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Adverse Childhood Experiences, Familial Emotion Socialization, and Adult Emotion

Regulation: A Moderation Model

A thesis

presented to

the faculty of the Department of Psychology

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Master of Science in Psychology

by

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December 2019

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Keywords: Adverse childhood experiences, emotion regulation, emotion socialization

ABSTRACT

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Adverse childhood experiences (ACEs) have been associated with maladaptive outcomes, including difficulties with emotion regulation (ER). ER difficulties, in turn, increase risk for experiencing physical and mental health problems. Parental emotion socialization is one factor that has been associated with ER skills across development. No known studies, however, have examined whether parental emotion socialization moderates the relationship between ACEs and ER difficulties. In the current study, undergraduates ($N = 678$) completed questionnaires about their history of ACEs, parental emotion socialization experiences, and current ER difficulties. Correlational results indicated a positive correlation between ACEs and ER difficulties. Results of the hierarchical multiple regression analyses found a significant moderation effect only within the context of distress reaction (DR) parenting. Results suggested that the link between ACEs and adult ER difficulties was stronger in the context of low to moderate DR parenting and relatively weak in circumstances of high DR parenting.

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CHAPTER 1

INTRODUCTION

Exposure to childhood traumatic stress and adversity has long term implications for physical, psychological, emotional, and behavioral health across the lifespan (Center for the Application of Prevention Technologies [CAPT], 2017; Child Welfare Information Gateway, 2013; Edwards, Dube, Felitti, & Anda, 2007). Childhood is a key time for emotion development, including emotion regulation abilities (Nanni, Uher, & Danese, 2012). Defined generally as an individual's ability to manage and adaptively respond to an emotional experience, emotion regulation has key implications for current and later psychological and behavioral health outcomes (Rolston & Lloyd-Richardson, 2017). Early childhood adversity and maltreatment have been associated with disruption in the development of emotion regulation abilities (England-Mason, Khoury, Atkinson, Hall, & Gonzalez, 2017). However, early adversity is probabilistic and not deterministic in its relation to future outcomes and thus more research is needed that examines risk and protective factors surrounding the link between early childhood adversity and later outcomes (Leitch, 2017). One potential protective factor may be a child's experience of growing up within a supportive emotion parenting system. Supportive emotion parenting behaviors have been associated with children's emotion regulation abilities whereas unsupportive emotion parenting behaviors have been associated with difficulties with emotion regulation (Morelen, Shaffer, & Suveg, 2014). As such, this study aims to examine the potentially moderating relationship of parental emotion socialization between early experiences of childhood adversity and adult emotion regulation (Morelen & Suveg, 2012).

Adverse Childhood Experiences

Childhood adversity has been documented in the earliest forms of human history (United Nations International Children's Emergency Fund, 2010) and the scientific study of developmental outcomes of childhood adversity has grown substantially over the past few decades (see Davidson, Devaney, & Spratt, 2010 for a review). A formative study in this subject area, the adverse childhood experiences (ACEs) study, conducted by Felitti and colleagues in 1998, aimed to explore, "the relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults" (p.245). In this study, seven categories of ACEs were assessed: psychological abuse; physical abuse; sexual abuse; violence against mother; living with household members who abuse substances; living with household members who struggled with mental illness; living with household members who experienced suicidal ideation; and living with household members who engaged in criminal behavior (Felitti et al., 1998). Though these seven categories served as a foundation for the identification of childhood adversity, the concept of ACEs has since been expanded to include physical and emotional neglect, as well as exposure to intimate partner violence and parental separation or divorce (Center for the Application of Prevention Technologies [CAPT], 2017; Sederer, 2013).

Though the notion of childhood adversity may seem obvious to most readers, a concrete definition of childhood adversity has remained elusive. One working definition that has been proposed defines childhood adversity as: "exposure during childhood or adolescence to environmental circumstances that are likely to require significant psychological, social, or neurobiological adaptation by an average child and that represent a deviation from the expectable environment" (McLaughlin, 2016, p. 363). Further, this definition specifies that adversity itself is defined as, "a state or instance of serious or continued difficulty or misfortune; a difficult

situation or condition; misfortune or tragedy,” (*Adversity*, (n.d.); McLaughlin, 2016). Within this proposed definition are several phrases of note. The first of these phrases, *exposure during childhood*, refers to the boundary condition that the adversity exposure must occur prior to age 18, during either childhood or adolescence. The second of these phrases, *environmental circumstances*, clarifies that said adversity can be either chronic or a singular event that is stressful or traumatic enough to elicit significant change in functioning from the average child. A final intentional phrase, *a deviation from the expectable environment*, refers to an identifiable departure from what can be expected in the healthy environment required for normal brain development – specifically this expectable, healthy environment includes opportunities to engage each of the five senses (e.g. exposure to a wide range of sensory experiences), opportunity for language development, and opportunity for interaction with an attentive and consistent caregiver (McLaughlin, 2016).

In line with this final intentional phrase, *a deviation from the expectable environment*, a branch of research, developmental psychopathology, further explains ACEs, and broader childhood maltreatment, by contextualizing them within a dynamic developmental trajectory. When considering ACEs through a developmental psychopathology framework, early adversities and stressors are not discrete events but rather complex phenomenon embedded within the environment (Masten, 2006). In other words, a developmental psychopathology framework emphasizes the way in which ACEs are enveloped by co-occurring circumstance (e.g. environmental factors, personality characteristics, social climate) and subsequent outcomes within a living system; circumstances and outcomes which are both variable and dynamic (Cicchetti, 2014; Hecht & Hansen, 2001; Masten, 2006; Rutter & Sroufe, 2000). Equifinality and multifinality are two concepts from the developmental psychopathology framework that help to

capture the variable and dynamic nature of childhood development. Equifinality refers to the way in which multiple developmental pathways may result in the same outcome and multifinality refers to the way in which a single experience may result in a wide range of developmental outcomes (Cicchetti, 2014). In other words, the way that a specific ACE impacts a given individual may differ entirely from the way in which it impacts another individual because of diversity in the circumstances, both internal and external, that precede and co-occur with the ACE (Masten, 2006). Thus, a developmental psychopathology framework is relevant for understanding the relationship between ACEs and later outcomes because it acknowledges risk and protective factors that contribute to the diverse processes and outcomes associated with early adversity.

In terms of diversity in outcome, there can be long-lasting consequences of ACEs that affect one physically, psychologically, and/or behaviorally (Center for the Application of Prevention Technologies [CAPT], 2017; Child Welfare Information Gateway, 2013; Edwards et al., 2007). Broad outcomes include significantly heightened risk for social, emotional, and cognitive impairment; adoption of health-risk behaviors; and disease, disability, and social problems (Blodgett & Lanigan, 2018; Chapman, Dube, & Anda, 2007; Chartier, Walker, & Naimark, 2010; Child Welfare Information Gateway, 2013; England-Mason et al., 2017; Merrick et al., 2017; Shin, McDonald, & Conley, 2018; Sonu, Post, & Feinglass, 2019). In childhood adversity research, there have been two main approaches to the study of outcomes of ACEs - one that focuses on the pure effects of individual experiences (i.e., child sexual abuse) and one that focuses on the cumulative effects of ACEs. The seminal ACEs study (Felitti et al., 1998) sought to examine the cumulative effect of ACEs on later outcomes. Specifically, Felitti and colleagues (1998) sought to associate the cumulative number of childhood adversity exposure categories (0-

7) with the risk factors for the leading causes of death in adult life. Several major findings were derived from this study. First, the prevalence of childhood adversity was found to be much higher than was initially thought. Of the 9,508 respondents, more than half (52%) reported having experienced at least one ACE; 25% reported having experienced two or more ACEs. Second, a significant dose-response effect was demonstrated by the increased health risk that was positively correlated with increased ACEs exposure. Those who reported having experienced four or more ACEs were also found to have a wide variety of heightened health risks in comparison to those who reported no childhood adversity. Specifically, four or more ACEs was associated with a 4-12x increased risk for alcoholism, drug abuse, depression, and suicide attempt; 2-4x increased risk for smoking, poor self-rated health, ≥ 50 sexual intercourse partners, and sexually transmitted disease; and 1.4-1.6x increased risk for physical inactivity and severe obesity. These findings illustrate that the detrimental impact of multiple ACEs is strong and cumulative and that the negative effects of ACEs extend into adult life (Felitti, 2009; Felitti et al., 1998).

Beyond physical health, research employing a longitudinal perspective of developmental psychopathology have examined the association between ACEs and negative mental health and behavioral outcomes in adulthood. An early study aimed to examine this association via focus on the relationship between childhood abuse and adult functioning (Silverman, Reinherz, & Giaconia, 1996). Three hundred and seventy-five subjects were assessed at ages 5, 9, 15, 18, and 21 in a 17-year longitudinal study. When interviewed at age 21, nearly 11% of subjects reported having experienced physical or sexual abuse during childhood (prior to the age of 18). Of those abused, approximately 80% qualified for the diagnosis of at least one psychiatric disorder based upon DSM-III-R criteria. In comparison to those who reported no childhood adversity, subjects

with an abuse history were shown to experience more depressive symptomology, anxiety, emotional-behavioral problems, suicidal ideation, and suicide attempts (Silverman et al., 1996). Though these results only reflect health outcomes for those who have experienced the abuse category of ACEs, they nevertheless remain consistent with current research examining increases of lifetime physical and mental health risk for those who have experienced any ACEs (Hughes et al., 2017; Merrick et al., 2017). In sum, there is a strong body of literature showing that ACEs have long-lasting effects on physical and mental health across the lifespan (Hughes et al., 2017; Merrick et al., 2017; Sederer, 2013; Whitfield, 1998).

Emotion Regulation

Emotion regulation is conceptualized as, “the process whereby emotions, both negative and positive, are effectively identified, monitored, managed, and modified, both internally and externally” (Rodriguez, Tucker, & Palmer, 2016, p. 1917). Adaptive emotion regulation entails both extrinsic (e.g., modulating facial expression) and intrinsic (e.g., restructuring thoughts) processes used on a regular basis to successfully cope with difficult situations (Rodriguez et al., 2016; Rolston & Lloyd-Richardson, 2017; Thompson, n.d.). As an adaptive strategy, emotion regulation promotes adaptation with environmental change. When strong emotions arise, healthy emotion regulation strategies can help to diffuse strong emotion and allow for processing of the emotion-invoking event. Some examples of healthy emotion regulation strategies include talking with friends, exercising, and getting adequate sleep (Rolston & Lloyd-Richardson, 2016).

Despite its adaptive utility, all emotion regulation strategies may not be healthy. Common unhealthy strategies include substance abuse, physical or verbal aggression, and situational avoidance (Rolston & Lloyd-Richardson, 2016). Unhealthy emotion regulation strategies may, in turn, lead to difficulties in the basic processes of identifying, accepting, resolving, and

modulating emotional experiences. Emotion dysregulation arises when difficulties with emotion regulation lead to a felt sense of loss of control over one's own emotional experiences; this felt sense transitions into dysregulation when it begins to interfere with the individual's ability to adaptively function (Gratz & Roemer, 2004). Additionally, emotion dysregulation can become cyclical in that it often results in further reliance on unhealthy strategies to avoid negative emotional experiences (Rolston & Lloyd-Richardson, 2017). As the avoidance of emotion is a deviation from adaptive emotional response, chronic emotional avoidance may also lead to the development of other maladaptive strategies, such as self-harm, binge-eating, substance use, and risky sexual behavior (Messman-Moore, Walsh, & DiLillo, 2010). Overall, emotion regulation encompasses a wide range of behavioral, cognitive, physiological, and psychological responses to emotionally-evocative situations and emotion regulation difficulties have been associated with a range of maladaptive outcomes (Gross & Jazaieri, 2014).

Adverse Childhood Experiences and Emotion Regulation

Given their association with a wide range of maladaptive outcomes, emotion regulation difficulties have been further considered as a potential mechanism of action that allows the effects of childhood adversity to continue past the initial ACE experience. Both biological and environmental explanations have been made to help explain this link between ACEs and emotion regulation difficulties. Regarding biological mechanisms, ACEs have been shown to impact the developing child's brain, and these neural deviations due to adversity have implications for both the immune and nervous systems (Danese & McEwen, 2012; Middlebrooks & Audage, 2008). Regarding environmental mechanisms, abuse and household dysfunction might reflect unstable and invalidating early caregiving environments, which in turn, disrupt the development of health

emotion regulation abilities (Burns, Jackson, & Harding, 2010; Lawler, Koss, & Gunnar, 2017; Linehan, 1993).

Regarding biological explanations of the link between ACEs and emotion regulation difficulties, abnormalities in the brains of children who have experienced maltreatment have been found in the prefrontal cortex and levels of hypothalamic-pituitary-adrenal (HPA) axis mediators (Danese & McEwen, 2012). It is suggested that these neural abnormalities are associated with the impairment of top-down emotional regulation (Danese & McEwen, 2012). Allostasis and allostatic load are two concepts that help to capture the mechanism through which chronic adversity can impact health. Conceptualized as the biological processes that help the human body to recover from environmental and physiological changes, allostasis is the process through which healthy individuals are allowed to return to homeostasis (a physical state characterized by the stability of physiological variables such as body temperature and energy level; (Danese & McEwen, 2012). Similarly, when the process of allostasis is over activated and prolonged as the result of chronic stress, allostatic load occurs. These processes have been found to result in a range of detrimental physiological consequences which may continue to occur long after the initial adversity has ceased. Specifically, emerging research has suggested that chronic exposure to stress has been linked to structural and functional abnormalities in stress-sensitive regions like the prefrontal cortex, the amygdala, and the hippocampus. In the prefrontal cortex, specifically, chronic adversity causes shortening of dendrites which is associated with, “behavioral manifestations, such as impairment in attention, in extinction of fear-conditioned tasks, and in top-down cognitive emotion regulation” (Danese & McEwen, 2012, p. 30). Though this area is still growing in terms of both conceptualization and understanding, it nevertheless

provides further support for a connection between ACEs and detrimental physiological consequence, including those that have implications for emotion regulation.

Regarding environmental explanations of the link between ACEs and emotion regulation difficulties, deviation from the development of adaptive emotion regulation may be the product of an invalidating environment (Burns et al., 2010; Lawler et al., 2017; Linehan, 1993). Conceptualized as an environment in which, “communication of private experiences is met by erratic, inappropriate, and extreme responses,” the invalidating environment undermines, trivializes, and often punishes expression of personal experience (Linehan, 1993, p. 49). Though it is not explicitly stated in the aforementioned formal definition, it should be acknowledged that not all children who are exposed to ACEs grow up in invalidating environments; however, it makes sense that the more ACEs a child is exposed to, the greater their risk for being in an invalidating environment. It is easy to see how a child exposed to abuse and/or neglect might not experience their emotional needs as being noticed, supported, and validated. Further, other ACEs (e.g., living with someone with addiction, living with someone with mental health difficulties) could also increase the likelihood that a caregiver might not be able to sensitively respond to their child’s emotions. This is particularly concerning because when combined with early adversity, the experience of an invalidating environment may communicate to a child that not only is expression (vocal, behavioral, or emotional) of their experience of said adversity wrong, but also irrelevant and the product of a personal flaw (e.g., oversensitivity, paranoia, distorted view of events). Beyond these messages, consequences of an invalidating environment include: lack of opportunity for learning of age-appropriate labeling and control of emotional reactions; oversimplification of the ease of problem solving that results in a lack of both ability to tolerate distress and set realistic expectations (e.g., negative emotions are unacceptable so, “just pull

yourself up by your bootstraps and move on”); reinforcement of spectrum-end emotional responses (i.e. extreme emotional responses or total emotional inhibition) to elicit environmental attention; and reinforcement of inability to trust one’s own responses as valid interpretations of environmental events (Linehan, 1993). Such deviation from the development of adaptive emotion regulation skills is especially relevant in young children as they have limited ways of changing their environment and thus rely on emotion regulation as a primary coping mechanism (Skinner & Zimmer-Gembeck, 2007). The invalidating environment itself also represents a significant deviation from the expectable environment of sensitive and responsive caregivers – the experience of which is associated with positive parent-child interaction, secure attachment, and healthy emotional development (Lawler et al., 2017).

To summarize thus far, ACEs heighten risk for emotion regulation difficulties which may also be heightened by experience of an invalidating environment, thereby extending the impact of initial adversity. The interaction of these factors may be better understood through application of the biopsychosocial model (Linehan, 1993). In acknowledging factor interaction, this model recognizes the compounded impact of both biological change and environmental dysfunction on the individual experience. In other words, use of such a model allows focus on both the complex and dynamic interplay of biology and environment (rather than only on one or the other) on an individual’s long-term experience of initial adversity. Though the research suggests a probabilistic path, it should also be acknowledged that ACEs are not deterministic. The nature and types of outcomes associated with ACEs depends on a multitude of factors and thus it is important to better understand factors that may heighten (risk factors) or lessen (protective factors) risk of maladaptive outcomes following ACEs. In doing so, we may better inform not only those directly impacted by ACEs (e.g., through design and revision of intervention

programs), but also those charged with providing support following ACEs (e.g., families, primary care physicians, teachers).

Parental Emotion Socialization

In examining factors which may intervene in the pathway between ACEs and maladaptive outcomes, such as emotion regulation, one relevant factor may be parental emotion socialization. Conceptualized as a multifaceted and complex process through which parents teach their children about the understanding, expression, and control of emotions, parental emotion socialization has been noted as an integral component of children's emotional development (Denham, Zoller, & Couchoud, 1994; Eisenberg, Cumberland, & Spinrad, 1998; Morelen, Jacob, Suveg, Jones, & Thomassin, 2013). These lessons on emotion may be taught both directly (i.e. verbal discussion, reactions to children's emotional displays, emotion coaching) and indirectly (i.e. parents' own expression of emotion, overall family emotion climate), but will altogether be key components of the child's emotional rehearsal stage before socialization with external sources such as teachers and peers begin (Denham et al., 1994; Meyer, Raikes, Virmani, Waters, & Thompson, 2014; Mirabile, 2010).

An abundance of research has examined the multitude of factors that may influence the way in which a parent reacts to their child's emotional experiences (e.g., role of the socializer, cultural display rules, socializers' attitudes/belief about emotions), and reactions have been classified into two general categories: supportive and unsupportive emotion parenting (Eisenberg et al., 1998; Morelen et al., 2013; Nelson et al., 2012). Of note, recent research efforts to further examine the broader spectrum of emotion parenting have suggested a third, distinct category of emotion parenting, distress reaction parenting – a form of parenting in which a child's emotional displays are met by parental reactions of distress (Labella, 2018). Supportive emotion parenting

has been conceptualized as parental reactions that are expected to enhance children's emotional development through assistance in adaptive coping and understanding of the emotions of both the self and others (Eisenberg et al., 1998). Common supportive emotion parenting strategies include comforting and exploring constructive means of coping with emotions (Denham et al., 1994; Eisenberg et al., 1998). Conversely, unsupportive emotion parenting has been conceptualized as parental reactions that are expected to suppress children's emotional development through discouragement or avoidance of emotional expression (Eisenberg et al., 1998). Common unsupportive emotion parenting strategies include punishment, minimization, and distress in response to the child's emotional reactions – these strategies have been associated with negative outcomes such as difficulties with emotion regulation and psychopathology for children (Eisenberg et al., 1998; Meyer et al., 2014; Morelen et al., 2013). While supportive emotion parenting for all emotional reactions is preferable and adaptive, the presence of supportive parental reactions in response to children's negative emotions (e.g., sadness, anger) is especially significant for healthy emotional development (Nelson et al., 2012). This significance is due to the overall difficulty that developing children face in coping with negative emotions such as fear, anger, and sadness and the range of negative outcomes that have been associated with a lack of support in facing such emotions (Fabes, Leonard, Kupanoff, & Martin, 2001; Nelson et al., 2012). In order to learn ways in which to effectively cope with these often initially overwhelming emotions, children are in need of assistance in handling the emotion-associated distress (Nelson et al., 2012). When this assistance is not provided, maladaptive lessons of avoidance are communicated that may manifest as emotional suppression, emotional incompetence, emotion and behavior regulation difficulties, and heightened negative emotional arousal and anxiety in adulthood (Fabes et al., 2001).

In sum, the nature of parental reactions to children's negative emotional reactions are a vital component of early emotional development. Despite early adversity, supportive emotion parenting may have the potential to intervene in the pathway to difficulties with emotion regulation due to promotion of understanding, validation, and control of the child's emotional reactions. Conversely, unsupportive emotion parenting following exposure to ACEs may have the potential to exacerbate the pathway to difficulties with emotion regulation due to promotion of avoidance, invalidation, and suppression of the child's emotional reactions.

Current Study Aims and Hypotheses

Very little research has examined the impact of compounded childhood adversity on subsequent emotion regulation, thus further research examining its impact is needed. Though the promotion of intervention strategies targeting emotion regulation and parenting strategies has been discussed in the literature, no known research has examined the moderating effect of parental emotion socialization on the detrimental consequences of ACEs and subsequently, how the presence of such socialization might impact adult emotion regulation capability (Masten, 2011). Ideally the supportive socialization of negative emotions could serve as a protective factor by counteracting tendencies toward experiential avoidance, whereas unsupportive socialization could serve as a risk factor by exacerbating a propensity toward emotion regulation difficulties. Thus, emotion socialization by caregivers remains worthy of further research for promotion of resilience to childhood adversity.

As such, this study aimed to examine the potentially moderating relationship of parental emotion socialization between early experiences of childhood adversity and adult emotion regulation (see Figure 1).

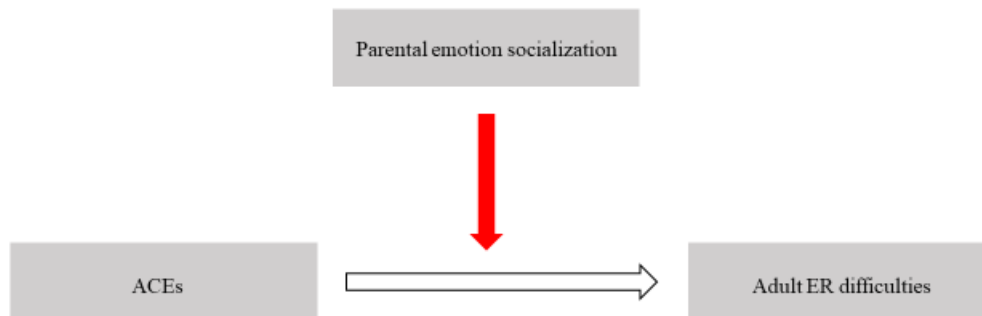


Figure 1. Conceptual model for simple moderation, adapted for the current study. Adapted from PROCESS: A Versatile Computational Tool for observed variable mediation, moderation, and conditional process modeling (Hayes, 2012, p. 33).

Note. ACEs = Adverse childhood experiences; ER = Emotion regulation

Specifically, it was hypothesized that there would be a positive relation between adverse childhood experiences (ACEs) and emotion regulation difficulties in adulthood. Further, it was hypothesized that this link would be stronger in the context of unsupportive emotion parenting experiences from childhood and weaker in the context of supportive emotion parenting experiences from childhood. In other words, it was hypothesized that unsupportive emotion parenting and distress reaction parenting would serve as a risk factor and supportive emotion parenting would serve as a protective factor when considering the impact of ACEs on emotion regulation.

CHAPTER 2

METHODS

Participants

The sample for this study was drawn from a larger online survey completed by both undergraduate- and graduate-level students from a rural southeastern university ($N = 678$). The reported age of participants ranged from 18-22 ($M = 19.09$, $SD = 1.25$). Within this sample, 71.9% ($n = 487$) of participants identified as female, 26.9% ($n = 182$) as male, and 1.2% ($n = 8$) as gender-nonconforming (a term which here includes both transgender and genderqueer identities). Of those participants who reported their sexual orientation, 86.3% ($n = 578$) identified as heterosexual, 1.9% ($n = 13$) identified as gay, 2.1% ($n = 14$) identified as lesbian, 4.8% ($n = 32$) identified as bisexual, 2.2% ($n = 15$) identified as pansexual, 0.9% ($n = 6$) identified as asexual, and 1.7% ($n = 12$) identified as either “other” or currently questioning their sexual orientation. Regarding ethnic diversity, 79.2% ($n = 537$) of participants identified as White, 11.4% ($n = 77$) as Black, 0.9% ($n = 6$) as Latino or Hispanic, 3.2% ($n = 22$) as Asian or Pacific Islander, and 1.9% ($n = 13$) as another unlisted ethnicity.

Procedure

Participants were recruited via an online platform, Sona Systems. The Sona system enables university researchers to conduct online research studies by pulling from a participant pool of students who sign up for research credits as part of class assignments and/or extra credit opportunities. All participation is voluntary, and students had the option to choose from a range of ongoing studies being conducted within the Sona system. If students chose to participate in this study, they were routed to another online survey platform, Research Electronic Data Capture (REDCap; Harris, Taylor, Minor, Elliot, Fernandez, O'Neal, McLeod, Delacqua, Delacqua,

Kirby, & Duda, 2019; Harris, Taylor, Thielke, Payne, Gonzalez, & Conde, 2009), that allowed them to answer survey questions anonymously. Informed consent was administered electronically before study participation and this study has institutional IRB approval. Questionnaires took approximately 90 minutes to complete. Data for this project were collected as part of a larger project, The Religion, Emotions, and Current Health (REACH) Project.

Measures

Adverse Childhood Experience

The Adverse Childhood Experience (ACE) questionnaire was used to measure participants' experience of adversity between the ages of 0-18 (Felitti et al., 1998). The ACE questionnaire is comprised of 10 items (each of which represent a different category of adversity) and has 3 subscales (Abuse, Neglect, and Household Dysfunction). Each affirmative response to individual items adds a single point to a participant's score, thereby allowing a maximum, overall score of 10. In terms of clinical cut-off, a score of 4 or more is considered to be clinically significant and associated with higher risk for physical, psychological, and/or behavioral consequence (as discussed in the Adverse Childhood Experiences section above). The questionnaire has demonstrated good internal consistency ($\alpha = 0.88$, (Murphy et al., 2014) and is considered to be both a valid and reliable measure (Dube, Williamson, Thompson, Felitti, & Anda, 2004). Cronbach's Alpha analysis of the ACE questionnaire in the current study also indicated demonstration of good internal consistency ($\alpha = 0.80$).

Emotion Regulation

The Difficulties in Emotion Regulation Scale (DERS) was used to assess current difficulties in emotion regulation (Gratz & Roemer, 2004). The DERS is comprised of 36 items and has 6 subscales (Nonacceptance of emotional responses, difficulty engaging in goal-directed

behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity). Each item is answered on a 5-point Likert-type scale that ranges from 1 (“almost never (0-10%)”) to 7 (“almost always (91-100%)”), thereby allowing a maximum, total score of 180. The total score was used for the present study. Though there is no established clinical cut-off, higher total scores, are reflective of greater difficulties with emotion regulation. The questionnaire has demonstrated good internal consistency ($\alpha = 0.93$) and is considered to be both a valid and reliable measure (Gratz & Roemer, 2004). Cronbach’s Alpha analysis of the DERS questionnaire in the current study also indicated demonstration of good internal consistency ($\alpha = 0.96$).

Parental Emotion Socialization

The Coping with Children’s Negative Emotions Scale (CCNES) was used to assess the way in which participants’ primary caregivers typically reacted to the participant’s own negative affect in distressing situations in childhood (Fabes, Eisenberg, & Bernzweig, 1990). The CCNES is comprised of 12 items (vignettes) and has 6 subscales (Distress Reactions (DR), Punitive Reactions (PR), Expressive Encouragement (EE), Emotion-Focused Reactions (EFR), Problem-Focused Reactions (PFR), and Minimization Reactions (MR)). Each item is followed by a list of six possible reactions that can be answered on a 7-point Likert-type scale that ranges from 1 (“Very Unlikely”) to (“Very Likely”) based upon how likely each reaction was to its associated distressing situation item. An example of a CCNES vignette and its associated answer options is as follows: “When you were a child if you lost some prized possession and reacted with tears, your parent/guardian would most likely have: (a) gotten upset with you for being so careless and then crying about it (DR); (b) told you that you are overreacting (MR); (c) helped you think of places you haven’t looked yet (PFR); (d) distracted you by talking about happy things (EFR); (e)

told you it's OK to cry when you feel unhappy (EE); (f) told you that's what happens when you're not careful (PR)". In terms of scoring, the score for each subscale is calculated by the mean of the twelve associated reaction scores. In general, higher scores on the PR and MR subscales are associated with unsupportive emotion parenting. Conversely, higher scores on the EE, EFR, and PFR subscales are associated with supportive emotion parenting. In recent analyses, examination of the DR subscale has identified it as representing a unique and separate construct (Labella, 2018). Thus, the present study used the unsupportive emotion parenting composite score, supportive emotion parenting composite score, and DR subscale score for analyses. The questionnaire has demonstrated acceptable internal consistency (with a subscale range of $\alpha = 0.69-0.85$) and is considered to be both a valid and reliable measure (Fabes, Leonard, Kupanoff, & Martin, 2002). Cronbach's Alpha analysis of the CCNES questionnaire in the current study also indicated demonstration of good internal consistency (subscales ranged from $\alpha = 0.74-0.93$).

Power Analysis

In order to determine the number of participants that would be necessary to obtain statistical power at the recommended 0.80 level, a post hoc power analysis was conducted. This power analysis was conducted using the software package, GPower 3 (Faul, Erdfelder, Lang, & Buchner, 2007). The sample size of 678 was used for the statistical power analysis and a 3-predictor variable equation was used as a baseline. The recommended effect sizes for multiple regression analyses are as follows: small ($r = 0.02$), medium ($r = 0.15$), and large ($r = 0.35$). The alpha level used for this analysis was $p < .05$. The post hoc analyses revealed the statistical power for this study was .96 for detecting a small effect, whereas the power exceeded .99 for the

detection of a moderate to large effect size. Thus, there was more than adequate power at the small, moderate, and large effect size levels.

CHAPTER 3

RESULTS

All analyses were conducted using the Statistical Package for the Social Sciences (SPSS), Version 25. To better understand the nature of ACEs in our sample, we examined the mean (1.82), median (1), and mode (0) of ACEs occurrence. Further, 36.3% reported 0 ACEs, 24.4% reported 1 ACE, 11.7% reported 2 ACEs, 7.0% reported 3 ACEs, and 8.2% reported 4 or more ACEs. Overall, these results are similar to the national estimates of ACE exposure provided by the original ACE study [36.1% reported 0 ACEs, 26% reported 1 ACE, 15.9% reported 2 ACEs, 9.5% reported 3 ACEs, and 12.5% reported 4 or more ACEs; Felitti et al., 1998]. Pearson's correlation analysis was used to examine bivariate association between all study variables. In line with the hypothesis that there would be a positive relation between ACEs and emotion regulation difficulties in adulthood, results indicated that there was a significant, positive correlation between ACEs and emotion regulation difficulties ($r(491) = .22, p < .01$). Significant associations were also found between all other main study variables (see Table 1).

Table 1

Table of Correlations for Main Variables

	1	2	3	4	5
1. ACEs Total	--	.223**	-.282**	.240**	.322**
2. ER Difficulty	.223**	--		.226**	.302**
3. SEP	-.282**	-.192**	--	-.388**	-.466**
4. UEP	.240**	.226**	-.388**	--	.778**
5. DRP	.322**	.302**	-.466**	.778**	--

Note: * $p < .05$, ** $p < .01$, *** $p < .001$, two-tailed. ACEs = Adverse childhood events; ER = Emotion regulation; SEP = Supportive emotion parenting; UEP = Unsupportive emotion parenting; DRP = Distress reaction parenting

To examine the potentially moderating relationship of parental emotion socialization between early experiences of childhood adversity and adult emotion regulation (Morelen & Suveg, 2012) a hierarchical multiple regression analysis was conducted. Specifically, Model 1 (simple moderation), from the PROCESS macro for SPSS, Version 3.1, was used for all moderation analyses (Hayes, 2012). The number of bootstrap resamples was set to 1000 with 95% confidence intervals. The Process (Hayes 2012) Macro estimates an OLS regression: $\hat{Y} = i + c_1X + c_2M + c_3XM + e_y$; where \hat{Y} = outcome (i.e., current difficulties in emotion regulation), X = the predictor variable (i.e., ACEs), and M = primary moderator variable (i.e., parental emotion socialization from childhood). Each term in the equation has its own significance value and an F value is provided to indicate whether the interaction (c_3XM) significantly changes the amount of variance accounted for by the model (as indicated by R^2 ; see Figure 1). A total of three moderation models were tested in order to examine the following variable combinations: 1) supportive emotion parenting as a potential moderator between ACEs and adult emotion regulation; 2) unsupportive emotion parenting as a potential moderator between ACEs and adult emotion regulation; and 3) distress reaction parenting as a potential moderator between ACEs and adult emotion regulation.

Results of the hierarchical multiple regression analyses did not find support for a significant moderation effect in the context of either supportive or unsupportive emotion parenting. While the overall models for supportive and unsupportive emotion parenting as moderators between ACEs and adult emotion regulation were significant, their respective interaction terms were nonsignificant, therefore no significant moderation effect existed within the context of our sample. A significant moderation effect was found, however, in the context of

distress reaction parenting, $\Delta R^2 = .0098$, $F(1, 478) = 5.23$, $p = .0226$, $b = -1.36$, $t(478) = -2.29$, $p < .05$ (see Table 2).

Table 2

Tested Moderation Tables with Adult Emotion Regulation as Outcome

	b^a	SE b	R^2	ΔR^2
<i>Model 1</i>			.06*	
Constant	96.35*	7.65		
ACEs Total	2.28	2.01		
SEP	-2.77†	1.59		
ACEs x SEP	.02	.46		.00
<i>Model 2</i>			.08*	
Constant	65.29*	5.55		
ACEs Total	4.44*	2.12		
UEP	5.10*	1.49		
ACEs x UEP	-.56	.51		.00
<i>Model 3</i>			.11*	
Constant	49.90*	6.43		
ACEs Total	7.05*	2.39		
DRP	9.92*	1.83		
ACEs x DRP	-1.36*	.60		.01*
<i>Simple slopes for Model 3</i>				
ACEs x DRP-L	3.53*	.96		
ACEs x DRP-M	2.17*	.58		
ACEs x DRP-H	1.06†	.62		
<i>Model 5</i>			.11*	
Constant	49.90*	6.43		
DRP	9.92*	1.83		
ACEs Total	7.05*	2.39		
DRP x ACEs	-1.36*	.60		.01*

*Note: b^a unstandardized beta, SE b standard error of beta, *DRP-L* distress emotion parenting – low levels, *DRP-M* distress emotion parenting – moderate levels, *DRP-H* distress emotion parenting – high levels

† $p \leq .10$; * $p \leq .05$

Despite patterns of nonsignificance of the interaction term across the supportive and unsupportive emotion parenting models, examination of the main effects of all tested moderation models remained warranted. Specifically, within the unsupportive emotion ($b = 4.44, p = .03$) and distress reaction parenting models ($b = 7.05, p = .00$), ACEs was found to be a significant predictor of emotion regulation difficulties. Conversely, within the supportive emotion parenting model ($b = 2.28, p = .26$), ACEs was not found to be a significant predictor of emotion regulation difficulties. Of note, within PROCESS, the main effect indicates the strength of the relationship between X and Y when accounting for the contributions of the moderator (M) and the interaction term (M*X). As such, the non-significant main effect for supportive emotion parenting model can be interpreted as meaning that when supportive emotion parenting and the interaction of supportive emotion parenting x ACEs are considered, the main effect of ACEs on emotion regulation difficulties are no longer significant.

To further explore the significant moderation effect in the context of distress reaction parenting, post-hoc simple slopes analyses were also conducted in order to determine whether early adversity was related to adult emotion regulation at high, moderate, and low levels of parental distress reaction socialization (a continuous variable). When looking at the conditional effects of ACEs on emotion regulation at different levels of the moderator, we found that as distress reactions increased, the effect of ACEs on emotion regulation decreased (see Figure 2).

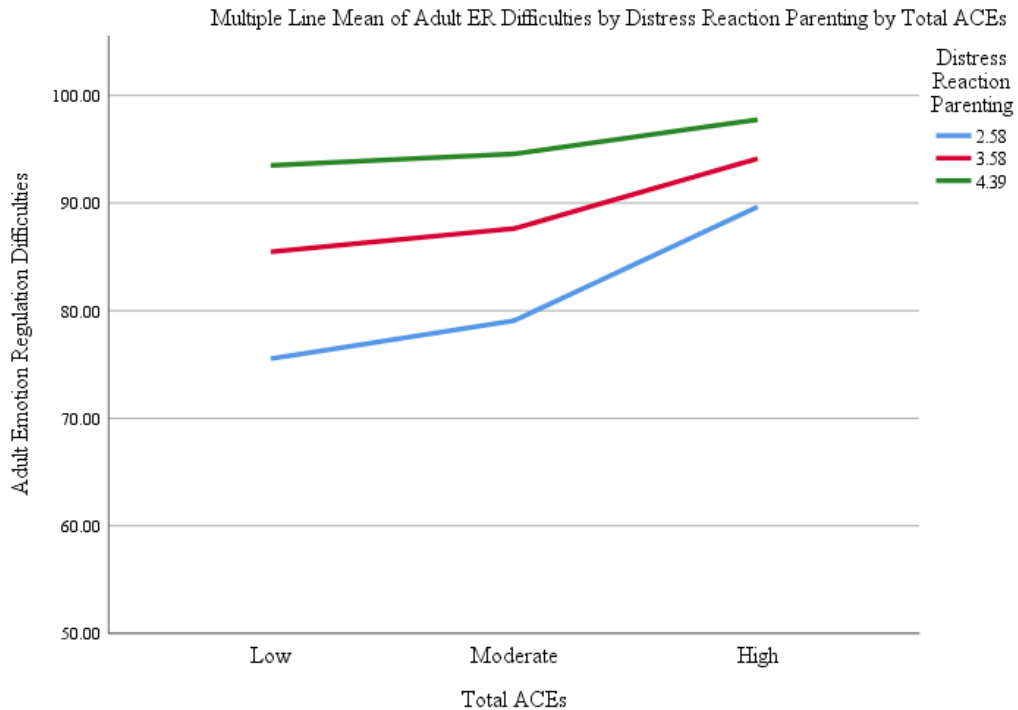


Figure 2. Multiple line model of adult ER difficulties by total ACEs by distress reaction parenting.

Note. ER = Emotion regulation

Further, the relationship between ACEs and emotion regulation was only significant at low ($b = 3.53$, $t(482) = 3.66$, LLCI = 1.64, ULCI = 5.42) and moderate ($b = 2.17$, $t(482) = 3.70$, LLCI = 1.02, ULCI = 3.31) levels of distress reactions. Though the relationship between ACEs and emotion regulation at high (above average) levels of distress reactions was non-significant ($b = 1.06$, $t(482) = 1.71$, LLCI = -0.16, ULCI = 2.28) and though the association continued to grow weaker with each increasing level of distress reactions, it should be noted that the association remained positive. Taken together, these results suggest that, within this sample, as the severity of distress reaction parenting increases, the additive effect of ACEs on emotion regulation grows weaker.

It should also be noted that visual inspection of Figure 2 suggested that the mean levels of ACEs and emotion regulation difficulties were highest for individuals in the high distress reactions group, followed by the moderate and low distress reactions groups, respectively (see Figure 2). To follow up on this observation, an exploratory MANOVA (IV = Distress reaction grouping variable; DVs = ACEs, emotion regulation difficulties) indicated that there was a significant effect of distress reactions group on ACEs and emotion regulation difficulties ($F(4, 956) = 14.13, p < .05$; Wilk's $\lambda = .0891$, partial $\eta^2 = 0.56$) such that levels of both ACEs ($F(2, 479) = 22.40; p < .05$; partial $\eta^2 = .086$) and emotion regulation difficulties ($F(2, 479) = 10.60; p < .05$; partial $\eta^2 = .042$) were found to significantly differ across distress reaction severity groups. Specifically, the group with high parental distress reactions in childhood reported higher ACEs than the moderate ($d = 0.67$) and low ($d = 0.94$) distress reactions groups (see Figure 3).

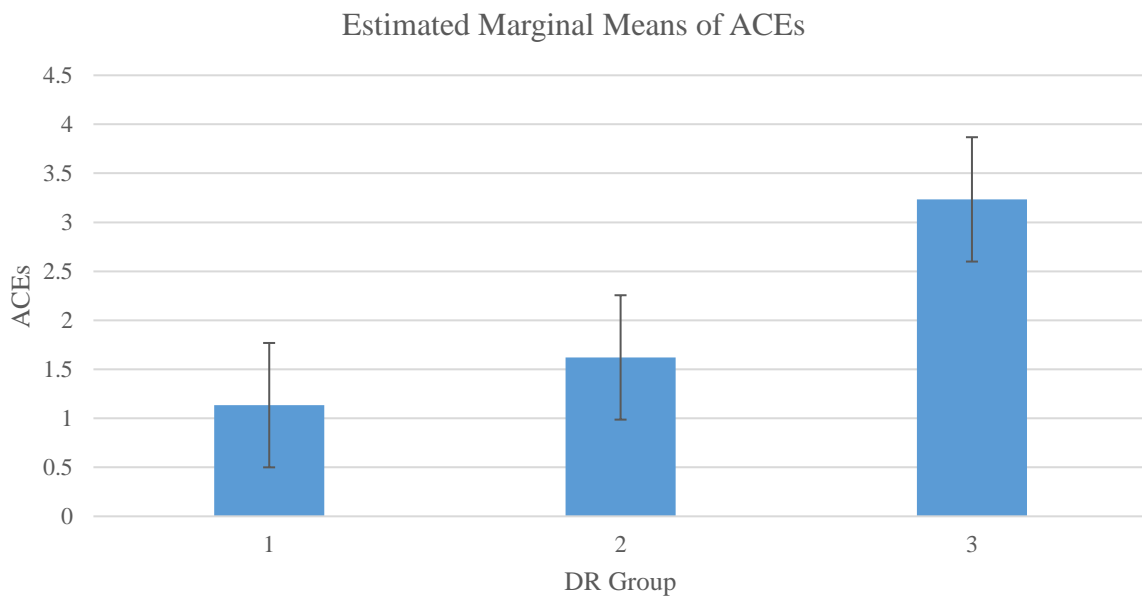


Figure 3. Estimated marginal means of ACEs across distress reaction parenting groups.

Note. DR Group – Distress reaction parenting group; 1 – Low; 2 – Moderate; 3 – High

Similarly, the group with high parental distress reactions in childhood reported higher emotion regulation difficulties than the moderate ($d = 0.37$) and low ($d = 0.72$) distress reactions groups (see Figure 4).

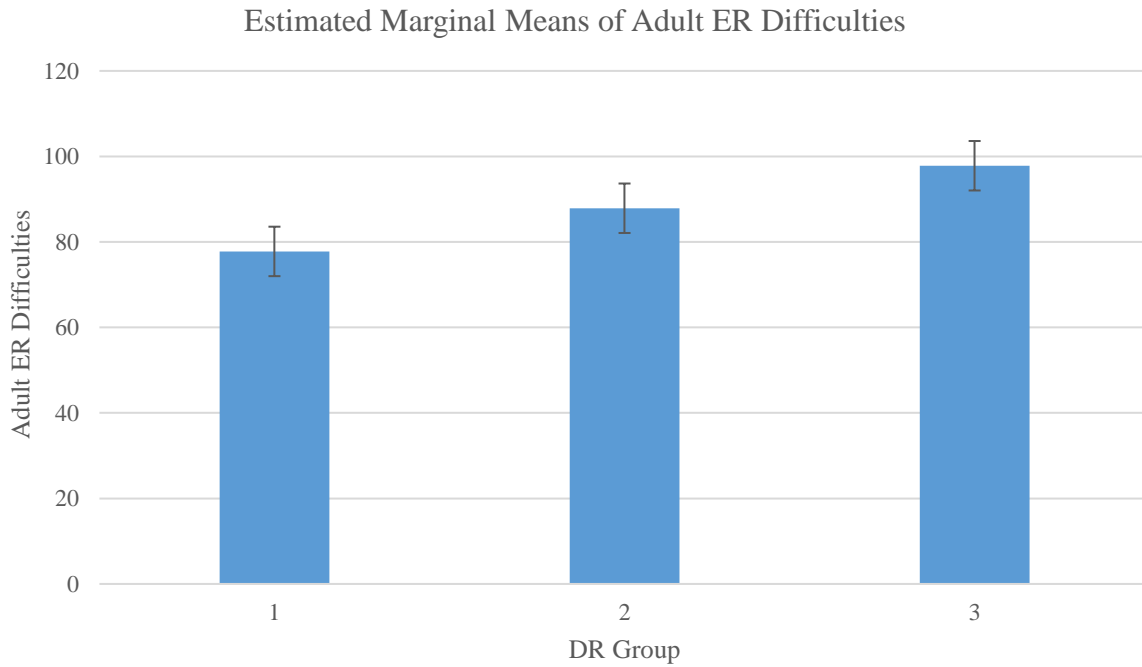


Figure 4. Estimated marginal means of adult emotion regulation difficulties across distress reaction parenting groups.

Note. DR Group – Distress reaction parenting group; 1 – Low; 2 – Moderate; 3 – High

Given the clinical cut-off of 4 or more ACEs as a notable indicator of later risk, exploratory analyses were conducted in which a grouping variable based upon the number of participants' endorsed ACEs was created, with different groups being created for those that had experienced less than four and four or more ACEs. Following the creation of this grouping variable, moderation models were again run for both groups in the context of supportive, unsupportive, and distress reaction parenting. None of the moderation models were significant.

Finally, given the disparity between the current study's pattern of model significance and that which has been consistently supported by existing literature, exploratory analysis was conducted in which distress reactions was added to the unsupportive emotion parenting composite. Of note, previous literature has been mixed about whether or not distress reactions is a stand-alone subscale or a part of the broader unsupportive emotion parenting composite. Following this computation of the broader unsupportive emotion parenting composite, a moderation model was run again in which the larger unsupportive emotion parenting variable was entered as the moderating variable between ACEs and adult emotion regulation difficulties. However, the model was nonsignificant and thus, no further analyses were warranted.

CHAPTER 4

DISCUSSION

Existing research on ACEs has associated exposure to early adversity with a number of detrimental, long-term health outcomes. These detrimental outcomes include increased risk for internalizing disorders (e.g. depression, anxiety, suicidal ideation; (Chapman et al., 2007; Merrick et al., 2017), externalizing symptomology (e.g. withdrawal from school, alcohol and drug abuse; (Blodgett & Lanigan, 2018; Shin et al., 2018), chronic health problems (e.g. cardiovascular disease. diabetes; Chartier, Walker, & Naimark, 2010; Sonu, Post, & Feinglass, 2019), and difficulties with emotion regulation (England-Mason et al., 2017). Given the crucial role of emotion regulation in the development and maintenance of a wide range of mental health disorders, understanding factors that may weaken the association between ACEs and emotion regulation problems is an important area of study (England-Mason et al., 2017; Rudenstine, Espinosa, McGee, & Routhier, 2019). Further, given that negative family environments can exacerbate the maladaptive outcomes associated with early adversity (Burns et al., 2010; Lawler et al., 2017; Linehan, 1993; Masten et al., 1999) *and* family emotion socialization can impact the development of emotion regulation (Denham et al., 1994; Eisenberg et al., 1998; Meyer et al., 2014; Morelen et al., 2013), parental emotion socialization is a ripe area of study. As such, the current study aimed to examine the potentially moderating relationship of parental emotion socialization between early experiences of childhood adversity and adult emotion regulation. In pursuit of this goal, two hypotheses were made: (1) There would be a positive relation between ACEs and emotion regulation difficulties in adulthood and (2) unsupportive emotion parenting would serve as a risk factor and supportive emotion parenting would serve as a protective factor when considering the impact of ACEs on emotion regulation. Overall, study results found

support for hypothesis one and did not support hypothesis two. Interpretations and implications are discussed below.

Our results found support for a positive relationship between ACEs and adult emotion regulation difficulties, consistent with past literature (Burns et al., 2010; Danese & McEwen, 2012; England-Mason et al., 2017; Linehan, 1993). This is not surprising given that childhood is a critical developmental period relevant for the emergence of skills utilized in the adaptive regulation of emotions (Cloitre et al., 2019; England-Mason et al., 2017; Rudenstine et al., 2019). In line with the well-established nature of this relationship, support within the current, community sample is particularly notable given the comparability of our sample's ACE frequency to that of the national average. When considering the moderating role of emotion parenting on this link between ACEs and emotion regulation, results did not support our original hypotheses. Specifically, supportive emotion parenting was not found to buffer the link between ACEs and emotion regulation nor was unsupportive emotion parenting found to exacerbate that link. Results did support a significant moderating effect for distress reactions; however, the nature of this finding was somewhat surprising such that as distress reactions increased, the additive effect of ACEs on emotion regulation problems decreased. This pattern of findings is notable given its contrast from previous research that found supportive emotion parenting to be beneficial and unsupportive emotion parenting to be detrimental for emotion regulation development (Denham et al., 1994; Eisenberg et al., 1998; Meyer et al., 2014; Morelen et al., 2013; Nelson et al., 2012).

Relevant to this pattern of contradictory significance, is discussion of the pattern of main effects across the tested moderation models. Specifically, ACEs was found to be a significant predictor of emotion regulation difficulties within both the unsupportive emotion and distress

reaction parenting models, but not within the supportive emotion parenting model. This pattern of predictability significance is especially interesting given the presence of significant bivariate association between ACEs and emotion regulation difficulties. Given the lack of ongoing significance following the consideration of supportive emotion parenting and the interaction of supportive emotion parenting x ACEs, further examination of the pattern of main effects across models would be beneficial for understanding the larger interaction of childhood adversity, parental emotion socialization, and emerging long-term emotion regulation difficulties.

Additional unique aspects of this pattern of significance came about in further exploration of the relationship between ACEs and adult emotion regulation at high, moderate, and low levels of parental distress emotion socialization. Specifically, examination of the mean scores for individuals who reported the highest levels of distress reaction parenting indicated that, overall, higher severity experiences of distress reaction parenting are associated with higher severity difficulties with adult emotion regulation (Figure 4). This relationship is well-supported by previous research given the general increase in interpersonal distress, increased tendency towards future non-supportive emotion socialization (e.g. avoidance of emotional stimuli), and long-term difficulty with emotion regulation strategies (e.g. inhibited emotional expressivity, deficits in emotion coding/labeling) following parental reactions of distress to children's negative emotions (Eisenberg et al., 1998; Fabes et al., 2001).

In contrast to this supported relationship between distress reactions and emotion regulation difficulties; however, the current study's simple slopes analyses revealed a unique pattern in which the additive effect of distress reaction parenting on the $X \rightarrow Y$ relationship (ACEs \rightarrow difficulties in emotion regulation) *decreased* as the experience of distress reactions in childhood *increased*. Though this pattern initially appears illogical and contradictory to the

aforementioned previous research which has established a positive association between distress reaction parenting and emotion regulation difficulties, the potential for this pattern of findings to be overall reflective of the pervasive impact of early adversity and familial dysfunction is worth mention. Specifically, exploratory, post-hoc examination of the marginal means of both ACEs (Figure 3) and emotion regulation difficulties (Figure 4) across the distress reaction parenting groups, provided confirmation of the presence of the highest ACE levels and highest emotion regulation difficulties in the most severe distress reaction parenting group. Together with the aforementioned trend that the additive effect of distress reaction parenting is at its lowest point in the most severe group, it may be that there is a ceiling effect for childhood household dysfunction. In other words, perhaps this demonstration of a decrease in the additive effect of distress reaction parenting as the severity of the distress reaction parenting increases, is more reflective of the way in which at certain levels of ACEs, emotion regulation difficulties are going to be pronounced regardless of the way in which emotions are socialized by parents. An additional, potential explanation of this data trend is that it is, instead, more reflective of the way in which at certain severity levels of distress reaction parenting, emotion regulation difficulties are going to be pronounced regardless of the presence of categorical, childhood adversity. Given the examination of this model via moderation and the cross-sectional design of the study, it is impossible to determine the true direction of the interaction between these variables. Nevertheless, further examination of the interaction of ACEs and distress reaction parenting in future research would be undeniably beneficial for children experiencing high levels of either aspect of household dysfunction.

A final finding of the current study involves significant correlations between ACEs and the three parental emotion socialization categories. Specifically, the total number of ACEs was

negatively correlated with supportive emotion parenting; positively correlated with unsupportive emotion parenting; and positively correlated with distress reaction parenting (see Table 1).

Though these relationships were not hypothesized, they remain in line with existing literature that has associated ACEs and overall family functioning – a multidimensional construct that encompasses parental emotion socialization given its reference to the way in which families communicate and relate to one another (Balistreri & Alvira-Hammond, 2016; Scully, McLaughlin, & Fitzgerald, 2019). Specifically, though all ACE categories do not occur exclusively within the family context, many do and thus have the potential to impact the overall functionality of a family system. As disruptions in the normative developmental pathway, ACEs themselves have been associated with increased parenting stress and decreased likelihood of positive parenting practices – a larger construct that again encompasses the way in which emotions are conceptualized and subsequently socialized (Nelson, O’Brien, Blankson, Calkins, & Keane, 2009; Lange, Callinan, & Smith, 2019). In addition to their potential to increase parenting stress, ACEs and other parental risk factors (e.g. mental health concerns, substance use, criminality) can broadly impact a parent’s ability to be sensitive to the emotional support needed by their child (Swain, 2017; Lange, Callinan, & Smith, 2019). Thus, the current study’s pattern of correlation findings is unsurprising, given the overlap of vulnerability factors for both ACEs and unsupportive emotion parenting.

Strengths, Limitations, and Future Directions

In considering strengths of this study, notable characteristics include a large sample size; utilization of bootstrapping; and anonymous, self-report of variables. Specifically, the combination of a large sample size and utilization of bootstrapping allowed for more than adequate power for detection of effect sizes. Additionally, the anonymous, self-report of study

variables allowed for an increased likelihood of honest and accurate experiences due to the reduction of stigma that is inherent to both the study's main variables and in-person discussion of adversity.

In considering limitations of the current study, notable characteristics include the lack of participant diversity in terms of age, gender, sexual orientation, and ethnicity. Though these participant characteristics are in line with characteristics of the overall population of the larger university from which this sample was drawn, they nevertheless make generalization of finding difficult given the potential of such a generalization's contribution to the W.E.I.R.D. problem in psychology (reliance upon Western, educated, industrialized, rich, and democratic societies; Schulz, Barahmi-Rad, Beauchamp, & Henrich, 2018). An additional limitation comes in the form of the relative minority (14.45%) of those who experienced ACEs at or above the clinical cut off level. Though this statistic is generally beneficial for the sample given its implication of a low rate of cumulative adversity, it limits the ability of this study to focus on those who stand to be most impacted by its results. A final limitation worth mention is the limited nature of the ACE questionnaire. While the questionnaire itself addresses a range of common adverse childhood events, the nature of item responses is inherently limiting in that no information beyond the presence of the experience is given. In other words, without further questioning or details voluntarily provided, additional information that would almost certainly be relevant for the overall model (e.g. context of the adversity, perpetrator relationship to the child, developmental timing, frequency of the event) remains unknown.

As the field of childhood adversity grows, future research should continue exploration of potentially exacerbating and protective factors within the pathway of ACEs and emotion regulation difficulties. Potentially moderating variables for which exploration may prove

beneficial include the nature of a primary caregiver's immediate response to adversity (e.g. validation vs. invalidation); the status of the experienced adversity (e.g. singular event vs. ongoing event); and the presence of engagement in additional coping resources (e.g. individual therapy services, family support groups). Additional research may benefit from focusing on other potentially protective factors within the current study's focal pathway between ACEs and adult emotion regulation difficulties. Given recent research, additionally potential protective factors include engagement with an adult outside of primary caregivers who serves a protective role (Crouch, Radcliff, Strompolis, Bennett, & Probst, 2019) and engagement with trauma-informed educators throughout schooling (Sciaraffa, Zeanah, & Zeanah, 2018).

Summary and Implications

In summary, the critical nature of continued childhood adversity research cannot be overstated given its potential to inform interventions targeting the development of healthy, adaptive emotion regulation strategies for those who have experienced early adversity. Such informed intervention is especially critical given previous research which highlights the detrimental impact of both ACEs and difficulties with emotion regulation on adult mental health and the persistence of a variety of major mental health disorders (Cloitre et al., 2019; Hughes et al., 2017; Merrick et al., 2017; Rudenstine et al., 2019). Further, informed intervention is surely becoming critical, now more than ever, given recent estimations which report increased rates of ACEs in children in the United States, as well as recent calls for revisions to the definition of ACE qualifying events (Crouch, Probst, Radcliff, Bennett, & McKinney, 2019; Merrick et al., 2017) – factors which will undoubtedly be associated with increased numbers of affected children in need of informed, efficacious care.

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