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Predicting Child Maltreatment Potential in Mothers Who are Substance-involved: A Study of Childhood Adversity, Stress, Affectivity, Emotion Dysregulation, and Emotion Regulation Strategies as Mechanisms of Action

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**PREDICTING CHILD MALTREATMENT POTENTIAL IN
MOTHERS WHO ARE SUBSTANCE-INVOLVED:
A STUDY OF CHILDHOOD ADVERSITY, STRESS, AFFECTIVITY,
EMOTION DYSREGULATION, AND EMOTION REGULATION STRATEGIES AS
MECHANISMS OF ACTION**

by

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ABSTRACT

Compared to the general population, parents who are substance-involved are both more likely to have experienced adversity during childhood and to exhibit elevated child maltreatment potential later in life. Within this population, mothers with young children are particularly at-risk. In order to enhance scientific understanding of this phenomenon, this study identified and examined several characteristics that were shown previously to be related to substance misuse and to the experience and perpetration of maltreatment. These characteristics included stress, affectivity, emotion dysregulation, and emotion regulation strategies. The current study examined these variables collectively in order to clarify the mechanisms at play in the intergenerational transmission of childhood adversity within the substance-involved population.

As part of this study, 127 mothers who were in treatment for substance use problems and who had young children ranging in age from 0- to 5-years rated their own childhood adversity, parenting stress, positive and negative affect, emotion dysregulation, emotion regulation strategies, and child maltreatment potential. Correlational analyses demonstrated many significant relationships among these characteristics. In addition, hierarchical regression analyses suggested that several characteristics (i.e., adverse childhood experiences, childhood maltreatment, parenting stress, positive affect, negative affect, and emotion dysregulation) added unique incremental variance to the prediction of child maltreatment potential. Moderation analyses indicated that parenting stress moderated the relationship between childhood maltreatment and positive affect. Exploratory mediation analyses demonstrated that emotion dysregulation mediated the relationship between childhood maltreatment and child maltreatment potential. Finally, exploratory logistic regression analyses demonstrated that adverse childhood

experiences predicted involvement with the child welfare system, even when other mechanisms of action were accounted for. In these analyses, emotion dysregulation approached significance.

Overall, this study demonstrated the importance of emotion dysregulation as a central characteristic that links the experience of childhood adversity, an elevated likelihood of substance misuse, and increased child maltreatment potential. Accordingly, these findings suggested the need to address emotion dysregulation as part of trauma-informed intervention efforts for this population. Integrative strategies such as these may reduce emotional and behavioral symptoms following the experience of childhood adversity, increase the likelihood of maintaining sobriety, improve parent-child relationships, and decrease child maltreatment potential.

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CHAPTER ONE: INTRODUCTION

The construct of *childhood adversity* encompasses an array of negative experiences that can occur in young children's lives and have lasting unfavorable outcomes. Within this overarching construct, *adverse childhood experiences* (ACEs) represent several broad, potentially traumatic events occurring within the context of a dysfunctional household (Felitti, Anda, Nordenberg, Williamson, Spitz, Edwards, Koss, & Marks, 1998). *Childhood maltreatment*, on the other hand, represents a smaller subset of ACEs including specific experiences of abuse and neglect. Both ACEs and childhood maltreatment are highly relevant to our understanding of how adversity often is perpetuated throughout generations within the substance-involved population. As a result, *childhood adversity* is used as an umbrella term for these two related constructs throughout this manuscript.

Within the general population, childhood adversity often is considered to be an intergenerational dilemma, with a proportion of individuals who experienced childhood adversity maltreating their own children upon entering parenthood (Belsky, 1993; Berlin, Appleyard, & Dodge, 2011; Wasserman, 1967). This pattern was particularly relevant for parents who were substance-involved. When compared to the general population, parents who were substance-involved presented with significantly elevated risk for perpetrating child maltreatment (Chaffin, Kelleher, & Hollenberg, 1996) and had a significantly higher proportion of involvement with child welfare systems due to child maltreatment allegations (Kelley, Lawrence, Milletich, Hollis, & Henson, 2015). In addition, when considering the histories of individuals who were substance dependent relative to those of the general population, both retrospective (Macleod, Hickman, Jones, Copeland, McKenzie, De Angelis, Kimber, & Robertson, 2012) and prospective (Mersky, Topitzes, & Reynolds, 2013) research demonstrated that this population reported an increased

prevalence of childhood adversity, including maltreatment. Thus, substance use has been conceptualized both as a cause and an effect of child maltreatment (Gruber & Taylor, 2006).

Given this foundational research suggesting the role of substance involvement in the intergenerational transmission of childhood adversity, there was a further need to understand more specific sequelae that could be playing a role in the child maltreatment potential of mothers who are substance-involved. Previous research suggested that child maltreatment potential (i.e., parents' propensity to engage in behaviors that could be abusive) was predicted significantly by a combination of variables rather than by a single characteristic (e.g., trauma history; Berlin et al., 2011; Lowell & Renk, 2017; MacKenzie, Kotch, & Lee, 2011). Previously examined factors included parenting stress and environmental stress (Black, Heyman, & Slep, 2001; Rodriguez, 2010), difficulties with emotion regulation (Bradley, 2011; Frodi & Lamb, 1980; Lowell & Renk, 2017; Stith Liu, Davies, Boykin, Alder, Harris, Som, McPherson, & Dees, 2009), and psychopathology, including substance use disorders (Barth, Gibbons, & Guo, 2006; Stith et al., 2009).

Although the relationships among several of these characteristics were studied previously in order to predict child maltreatment potential, these aforementioned characteristics have not yet been examined in a comprehensive interactional model for mothers who are substance-involved. Thus, the current study evaluated the predictive validity of several of these characteristics, as they may be of particular importance to mothers who are substance-involved, in order to predict optimally these mothers' child maltreatment potential. By determining which factors may serve as predictive mechanisms of action for elevations in child maltreatment potential for mothers who are substance-involved, points of intervention may be better identified in an attempt to

interrupt the cycle of childhood adversity in this population. The factors that were examined in this study are discussed below.

Child Maltreatment Statistics

Each year, the U.S. Department of Health and Human Services provides data regarding the frequency of child maltreatment perpetrated nationwide. In 2013, approximately 3.9 million children were referred to Child Protective Services (i.e., CPS) as having been exposed to alleged maltreatment (U.S. Department of Health and Human Services, 2015). Of these children, 17.5% became the subjects of substantiated claims and were found to have experienced some form of maltreatment (i.e., physical abuse, physical neglect, emotional abuse, emotional neglect, sexual abuse). Although a majority of claims were not substantiated by CPS, research suggested that the actual prevalence of physical abuse based on anonymous reports would be between five and eleven times higher than official government statistics (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998). In addition, although the U.S. Department of Health and Human Services (2015) indicated that 50.9% of affected children were female and 48.7% were male, other estimates suggested that females were approximately three times more likely than males to experience maltreatment in childhood (Silverman, Reinherz, & Giaconia, 1996).

Overall, recent figures indicated that very young children were represented disproportionately among children who were maltreated in the United States. Specifically, the U.S. Department of Health and Human Services (2015) indicated that children younger than 12-months of age experienced the highest rate of occurrence, with 23.1 per 1,000 children in this age group being referred to Child Protective Services following maltreatment. As children aged, rates of maltreatment decreased, with 11.8 per 1,000 children, 11.4 per 1,000 children, 11.0 per 1,000 children, 11.1 per 1,000 children, 10.7 per 1,000 children, and 10.2 per 1,000 children

experiencing maltreatment among 1-, 2-, 3-, 4-, 5-, and 6-year olds, respectively. Other statistics suggested that 27.3% of children who were maltreated were between the ages of birth and 3-years and that 19.7% were between the ages of 3- and 5-years (U.S. Department of Health and Human Services, 2015).

To corroborate these findings, multi-site research indicated that children who were approximately 2-years of age experienced a spike in physical abuse rates (Starling, Sirotnak, Heisler, & Barnes-Eley, 2007). These young children were at a heightened risk for experiencing physical abuse (i.e., inflicted skeletal trauma) for several reasons. In particular, the high rate of physical abuse inflicted upon young children was due possibly to the extensive amount of time that these children spent with their caregivers as well as their dependence on parents to meet their basic physical and emotional needs (Palacio-Quitin, 2005). An additional explanation suggested that young children's degree of "toddler negativism" (i.e., negative affect, refusal to comply with requests; Starling et al., 2007, p. 998) was a contributing factor. Further, due to their developmental levels, young children experienced greater difficulty regulating their own emotions, thereby placing them at higher risk for maltreatment (Belsky, 1993).

Statistics also suggested that children were maltreated primarily by parents. Specifically, one or both parents perpetrated 91.4% of incidents of child maltreatment in 2013. This figure represents an all time high given that the rate of parent-perpetrated maltreatment ranged from a low of 78.5% of incidents (in 2004) to a high of 87.3% of incidents (in 1999) in prior statistics (U.S. Department of Health and Human Services, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009). Recently, biological parents represented 88.6% of these parent perpetrators (U.S. Department of Health and Human Services, 2015). In general, however, the trend of parents being the most common perpetrators of maltreatment was evident across several

years. Of those children who were maltreated by parents, 40.7% of children were subjected to maltreatment by mothers acting alone, whereas 20.3% were subjected to maltreatment by fathers acting alone. In addition, 22.5% of CPS-involved children were maltreated by mothers and fathers acting together, 6.8% were maltreated by mothers and non-parent adults acting together, and 1.0% were maltreated by fathers and non-parent adults acting together (U.S. Department of Health and Human Services, 2015). Such findings suggested that female caregivers maltreated children at an increased rate compared to male caregivers.

With regard to types of childhood adversity, neglect was the most common form of maltreatment documented in 2013, with this trend being evident across several years (U.S. Department of Health and Human Services, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2015). After neglect (which accounted for 79.5% of child maltreatment incidents in 2013), physical abuse was the next most common form of child maltreatment, accounting for 18.0% of reported incidents (U.S. Department of Health and Human Services, 2015). After neglect and physical abuse, other common forms of child maltreatment were comprised of “other” forms of adverse childhood experiences (e.g., having a parent abuse substances or alcohol, experiencing threatened abuse, witnessing domestic violence), accounting for 10% of incidents reported to CPS (U.S. Department of Health and Human Services, 2015, p. 23). Finally, sexual abuse accounted for 9.0% of maltreatment cases, psychological maltreatment (i.e., emotional neglect or emotional abuse) accounted for 8.7% of maltreatment cases, and medical neglect accounted for 2.3% of maltreatment cases (U.S. Department of Health and Human Services, 2015).

As noted above, having a parent who abused substances was considered as a form of childhood adversity. In particular, pregnant women and women of child-bearing age represent a

unique population of study, given the fact that substance use may have damaging effects on both a mother's and her fetus' health (Gustavsson, 1991). In addition, chemically exposed fetuses, infants, and children are susceptible to significant consequences, including cognitive difficulties due to brain-related birth defects, as well as psychosocial difficulties due to parents' caregiving deficits (Cunningham, 1992). Unfortunately, however, information regarding drug and alcohol use as a caregiver risk factor has been undercollected (Daro & McCurdy, 1991) and underreported (U.S. Department of Health and Human Services, 2015) by the government. Nonetheless, several states took substance and alcohol exposure into consideration. In fact, exposure to substances in utero was considered a unique form of child maltreatment in some states (Plant, Donohue, & Holland, 2015).

For example, states such as Louisiana, Mississippi, North Dakota, and Oklahoma investigated or classified newborn infants as having experienced child maltreatment if they exhibited withdrawal symptoms or otherwise were affected negatively by prenatal drug use (U.S. Department of Health and Human Services, 2013). In addition, Oklahoma classified children exposed to parental substance involvement as "drug-endangered," and New York and Puerto Rico classified such children as having experienced "other" forms of child maltreatment (U.S. Department of Health and Human Services, 2015; p. 194, p. 204, and p. 211, respectively). Further, states such as Iowa and Utah classified children as having experienced child maltreatment if they were exposed to or had access to substances or drug paraphernalia (U.S. Department of Health and Human Services, 2015). Regardless of whether states classified children as having experienced child maltreatment when they were exposed to substances in one way or another, it is noteworthy that primary caregivers' parenting abilities could be compromised or impaired as a result of drug or alcohol use, thereby increasing children's risk for

physical, sexual, or psychological maltreatment. Thus, understanding the predictors of child maltreatment potential in this population is warranted. Theories meant to predict child maltreatment potential are described next.

Child Maltreatment Potential

The general cumulative risk theory (e.g., Appleyard, Egeland, van Dulmen, & Sroufe, 2005; Williams, Anderson, McGee, & Silva, 1990), one of the seminal ways in which child maltreatment potential has been conceptualized, emerged from research suggesting that the likelihood of children's negative outcomes (i.e., behavior problems) could be predicted by the sheer number of risk factors that were present in their lives. When applied to the prediction of child maltreatment potential, the cumulative risk theory held that the risk for child maltreatment increased as a parent's number of risk factors (e.g., parenting satisfaction, parenting stress, locus of control, age, marital status, income, family size) increased. This theory also posited that the severity or intensity of the risk factors (or the interactions among them) did not matter as much as their sheer quantity.

Beyond cumulative risk theories, others developed transactional theories of child maltreatment potential. Transactional theories of child maltreatment potential were derived from Bronfenbrenner's (1977, 1979) ecological theory of human development. These theories (also called *developmental ecological* theories) indicated that child maltreatment resulted from differing levels of risk, with each level of risk interacting with all other levels of risk to either prevent or promote child maltreatment (Belsky, 1980, 1993). As such, several researchers found support for the idea that child maltreatment is best predicted by the interplay amongst several risk factors. In general, such theories incorporated interactions among the *developmental context* (i.e., individual parent characteristics, individual child characteristics), the *immediate*

interactional context (i.e., the parent-child relationship, parenting behavior), and the *broader context* (i.e., community and societal characteristics; Belsky, 1993). Others also underscored the importance of the reciprocal nature of parent characteristics, child characteristics, family dynamics, and environmental variables (Cicchetti & Rizley, 1981; Gaines, Sandgrund, Green, & Power, 1978; Sameroff & Fiese, 2000). Overall, it was clear that “being maltreated as a child puts one at risk for becoming abusive, but the path between these two points is far from direct or inevitable” (Kaufman & Zigler, 1987, p. 190).

Given these foundational characteristics, transactional theories of child maltreatment appeared most desirable when predicting child maltreatment potential, particularly in the context of the examination of the intergenerational transmission of trauma. In fact, one previous study aimed to evaluate the predictive capacity of cumulative risk theory versus a transactional theory of child maltreatment. Researchers examined data in the context of both theories and determined that the cumulative risk theory was superior to the transactional theory (Begle, Dumas, & Hanson, 2010). Specifically, findings indicated that risk factors predicted up to 28% of the variance in child maltreatment potential when examined using cumulative risk theory. In contrast, these same risk factors exhibited an unacceptable fit (i.e., $\chi^2 = 2076.04$, $p < .001$; Goodness-of-Fit Index=0.77; Root Mean Square Approximation=0.12; Comparative Fit Index=0.71) when they were categorized into latent constructs and examined using transactional theory (Begle et al., 2010). Nonetheless, building upon the idea of cumulative risk theories and with the selection, categorization, and placement of risk factors completed in a theoretical manner, recent research demonstrated that a transactional approach using variables that represented the developmental context (i.e., parent and child temperament, parent coping, parent emotion regulation), the immediate interactional context (i.e., parenting stress), and the broader

context (i.e., daily hassles) could predict up to 67% of the variance in child maltreatment potential in a community sample (Lowell & Renk, 2017).

Thus, although previous research efforts have predicted child maltreatment potential in multiple ways using many combinations of risk factors, several unanswered questions remain with regard to the prediction of child maltreatment and intergenerational transmission of childhood adversity in the substance-involved population. As a result, the aim of the current study was to examine risk factors in a theoretically driven manner, using mothers' experience of childhood adversity, parenting stress, affectivity, emotion dysregulation, and emotion regulation strategies to predict child maltreatment potential in this population. It was our hope that our findings could help both researchers and clinicians better understand how to best predict child maltreatment potential in mothers who were substance-involved, particularly in light of the childhood adversity that individuals in this population may have experienced.

Childhood Adversity

Individuals who experienced childhood adversity tended to exhibit an array of negative sequelae throughout their lifetimes and also were more likely than the general population to maltreat their children. Types of childhood adversity that altered individuals' outcomes included experiencing physical, emotional, or sexual abuse as well as other adversities, such as witnessing domestic violence, having a parent use or misuse alcohol, having a parent abuse other substances, having a parent who was incarcerated, having parents who were separated or divorced, and having a parent who suffered from mental illness (Felitti et al., 1998).

In an effort to identify the trajectories of individuals who faced such experiences in childhood, members from the Centers for Disease Control in Atlanta, Georgia, and Kaiser Permanente (i.e., an integrated non-profit health plan consortium in Southern California) joined

forces in order to conduct the Adverse Childhood Experiences (ACEs) Study. This ongoing collaborative research program gathered data from a national sample of adults and yielded numerous publications demonstrating that the negative outcomes experienced by individuals with high levels of ACEs included emotional and behavioral difficulties, significant health problems, and premature death (Edwards, Holden, Felitti, & Anda, 2003; Felitti, Anda, Nordenberg, Williamson, Spitz, Edwards, Koss & Marks, 1998). Countless other independent researchers also examined the outcomes of individuals who experienced specific childhood adversities as well, with some of their findings presented here.

Childhood Adversity and Outcomes

Health Sequelae. The effects of childhood adversity are far reaching, with negative outcomes extending into the biomedical realm. Some of these outcomes can be attributed to changes in neurobiology following childhood adversity. Such changes include hyper-responsiveness at the cortico-limbic level, increased responsiveness of adrenocorticotrophic hormone (ACTH), and higher cortisol levels (Gunnar & Quevedo, 2007). These stress responses serve the important purpose of survival when faced with threats; however, repeated and chronic stress responses wreak havoc on the developing body over time. As a result, with increased stress hormones, other poor physical health outcomes become more likely. For example, physical abuse predicted men and women's medical diagnoses significantly in a large population-based study. Specifically, adults who reported childhood physical abuse experiences faced a 21% increase in the number of medical diagnoses (e.g., high blood pressure, high cholesterol, heart problems, chronic pain, arthritis, cancer) that they were assigned and a 22% increase in the number of physical symptoms that they experienced (Springer, Sheridan, Kuo, & Carnes, 2007). These effects were still present, even after controlling for family characteristics and other

childhood adversities. In addition, as the number of ACEs increased, the risk for myocardial infarction, asthma, coronary heart disease, stroke, and diabetes increased as well (Gilbert, Breiding, Merrick, Thompson, Ford, Dhingra, & Parks, 2015).

Emotional and Behavioral Functioning. With regard to psychological symptoms in adulthood following the experience of childhood maltreatment, previous research established unequivocally that women who had experienced childhood physical, emotional, and/or sexual abuse were more likely than their non-maltreated counterparts to report such difficulties as posttraumatic stress symptomatology, depression, anxiety, disordered eating, suicidality, drinking problems, interpersonal dysfunction, low self-esteem, and sexual problems (Fleming, Mullen, Sibthorpe, & Bammer, 1999; Gross & Keller, 1992; Moor & Silvern, 2006; Mullen, Martin, Anderson, Romans, & Herbison, 1996; Silverman et al., 1996; Springer et al., 2007). In fact, longitudinal research demonstrated that approximately 80% of individuals who were maltreated in childhood met criteria for one or more psychiatric disorders in adulthood (Silverman et al., 1996). Women who experienced physical and/or sexual abuse in particular also were less likely to report having graduated from high school or obtaining higher education and were more likely to report lower socioeconomic status (Mullen et al., 1996).

Further, with regard to the severity of trauma in childhood, individuals who experienced greater numbers of ACEs experienced worse emotional and behavioral outcomes. In other words, as the number of ACEs increased, the likelihood of negative outcomes also increased. For example, individuals who experienced both physical and psychological maltreatment were significantly more likely to report elevated levels of depression compared to those who experienced no maltreatment or those who experienced only either physical or psychological maltreatment (Gross & Keller, 1992). Strikingly, women who experienced one form of

maltreatment (i.e., physical, emotional, or sexual abuse) were 24.2% more likely to exhibit psychopathology, those who experienced two forms of maltreatment were 40.6% more likely to exhibit psychopathology, and those who experienced three forms of maltreatment were 60.0% more likely to exhibit psychopathology than their non-maltreated counterparts (Mullen et al., 1996).

In addition, with regard to emotion processing (i.e., a mechanism of action in the development of psychopathology), individuals who experienced childhood maltreatment exhibited greater overall difficulty processing emotions (da Silva Ferreira, Crippa, & de Lima Osório, 2014), with specific deficits noted depending on the type of maltreatment experienced (Young & Widom, 2014). Specifically, the experience of physical abuse predicted lower accuracy in individuals' ability to recognize pictures with a neutral emotional valence, whereas neglect and sexual abuse predicted lower accuracy in individuals' ability to recognize pictures with a positive emotional valence (Young & Widom, 2014). Others found that individuals with maltreatment histories were particularly sensitive (i.e., hyper-responsive) to negative facial stimuli (e.g., depictions of sadness) but not positive facial stimuli (i.e., depictions of happiness; Dannlowski et al., 2013). These results provided support for the notion that emotional (dys)function would likely serve as an additional mechanism of action in predicting child maltreatment potential.

Substance Use. Childhood adversity had long lasting effects in terms of substance use and misuse as well. In fact, countless studies demonstrated a clear link between childhood trauma and the development of substance and alcohol use disorders throughout the lifespan (e.g., Brems, Johnson, Neal, & Freemon, 2004; Brems & Namyniuk, 2002; Bulik, Prescott, & Kendler, 2001; Kendler et al., 2000; McCauley et al., 1997; Westermeyer, Wahmanholm, & Thuras, 2001;

Widom, White, Czaja, & Marmorstein, 2007). For example, compared to individuals with a history of zero ACEs, individuals who experienced two or more ACEs were significantly more likely to use tobacco and marijuana frequently, and individuals with five or more ACEs were more likely to use alcohol daily (Mersky et al., 2013). In addition, each type of ACE, including childhood abuse, was predictive of heavy drinking, alcohol abuse, and alcoholism in adults (Dube, Anda, Felitti, Edwards, & Croft, 2002). Specifically, compared to individuals who did not endorse any ACEs, adults who reported four or more ACEs were twice as likely to report heavy drinking, three times more likely to report general alcohol problems, and four times more likely to report suffering from alcoholism (Dube et al., 2002).

Further, in a large case-controlled study examining injection opiate users, researchers discovered that over 70% of injection opiate use onset could be attributed to early childhood risk factors (Macleod et al., 2012). Specifically, compared to individuals who did not use substances, injecting drug users were significantly more likely to have had a history of early physical abuse, sexual abuse, removal from the home, placement in public or kinship care, and parents who used substances (Macleod et al., 2012). Mothers who were addicted to cocaine also reported significantly higher levels of childhood sexual abuse, emotional abuse, and emotional neglect compared to biological and foster mothers who were not substance-involved (Eiden, Foote, & Schuetze, 2007). Finally, alcohol has been shown to be both a consequence of childhood maltreatment experiences and a risk factor for perpetrating maltreatment (Widom & Hiller-Sturmhofel, 2001). This relationship could be traced back to emotion regulation deficits that occur as a result of maltreatment in childhood and subsequently increase risk for substance use (see below).

Affectivity. The construct of affectivity (i.e., individuals' levels of positive affect and negative affect) has been a particularly useful way of examining risk following adversity, given that affectivity was an underlying and shared component of many forms of psychopathology, including substance use disorders (Krueger, 1999; Watson & Clark, 1992). In addition, researchers demonstrated previously that, compared to non-maltreated children, children who experienced adversity experienced significantly elevated levels of negative affect (Shackman & Pollak, 2014). In addition, compared to those without a maltreatment history, adults who experienced maltreatment in childhood reported persistently high levels of negative affect over time. In contrast, adults with maltreatment histories exhibited high levels of within-subject variability in positive affect over time (Teicher, Ohashi, Lowen, Polcari, & Fitzmaurice, 2015).

Intergenerational Transmission of Adversity

As noted previously, trauma often is transmitted across generations in an “intergenerational cycle of maltreatment” (Dixon, Browne, & Hamilton-Giachritsis, 2005, p. 47). Seminal work regarding the concept of *ghosts in the nursery* indicated that unfavorable child-rearing practices experienced by infants emerged consistently and unconsciously across generations as these infants matured, became parents themselves, and parented their own children (Fraiberg, Adelson, & Shapiro, 1975). These *ghosts* contributed to cyclical family tragedy, violence, and maltreatment, particularly when parents did not have access to the memories of the pain that they experienced in childhood. Such theoretical work was reframed more recently in a cognitive-behavioral manner. Although the idea of *ghosts in the nursery* fit most closely with psychoanalytic theory and treatment, changes in terminology could retain the underlying concepts of this theory while making it possible to address the intergenerational cycle via cognitive or cognitive-behavioral mechanisms (Renk, Roddenberry, & Oliveros, 2004).

Aside from these theoretical underpinnings, empirical literature provided objective measures of the intergenerational transmission of adversity indicating that the rate of maltreatment perpetrated by individuals with a history of maltreatment was six times higher than the base rate of maltreatment in the general population (Kaufman & Zigler, 1987). More specifically, these authors suggested that approximately one-third of individuals with a maltreatment history would become maltreating parents (Kaufman & Zigler, 1987). Thus, individuals who experienced adversity in childhood were significantly more likely than individuals with no history of adversity to perpetuate this cycle with their own children. For example, when examining risk factors for perpetrating child maltreatment, parents with a history of maltreatment were compared to parents without a history of maltreatment. Results of a large community sample indicated that 6.7% of parents who experienced maltreatment in their own childhoods had maltreated their children by the time their children were 13-months of age, compared to just 0.4% of parents who had not experienced maltreatment in childhood (Dixon et al., 2005a).

With regard to the measurement and prediction of child maltreatment potential, the experience of childhood physical abuse was shown to impact child physical abuse potential directly (Crouch, Milner, & Thomsen, 2001), with more severe physical abuse and abuse beginning before puberty onset being associated with increasingly higher child maltreatment potential (Chan & Perry, 1981). In addition, although social support and family relationships were posited to be a buffering factor between child maltreatment history and child maltreatment potential, these variables did not mediate this relationship (Hall, Sachs, & Rayens, 1998).

In addition, longitudinal research indicated that both teen and adult pregnant mothers who endorsed experiences of severe physical punishment and/or physical injury resulting from

such punishment exhibited significantly higher child maltreatment potential than did non-maltreated pregnant mothers (de Paul & Domenech, 2000). In addition, researchers further subdivided their sample by trauma exposure (i.e., no trauma exposure, childhood-only trauma exposure, adult-only trauma exposure, and childhood and adult trauma exposure) and found that individuals in all three trauma exposure groups reported significantly higher child physical abuse potential than the no trauma exposure group (Craig & Sprang, 2007). These results suggested that the type of trauma was a more salient predictor of child maltreatment potential than the age at which trauma was experienced. Specifically, interpersonal forms of trauma (i.e., childhood physical abuse, adult physical abuse, childhood sexual abuse, adult sexual abuse, and domestic violence) were all significant predictors of child maltreatment potential, whereas non-interpersonal trauma (e.g., natural disasters, motor vehicle accidents, death of a loved one) did not predict child maltreatment potential significantly (Craig & Sprang, 2007). Nonetheless, compared to individuals with no trauma history, individuals who experienced trauma in childhood and adulthood were four times more likely to have child maltreatment potential scores that fell in the clinical range, and those who experienced childhood trauma only were two times more likely to have scores that were above the clinical cutoff score (Craig & Sprang, 2007).

Although substantial data supported the intergenerational cycle of maltreatment, seminal work by Kaufman and Zigler (1987) emphasized that several mechanisms of action were at work, altering the likelihood of maltreated individuals perpetrating maltreatment in adulthood. Previous research demonstrated that such mediating factors included stress, emotion regulation, coping, and substance use. Interestingly, independent links between each of these variables have been established, although they have not been examined collectively in mothers who are substance-involved. As a result, the interrelationships among these variables are described below

in order to inform a model that explains mechanisms leading from child maltreatment history to child maltreatment potential in mothers who are substance-involved.

Stress

In addition to childhood adversity, current stressors experienced by parents were important to consider in the current study. Stress in general affects the sympathetic-adrenomedullary (SAM) system (i.e., the system responsible for the release of epinephrine and norepinephrine and the fight or flight response) as well as the hypothalamic-pituitary-adrenocortical (HPA) axis (i.e., the system responsible for the production of cortisol; Gunnar & Quevedo, 2007). The activation of these mechanisms occurs in humans in order to increase chances of survival in the face of threat via either change or allostasis. Exposure to high-stress environments, especially in early childhood (i.e., when the brain is developing rapidly), causes frequent neurobiological stress responses, however. These chronic stress responses subsequently increase the likelihood of physical, emotional, and behavioral problems (Gunnar & Quevedo, 2007). These neurobiological effects last into adulthood, with individuals who experienced childhood adversity reporting increased stress levels later in life (Steele, Bate, Steele, Dube, Danskin, Knafo, & ... Murphy, 2016). Stress also predicted child maltreatment potential (Milner, 1994; Stith et al., 2009) in addition to substance use (Koob & Kreek, 2007). These interrelationships were important to the understanding of the intergenerational transmission of maltreatment for mothers who were substance-involved.

Stress and Child Maltreatment Potential

For families in which child maltreatment had occurred, stress was identified as a significant risk factor (Berger, 2004; Sullivan & Knutson, 2000). In fact, Milner (1994) indicated that parents who maltreated children were more reactive to stress and experienced less coping

efficacy. Types of stress that were related to child maltreatment potential could come in multiple forms, including environmental stress (i.e., daily hassles, recent life changes, major life changes or crises) and parenting stress (i.e., caregiving, having difficult children, being a single parent). For example, meta-analytic research indicated that there were small but significant effect sizes between child physical abuse and stressors such as unemployment, single-parenthood, large family size, low socioeconomic status, and personal stress (e.g., recent life changes; Stith et al., 2009).

The construct of parenting stress was of particular importance to the prediction of child maltreatment potential given that it encompassed the distress felt by parents regarding their interactions with their young children and represented Belsky's (1993) *immediate interactional context* in the prediction of child maltreatment potential. Not surprisingly, the stress of raising very young children is highly prevalent in maltreating families (Barton & Baglio, 1993). In addition, mothers who had perpetrated physical abuse reported significantly higher levels of parenting stress compared to non-maltreating mothers (Mash, Johnston, & Kovitz, 1983). High levels of parenting stress also predicted child maltreatment potential significantly for both mothers and fathers (Grietens, De Haene, & Uyttebroek, 2007; Rodriguez, 2010; Rodriguez & Green, 1997). Further, parents who reported high child maltreatment potential provided reports of increased parenting stress compared to parents who reported low child maltreatment potential (Holden & Banez, 1996; Holden, Willis, & Foltz, 1989).

The potential mediating or moderating role of stress also was posited by the literature (Milner, 1993, 1994). For instance, previous findings indicated that individuals who experienced trauma in childhood as well as subsequent stressors in adulthood exhibited impulsive behavior during parent-child interactions (Craig & Sprang, 2007). Thus, with regard to the prediction of

parenting difficulties and maltreatment perpetration, it appeared that the predictive value of trauma or stress alone was not nearly as strong relative to the predictive value of the interaction between trauma history and current stress. In other words, ACEs predicted impulsive parenting behaviors, but this relationship varied depending on the levels of stress experienced by parents. These results provided additional support for transactional theories of child maltreatment that included history of maltreatment as well as stress and other variables.

Stress and Substance Involvement in the Context of Parenting

Findings that implicated stress as a major risk factor in child maltreatment perpetration were extremely relevant to the current study given that individuals who were substance-involved were shown previously to experience greater degrees of stress than the general population. Indeed, stress was implicated as a strong predictor of substance use (Seo, Lacadie, & Sinha, 2016; Sinha, 2008, 2013). In addition, stress and the concomitant dysregulation of reward pathways in the brain were implicated as leading from less severe substance abuse to more severe substance dependence (Koob & Kreek, 2007). These reward pathways had implications for the quality of parent-child attachment relationships as well (Chaplin & Sinha, 2013).

The study of stress also was of particular importance for individuals who were substance-involved given that individuals entering treatment for heroin addiction often are marginalized and disadvantaged (Taplin & Mattick, 2015). In addition, recent life changes (e.g., Stith et al., 2009) and crises (e.g., Rosenberg & Reppucci, 1983) were related to child maltreatment perpetration. Such findings were particularly noteworthy given that entering treatment (whether residential or outpatient) for substance abuse may represent a major life change for parents, thereby possibly increasing child maltreatment potential. Parenting stress also was shown previously to play a role in parents' addictive behaviors, have effects on children's subsequent

development, and increase the likelihood of relapse (Chaplin & Sinha, 2013; Sinha, 2001). Given the links among stress, substance use, and child maltreatment potential, stress also was included in the current study.

Affectivity

As noted above, childhood adversity influenced the experience of positive and negative affect well into adulthood (Teicher, Ohashi, Lowen, Polcari, Fitzmaurice, 2015). A wealth of literature also demonstrated that affectivity (i.e., the tendency to experience positive or negative emotions) was a central component of psychopathology, including substance use disorders (Krueger, 1999; Watson & Clark, 1992). In addition, affectivity had associations with processes including emotion dysregulation and regulation, substance use, and child maltreatment perpetration. These interrelationships were due, in part, to shared underlying neurobiological mechanisms including structures within the limbic system. In particular, childhood adversity was related to smaller amygdala and hippocampal volumes, which, in turn, predicted poorer mental health outcomes (Hanson, Nacewicz, Sutterer, Cayo, Schaefer, Rudolph, & ... Davidson, 2015). These structural and functional differences were thought to be due to chronic activation of the HPA axis in the face of early life stress (Cross, Fani, Powers, & Bradley, 2017). These relationships are discussed below to place this variable in the context of the current study.

Affect and Emotion Regulation

Affect and emotion are terms that often were used interchangeably. Subtle differences are noted in these constructs, however. Emotions are considered brief, distinct, specific, and subjective experiences of feeling states. Affect, on the other hand, is considered the observable expression of emotion as well as the general valence or tone of individuals' overall feeling state. Relatedly, *mood* is evident when an affective state became prolonged and alters individuals'

overarching emotional life (Leigh, 2015). These constructs are related so closely that semantics often gets in the way and the same phenomena are labeled with different terms. For example, recent findings suggested that *affect variability* is synonymous with the construct of emotion dysregulation (see below for further discussion of emotion dysregulation; Gottfredson & Hussong, 2013).

Unfortunately, in the context of high adversity environments, children who exhibited high levels of negative affect were at increased risk of becoming emotionally dysregulated (Calkins & Hill, 2007). As a rule of thumb, however, emotion regulation strategies often were employed by individuals in order to reduce negative affect or emotion and increase positive affect or emotion. As such, it was asserted appropriately that “affect regulation is a core motivational process underlying human behavior” (Kuntsche & Bruno, 2015, p.569).

Affect and Substance Use

Large-scale epidemiological research revealed that a significant proportion of adults diagnosed with substance use disorders experienced comorbid mood and anxiety disorders (Merikangas, Mehta, Molnar, Walters, Swendsen, Aular-Gaziola, & ... Kessler, 1998). One explanation for this overlap was underscored by the construct of affectivity, specifically the presence of elevated levels of negative affect. As a result, much research has focused on examining substance use as a response to an imbalance in positive and negative affect (Kuntsche & Bruno, 2015).

Previous research proposed that, for individuals who were substance dependent, the experience of negative affect associated with physical withdrawal symptoms was a primary motivator for continued use. Specifically, escape and avoidance of negative affect through self-administration of substances acted as a negative reinforcement, thus increasing substance use

behaviors (Baker, Piper, McCarthy, Majeskie, & Fiore, 2004). This process was thought to be preconscious, in that individuals who were substance-involved could quickly detect interoceptive markers for negative affect and withdrawal, thus prompting substance use to alleviate this experience. This motivational force was thought to be outside of awareness and occurring before an initial cognitive appraisal or attempt at control had been made. Other research noted that the variability of negative affect (rather than a consistently elevated average level of negative affect) was more predictive of substance use (Mohr, Arpin, & McCabe, 2015; Shadur, Hussong, & Haroon, 2015).

As would be expected given these findings, negative affect was a major factor in the prediction of substance use relapse (Shiffman & Waters, 2004; Witkiewitz 2011; Witkiewitz, Bowen, & Donovan, 2011; Witkiewitz & Villarroel, 2009). Conversely, positive affect was an important factor to consider when predicting outcomes during and after substance use treatment. For example, higher levels of positive affect were related to longer periods of sobriety (Serafini, Malin-Mayor, Nich, Hunkele, & Carroll, 2016). Compared to controls, individuals in substance use treatment who reported elevated levels of negative affect were more likely to report wanting to use cigarette and alcohol when provided with visual cues of these substances. In contrast, those who reported elevated levels of positive affect were significantly less likely to report craving these substances and, in fact, were significantly more likely to report wanting to avoid substances (Schlauch, Gwynn-Shapiro, Stasiewicz, Molnar, & Lang, 2013).

Affect and Child Maltreatment Potential

Psychopathology was considered to represent a significant area of risk for the perpetration of child maltreatment (Barth, Gibbons, & Guo, 2006; Stith et al., 2009). Depression and anxiety in particular increased parents' likelihood of perpetrating physical abuse (Chaffin et

al., 1996). In fact, post-partum depression was of particular interest in the study of young children and was noted previously as increasing risk for physical abuse, emotional neglect, and infanticide (Burke, 2003; McKee & Bramante, 2010; McKee & Egan, 2013).

Given the wide array of diagnostic categories for psychopathology, some researchers have found it useful to study affect as a proxy for psychopathology in the prediction of child maltreatment potential (Smith, Cross, Winkler, Jovanovic, & Bradley, 2014). The current study took a similar approach, particularly given that variations in positive and negative affect were pathognomonic for a variety of emotional and behavioral difficulties, including emotion dysregulation, substance use, and child maltreatment perpetration. For example, for parents reported previously to CPS as having perpetrated maltreatment, elevated levels of negative affect were predictive of self-reported physical aggression toward children (Mammen, Kolko, & Pilkonis, 2002). Negative affect also was shown previously to mediate the relationship between childhood maltreatment experiences and child maltreatment potential (Smith et al., 2014).

Emotion Dysregulation and Emotion Regulation Strategies

Unfortunately, individuals who faced childhood adversity (Dvir, Ford, Hill, & Frazier, 2014; Kim et al., 2013; Maughan & Cicchetti, 2002) and stress in adulthood (McEwen, 2012; Sinha, 2001) experienced difficulties with emotion regulation (i.e., *emotion dysregulation*). In turn, emotion regulation difficulties predicted child maltreatment potential and perpetration (Robinson, Morris, Heller, Scheeringa, Boris, & Smyke, 2009). Consequently, emotion dysregulation was demonstrated to be a mechanism of action in the relationship between chronic toxic stress (i.e., adverse childhood experiences including risky family behavior, conflict, aggression, and neglect) and unfavorable physical and mental health outcomes throughout the lifespan (Abravanel, & Sinha, 2015; Repetti, Taylor, & Seeman, 2002).

Theoretical Background

In the most general sense of the term, emotion regulation is the process by which negative emotions are downregulated and positive emotions are upregulated (Gross, 2014). According to Gross' (2006, 2015) process model of emotion regulation, there were several steps involved in emotion regulation, including: *situation selection*, *situation modification*, *attentional deployment*, *cognitive change*, and *response modulation* (Gross, 2006, 2014, 2015). *Situation selection* involved either approaching or avoiding situations, people, or places in order to regulate emotion. *Situation modification* involved altering the chosen situation in order to change its influence on emotions. *Attentional deployment* referred to what aspect an individual chose to concentrate on within the chosen situation. The strategy of *cognitive change* (i.e., cognitive reappraisal) relied on an individual changing his or her interpretations or thoughts about the given situation. Finally, *response modulation* (i.e., expressive suppression, behavioral inhibition) involved the suppression of emotional responses in order to prevent maladaptive behaviors from occurring (Gross, 2006).

These specific emotion regulation strategies could be placed into either one of two broader categories of emotion regulation. *Antecedent-focused* strategies involved actions that the individual could take before an emotion was experienced and before his or her emotional responses were activated fully. Situation selection, situation modification, attentional deployment, and cognitive change all fell in this category. Of these strategies, *cognitive reappraisal* has received much research attention and was studied frequently as a means of cognitive change. Cognitive reappraisal is considered *explicit* or effortful, and it occurs within awareness. It involves activation of the frontoparietal executive network (i.e., the dorsolateral prefrontal cortex, the ventrolateral prefrontal cortex, and the parietal cortex) and the insula,

supplemental motor area, and pre-supplemental motor area of the brain (Etkin, Büchel, & Gross, 2015). In comparison, *response-focused* strategies were actions that the individual took after physiological and behavioral responses were triggered and once the emotional response was already underway. In other words, response-focused strategies were an attempt to change behaviors once an emotion already was experienced and on the path to influence behavior. Response modulation fell in this second category, and *expressive suppression* was researched as the main form of this strategy (Gross, 2006, 2014). In contrast to antecedent-focused strategies, response-focused strategies focused involved reducing emotional conflict by decreasing behavior rather than increasing positive interpretations or reactions (Gross, 2006). In the context of emotional conflict, the ventral anterior cingulate cortex and the ventromedial prefrontal cortex become activated (Etkin et al., 2015).

Overall, response-focused strategies were thought to be far less effective than antecedent-focused strategies at preventing unfavorable consequences and maladaptive behavior (Gross, 2006). For example, individuals who used expressive suppression on a daily basis reported experiencing and expressing more negative mood states and emotions and fewer positive mood states and emotions than their counterparts who utilized cognitive reappraisal as an antecedent-focused emotion regulation strategy daily (Gross & John, 2003). In addition, differences in interpersonal functioning were found between individuals who used cognitive reappraisal versus expressive suppression. Specifically, individuals who utilized expressive suppression reported worse interpersonal functioning (i.e., less sharing of both positive and negative emotion with others, more avoidance of attachment, less relationship closeness as rated by peers, less emotional social support, and less instrumental social support) than those who used cognitive reappraisal (Gross & John, 2003). As a result, emotion regulation strategies were related

subsequently to individuals' overall well-being, with expressive suppression predicting higher levels of depression and lower levels of life satisfaction, self-esteem, optimism, environmental mastery, autonomy, personal growth, purpose in life, self-acceptance, and positive relations with others (Gross & John, 2003). Finally, on a physiological level, individuals who were asked to suppress their expression of emotion or inhibit their natural behavior were observed to have heightened physiological reactivity in interpersonal situations (e.g., DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996).

Childhood Adversity and Emotion Regulation

In general, “interactions with caregivers shape the unfolding of affect expression” (Cicchetti et al., 1991, p. 26). In fact, others conceptualized attachment as “the dyadic regulation of emotion” (Sroufe, 1996, p. 172). Given that the development of emotion regulation was learned through interactions with primary caregivers or attachment figures, the quality of the parent-child relationship affected greatly the development of emotion regulation capacities as individuals aged (Sroufe, 1996, 2005). Accordingly, the experience of adversity in childhood (particularly parent-perpetrated maltreatment) altered negatively the way in which individuals learned to regulate their emotions. This relationship often occurred through the development of attachment, as previous research indicated that childhood maltreatment predicted insecure attachments between infants and their caregivers (e.g., Baer & Martinez, 2006; Carlson, Cicchetti, Barnett, & Braunwald, 1989). Attachment insecurity was predictive of expressive suppression, object-oriented regulation strategies, and general emotion dysregulation (Brenning & Braet, 2012; Crugnola et al., 2011).

For example, when faced with a laboratory-induced stressor (i.e., having a toy taken away), infants who were attached insecurely were less likely than infants who were attached

securely to engage in emotion regulation strategies geared toward reducing tension (Kim, Stifter, Philbrook, & Teti, 2014). These findings had neural underpinnings as well, with longitudinal research indicating that individuals who were attached insecurely at 18-months of age demonstrated decreased co-activation in the prefrontal cortex and nucleus accumbens as well as increased activation in the prefrontal regions used for cognitive control. Findings such as these indicated that individuals who exhibited insecure attachment also demonstrated inefficient neural upregulation of positive emotions in adulthood (Moutsiana et al., 2014). As a result of this body of research, parenting interventions were developed based on the notion that infants learned to regulate their emotions effectively only through warm and responsive caregiver interactions (e.g., Powell, Cooper, Hoffman, & Marvin, 2014).

Unfortunately, 80% of young children who experienced maltreatment exhibited concerning levels of emotion dysregulation, whereas only 37.2% of non-maltreated young children were classified as dysregulated (Maughan & Cicchetti, 2002). In turn, young children's emotion dysregulation mediated the relationship between maltreatment and symptoms of anxiety and depression (Maughan & Cicchetti, 2002) and disruptive behavior (Teisl & Cicchetti, 2008). It also was suggested previously that the development of emotion regulation in at-risk infants depended upon the type of trauma, adversity, or maltreatment experienced (Cicchetti, Ganiban, & Barnett, 1991). Specifically, physical abuse predicted significantly children's ineffective emotion regulation abilities (Teisl & Cicchetti, 2008). Additional research indicated that children who experienced physical abuse displayed a greater degree of aggressive behavior (i.e., defensive responses to perceived threats; Shackman & Pollak, 2014). Nonetheless, this relationship was indirect and instead was mediated by maltreated children's emotion regulation strategies. Specifically, children who were abused physically tended to allocate more attention

(i.e., use the emotion regulation strategy of *attentional deployment*) toward stimuli that they perceived as threatening (i.e., angry facial stimuli).

In chronically abusive households, this behavior could be thought of as adaptive, serving to alert children to violent cues and protect them from danger. Nonetheless, children's increased use of attentional deployment as an emotion regulation strategy even in non-violent situations increased their likelihood of becoming aggressive or exhibiting externalizing behavior problems (Shackman & Pollak, 2014). This study also indicated that children who were maltreated displayed greater levels of negative affect than their non-maltreated counterparts and did not employ effective emotion regulation strategies in order to downregulate such affective states. In turn, this negative affect predicted aggressive behavior in maltreated children. These findings were particularly relevant to the intergenerational cycle of maltreatment, given that the aggressive behavior resulting from childhood maltreatment and failure to regulate emotions effectively could manifest in adulthood as aggression toward the next generation of children.

The difficulties with emotion regulation experienced by individuals with maltreatment experiences extended well into adulthood and exerted significant influence on emotional and behavioral functioning later in life. For example, childhood maltreatment predicted emotion dysregulation, which in turn predicted substance misuse. Further analyses revealed that emotion dysregulation mediated the relationship between the experience of childhood maltreatment (e.g., sexual and emotional abuse) and substance misuse in adulthood (Oshri, Sutton, Clay-Warner, & Miller, 2015). The long-lasting nature of emotion dysregulation following maltreatment may be due, in part, to the biological underpinnings of emotion regulation, dysregulation, and executive functioning (Cross et al., 2017). Specifically, there is evidence of impairment in the activation of the ventral anterior cingulate cortex and the ventromedial prefrontal cortex for individuals with

trauma histories (Etkin et al., 2015). As such, emotion regulation proved to be an important piece of the puzzle leading from adversity in childhood to subsequent, chronic unfavorable outcomes. In addition to impairments in emotion regulation due to trauma history and underlying neurobiological processes, researchers also found that emotion regulation abilities have a genetic component. Specifically, inheritance of the short allele serotonin transporter (5-HTTLPR) gene is related to impaired downregulation of negative emotions (Gilman, Latsko, Matt, Flynn, de la Cruz Cabrera, Douglas, & ... Coifman, 2015). In addition, the experience of childhood adversity increases these effects and makes emotion dysregulation even more likely in those who have inherited this gene (Grabe, Schwahn, Mahler, Schulz, Spitzer, Fenske & ... Freyberger, 2012). As a result, emotion dysregulation and poor emotion processing can be passed from one generation to the next via genetic mechanisms in combination with the experience of childhood adversity.

Emotion Regulation and Substance Use

Emotion regulation also was important to consider when examining the intergenerational cycle of child maltreatment in the substance-involved population. At their core, alcohol and other substances were used to either upregulate or increase positive emotions or to downregulate or ameliorate negative emotions (Kober, 2014). Seminal work regarding the *Self-Medication Model* of addiction emphasized “how addicts try to master dysphoria from the present and the past as a prime motivator of their repetitious drug related behavior” (Khantzian, 1989, p. 75). Others highlighted the upregulation of positive emotions as well, indicating that “individuals use alcohol to reduce or manage dysphoria (to cope) as well as to enhance positive emotional experience” (Cooper, Frone, Russell, & Mudar, 1995, p. 990). Although maltreated individuals often used substances to relieve distress, their addictive behaviors often resulted in the eventual perpetuation (rather than amelioration) of suffering (Khantzian, 1989). In fact, multiple studies

demonstrated that substance use as a means of emotion regulation mediated the relationship between childhood trauma and problematic drug and alcohol use in adulthood (Smith, Smith, & Grekin, 2014; Vilhena-Churchill & Goldstein, 2014).

Overall, it should be no surprise that parents who were diagnosed with substance use disorders reported increased levels of emotion dysregulation (Hien et al., 2010). High risk young adults who exhibited difficulties with emotion regulation also were more likely to misuse substances (Wong et al., 2013). Further, individuals who used substances or alcohol to upregulate or downregulate emotions used such substances more often and more frequently and were more likely to experience problematic use patterns (Cooper et al., 1995). Further, and of particular importance to the current study, individuals who were motivated to drink in an effort to regulate emotions chose to do so because they lacked other more adaptive regulation strategies (Cooper et al., 1995), possibly due to a lack of a secure attachment relationship in which adaptive emotion regulation could be learned.

Not surprisingly, emotion dysregulation was an important etiological factor in the development of substance use disorders (Ammerman et al., 1999; Gross, 2006). As a result, many individuals used substances in an attempt to combat such dysregulation. A substantial amount of research provided scientific evidence in support of the many motivational reasons that individuals used drugs and alcohol, which included enhancement of positive affect, reduction of negative affect, socialization, and the desire to conform. Substance choice also was directed by the type of dysregulation that an individual was experiencing, with individuals choosing narcotics or opiates in order to numb or reduce distressing emotions, such as anger and aggression, and individuals choosing stimulants in order to increase positive emotions and reduce depression (Khantzian, 1985; Suh, Ruffins, Robins, Albanese, & Khantzian, 2008).

Overall, in the context of the intergenerational transmission of trauma (and the uncomfortable, frightening, and threatening experiences that come with it), drug and alcohol use was viewed as a means to regulate distressing emotions in the absence of other strategies or coping skills (Hien et al., 2010). Such maladaptive strategies often lead to other negative consequences, including the perpetration of child maltreatment.

Emotion Regulation and Child Maltreatment Potential

Given that emotion dysregulation was conceptualized as the non-functional use of emotion, these difficulties clearly rendered individuals unable to behave or (of particular interest to the current study) parent effectively (Gratz & Roemer, 2004). Coping, which was often synonymous with emotion regulation strategies (Gross & Thompson, 2007), also demonstrated relationships with child maltreatment potential (Gaines et al., 1978; Milner, 1994; Rodriguez, 2010; Stith et al., 2009). Meta-analytic research indicated that there was a significant moderate effect size between parents' difficulties with emotion regulation and their likelihood of perpetrating both child physical abuse and neglect (Stith et al., 2009). More specifically, mothers who maltreated their children tended to exhibit lower levels of positive affect as well as higher levels of anger intensity and greater overall difficulties with emotion regulation (Robinson et al., 2009). In addition, compared to non-maltreating mothers, mothers who were found guilty of abuse reported a significantly higher tendency to become upset or angry (Spinetta, 1978). Parents who maltreated their children also reported difficulty controlling their anger (Ammerman, 1990). Further, maltreating parents exhibited "strong emotional reactance," particularly in situations that involved their children (Cantos, Neale, O'Leary, & Gaines, 1997, p. 634). Finally, maltreating mothers were noted to exhibit stronger, more intense, and impulsive emotional responses to child-related situations (Frodi & Lamb, 1980).

With regard to the prediction of child maltreatment potential, emotion dysregulation (i.e., internalizing symptoms) predicted child maltreatment potential significantly (Solomon, Morgan, Asberg, & McCord, 2014). In addition, maternal emotion dysregulation (i.e., anger and reactivity) was more predictive of child maltreatment potential than psychiatric diagnosis (i.e., substance use disorder or depression; Hien, Cohen, Caldeira, Flom, & Wasserman, 2010). Further, compared to adolescent mothers with low child maltreatment potential, adolescent mothers with high child maltreatment potential reported significantly higher levels of emotional distress (Budd, Heilman, & Kane, 2000). Mothers (but not fathers) who reported high child maltreatment potential also reported similarly higher levels of emotional distress than mothers and fathers who reported low child maltreatment potential (Perez-Albeniz & de Paul, 2004).

In terms of physiological markers of emotion dysregulation, individuals with high child maltreatment potential exhibited significantly higher heart rates when exposed to both low- and high-pitched infant cries compared to individuals with low maltreatment potential (Crowe & Zeskind, 1992). Individuals who reported high child maltreatment potential also appeared to have a lower threshold of responsiveness, as evidenced by exhibiting higher skin conductance levels than those with low child maltreatment potential, even in response to low-pitched infant cries. It also was noted that the physiological responses of individuals with high child maltreatment potential mirrored the physiological responses of individuals who were found previously to have perpetrated child physical abuse (Crowe & Zeskind, 1992).

Clearly, emotion regulation predicted child maltreatment directly in several studies. The etiology of emotion dysregulation was likely to provide insight regarding the intergenerational transmission of trauma, however. As a result, several studies demonstrated emotion regulation to be a key player that served as a pathway through which many other risk factors increased child

maltreatment potential. For example, when examining potential risk factors in the indirect relationship between substance use disorders and child maltreatment potential, emotion dysregulation proved to be the strongest predictor of child maltreatment potential compared to other risk factors (e.g., socioeconomic status, race, child emotional and behavioral problems, inconsistent discipline, poor supervision, poor family functioning; Ammerman, Kolko, Kirisci, Blackson, & Dawes, 1999). Further, in a nationwide community sample, emotion dysregulation mediated the relationship between mothers' difficult temperament characteristics (i.e., flexibility/rigidity) and their child maltreatment potential (Lowell & Renk, 2017). In addition, emotion dysregulation mediated the relationship between childhood history of maltreatment and maltreatment potential (Bradley, 2011; Smith et al., 2014). Other symptoms of emotion dysregulation (i.e., depression) also mediated the relationship between childhood experience of maltreatment and perpetration of maltreatment in adulthood (Dixon et al., 2005a). In fact, addressing mental health issues (which often includes the teaching of emotion regulation and distress tolerance skills) was suggested as one potentially effective way of preventing child maltreatment for adults who experienced abuse in their own childhoods (Dixon et al., 2005b; Solomon et al., 2014).

Substance Use

Finally, relationships among substance use and the other variables of interest must be considered, given that mothers who used substances were more likely than mothers in the general population to perpetuate the cycle of maltreatment within their families, given that childhood adversity predicted substance use (Macleod et al. 2012), and given that substance use problems also were highly prevalent (e.g., up to 80%) amongst mothers involved in the child welfare system (Barth, Courtney, Berrick, & Albert, 1994). Consequently, compared to the

general population in which the prevalence of illicit drug use was 9.4% (Substance Abuse and Mental Health Services Administration, 2014), mothers who were substance-involved were represented disproportionately amongst those being investigated due to claims of child maltreatment. As a result, characteristics of these mothers needed to be investigated further in order to identify points of intervention in the cycle of maltreatment for this population.

Substance Use, Neurobiology, and Attachment

As noted above, substance use is a cause and consequence of child maltreatment (Barth et al., 2006; Widom et al., 2007) and also has been conceptualized as a means of emotion regulation (Kober, 2014). The relationship between these psychological constructs has neurological underpinnings as well. For example, substance use problems have been linked to changes in the HPA axis and limbic regions caused by childhood adversity (Logrip, Zorrilla, & Koob, 2012).

Broadly, addiction is considered “the result of an interaction between individual differences factors (e.g. genetic vulnerabilities, traumas) and drug-induced pharmacological changes within specific brain circuits (cortico-basal-ganglia-thalamo-cortical, limbic-basal-ganglia, and limbic-cortical)” (Conord & Nikolaou, 2016, p. 372). These circuits are disrupted in individuals with substance use disorders, and impairment is noted in skills that use these circuits, such as the processing of negative affect, goal-directed behavior, and reward processing. This finding is noteworthy given that substances influence dopaminergic signaling in the brain. This signaling creates an imbalance of the perceived reward experienced by the use of substances compared to other more adaptive behaviors (Conord & Nikolaou, 2016). Consequently, the naturally rewarding process of caring for one’s offspring does not provide the same degree of reward for individuals who are substance dependent (Rutherford et al., 2013). Without

experiencing the biological and psychological rewards of parenting, caregiver behaviors such as feeding, bathing, changing, comforting, and bonding with an infant can take a backseat to engaging in active substance use. This reconfiguration of behaviors then decreases the likelihood of infants developing secure attachment relationships with their caregivers, which, in turn, can lead to a host of emotional and behavioral problems throughout life (Rutherford et al., 2013).

Substance Use and Parenting Behaviors

One criterion that individuals were required to exhibit in order to meet criteria for a substance or alcohol use disorder according to the *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition* (i.e., *DSM-5*) was social impairment, including “failure to fulfill major role obligations at... home” (American Psychiatric Association, 2013, p. 483). The *DSM-5* also noted that “the individual may withdraw from family activities... in order to use the substance” (American Psychiatric Association, 2013, p. 483). Due to the neurological underpinnings of addiction noted above, childrearing can become less of a priority compared to using or even obtaining and selling drugs for some parents who are substance-involved. As a result, parenting was one such domain that could be impaired as a result of substance or alcohol use, and parents who use substances were shown to demonstrate deficits in their parenting behaviors.

For example, authors suggested previously that that substance involvement impeded parents’ abilities to provide safety and stability (Small & Kohl, 2012). Others suggested that parent substance involvement led to unstable and inconsistent child-rearing environments, which could include violence, inconsistent discipline and connection, decreased sensitivity to children, and transient living situations (Gruber & Taylor, 2006). Compared to mothers who did not use drugs or alcohol, mothers who were substance-involved reported more punitive behavior and more severe discipline toward their children (Hien & Honeyman, 2000). Overall, parenting

impairment was demonstrated by statistics indicating that 19% of mothers who were addicted to cocaine lost custody of their newborn infants by the time that their infants reached 1-month of age, compared to just 0.02% of mothers who were not substance-involved (Eiden et al., 2007). In comparison, 63.7% of mothers in methadone treatment for heroin addiction indicated that they had been reported to CPS, with a majority of these women reporting that at least one of their children had been placed in out-of-home care as a result of inadequate or dangerous parenting related to their substance use (Taplin & Mattick, 2015).

Further, mothers who were substance-involved endorsed perceptions of their children as being overly demanding (i.e., difficult). This finding also was related to mothers' decreased pair bonding and attachment with their infants (Davis, 1990, 1994). As a result, mothers who were substance-involved reported greater levels of parenting stress as well as decreased parenting competence and efficacy (Davis, 1994; Kelley, 1992). Thus, it was clear that drug and alcohol use influenced (and was influenced by) parent-child interactions (Leonard & Eiden, 2007).

Substance Use and Child Maltreatment Potential

In addition to hindering effective parenting behaviors, alcohol and substance use constituted an important component in the intergenerational transmission of trauma. For example, substance use problems mediated the relationship between mothers' history of childhood sexual and physical abuse and their subsequent perpetration of child maltreatment (via county records of reported or substantiated abuse or neglect of children 26-months of age and younger; Appleyard, Berlin, Rosanbalm, & Dodge, 2011). Given what was known about the prevalence of childhood adversity faced by maltreating mothers as well as the subsequent emotion dysregulation and the use of substances to regulate emotions artificially, it was no surprise that substance involvement was a problem for a majority of the parents who became

involved in the child welfare system due to child abuse or neglect (Dore, Doris, & Wright, 1995). Specifically, over two-thirds of child maltreatment cases referred to CPS included parents who were substance-involved (Dore & Doris, 1998). Other research indicated that almost half (i.e., 46.7%) of women entering substance use treatment services were involved in the child welfare system. Interestingly (but not surprisingly), those women who indicated that they were receiving child welfare services, had a child removed from the home, or had their parental rights terminated also reported a significantly higher rate of physical abuse experiences in their own childhoods compared to women who were substance-involved but who were not referred to CPS (Grella, Hser, & Huang, 2006).

Unfortunately, parents who were substance-involved and who were involved in the judicial system as a result of charges of child abuse or neglect were significantly more likely to have their parental rights terminated than their non-substance-involved counterparts (Murphy et al., 1991). Further, substance use disorders also were the most prevalent psychiatric diagnosis in maltreating populations (Chaffin et al., 1996). Although some estimates placed the co-occurrence rate of substance use and child maltreatment perpetration at 80% (Barth, 1994), more conservative meta-analytic results suggested that a small but significant effect size was present between parent substance abuse and the likelihood of perpetrating child physical abuse or neglect (Stith et al., 2009). Other studies provided more specific insight regarding the link between substance and alcohol use and child maltreatment, however.

For example, 43% of families involved in the judicial system as a result of child abuse or neglect charges included a parent with a documented alcohol or substance use problem (Murphy et al., 1991). Further, one case-control study compared maltreating parents with a sample of control parents matched on characteristics such as gender, age, race, and socioeconomic status.

Findings indicated that 40.2% of parents who reported physically abusive behaviors and 56.0% of parents who reported neglectful behaviors met criteria for an Alcohol or Drug Use Disorder based on the *Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised* (i.e., *DSM-III-R*; American Psychiatric Association, 1987; Kelleher, Chaffin, Hollenberg, & Fischer, 1994). In other words, maltreating parents were significantly more likely to report alcohol or drug abuse or dependence compared to non-maltreating matched control participants (of whom only approximately 16% reported alcohol or drug problems).

Not only were parents who were substance-involved represented disproportionately among child welfare cases, but the overall prevalence of maltreatment perpetration and the increased level of child maltreatment potential within this at-risk population also was concerning. Generally, parent substance use increased significantly the risk for chronic and recurrent child maltreatment (Barth et al., 2006). In particular, parent substance involvement increased the risk of child maltreatment (i.e., physical abuse and sexual abuse) twofold (Walsh, MacMillan, & Jameison, 2002). More specifically, parents were 2.90 times more likely to perpetrate physical abuse and 3.24 times more likely to perpetrate neglect if they met criteria for a substance use disorder (Chaffin et al., 1996). In addition, neglect occurred in 30.5% of families with alcohol or opiate addicted parents, and physical or sexual child abuse occurred in 22.5% of these households. Multiple forms of maltreatment (i.e., neglect and abuse) occurred in 41.0% of alcohol and substance-involved families (Black & Mayer, 1980). Mothers who were substance-involved also reported physical abuse (e.g., hitting children with a belt, closed fist, or open hand) significantly more frequently than mothers who did not use substances (Hien & Honeyman, 2000).

In terms of parents' level of child maltreatment potential, mothers and fathers with histories of substance use disorders reported higher levels of child maltreatment potential and were significantly more likely to have their scores fall above a set clinical cutoff than parents who were not substance-involved (Ammerman et al., 1999). More specifically, other research showed that 40.91% of fathers and 50.0% of mothers with substance use disorders fell above a set clinical cutoff score and were classified as having high maltreatment potential (Kelley et al., 2015). For couples in which both parents were substance-involved, 30.0% of fathers and 61.29% of mothers fell above this clinical cutoff score (Kelley et al., 2015).

In general, many previous studies examined substance use as a risk factor in and of itself while ignoring other risk factors or characteristics of the broader context (De Bortoli, Coles, & Dolan, 2014). Nonetheless, more recent research demonstrated that substance use is related to several other risk factors that also were important in the prediction of child maltreatment potential. For example, depressive symptoms increased child maltreatment potential for parents who were substance-involved (Kelley et al., 2015). In addition, emotion dysregulation mediated partially the relationship between maternal psychiatric diagnoses (i.e., substance use disorder or depression) and child maltreatment potential (Hien et al., 2010). Such findings demonstrated the importance of examining emotion dysregulation exhibited by parents who were substance-involved, as such dysregulation places them at an even greater risk of maltreating their children than their diagnosis alone.

Ultimately, mothers who were in treatment for substance use disorders represented an interesting subset of parents who were substance-involved and worth studying for several reasons. Parenthood and pregnancy both proved to be a strong deterrent for substance use, and women often presented to substance use treatment during pregnancy, citing their children's

psychosocial well-being or fetus' physical health as a motivator for sobriety. In fact, 35% of women in substance use treatment reported that they were motivated to enter treatment due to pregnancy or to improve their ability to care for their children (Taplin & Mattick, 2015). In addition, these mothers were motivated to enter substance use treatment significantly more quickly and to remain in treatment significantly longer after the passage of the Adoption and Safe Families Act (i.e., a federal law calling for timely permanency planning for children in the child welfare system) once they became involved in the child welfare system, given the fact that they did not want to have their parental rights terminated (Green, Rockhill, & Furrer, 2006).

Individuals undergoing substance abuse treatment were faced with the unique challenge of learning to regulate their emotions differently than they ever had before (i.e., without the use of substances to regulate emotions artificially). As such, they likely found themselves more dysregulated due to this disruption in their typical emotion regulation strategy of choice. Such an increase in emotion dysregulation would place these mothers at a higher risk for maltreatment. As a result, studies showed that parents who no longer met criteria for substance use disorders following treatment did not exhibit significantly lower levels of child maltreatment potential compared to parents who met criteria for substance use disorders currently (Ammerman et al., 1999). These findings highlighted the fact that substance use was not directly responsible for increasing child maltreatment potential. As a result, attempting to prevent child maltreatment or improve parenting behavior by addressing this population's substance use problems alone would not suffice (Hien et al., 2010). Instead, emotion regulation skills training should be an integral part of comprehensive substance use treatment, particularly if parenting is of concern. As a result, it was imperative to identify underlying mechanisms of action in the intergenerational cycle of maltreatment. After all, "prevention of child abuse may well be one of the most

powerful means of preventing substance use” (and vice versa) in the next generation (Small & Kohl, 2012, p. 423).

The Current Study

Given the prevalence of childhood adversity experienced by individuals who use substances (Macleod et al., 2012) as well as the likelihood of mothers who are substance-involved to have elevated child maltreatment potential (Chaffin et al., 1996; Walsh et al., 2002), the intergenerational transmission of adversity within this population represents a significant public health problem. Nonetheless, it was important “to cease asking ‘do abused children become abusive parents?’ and ask, instead, ‘under what conditions is the transmission of abuse most likely to occur?’” (Kaufman & Zigler, 1987, p. 191). As a result, several mechanisms of action were examined in the current study.

In addition to history of childhood adversity, stress was another important variable to consider in the current study given that parents who were substance-involved experienced a significantly greater degree of stress compared to the general population (Taplin & Mattick, 2015), that stress could lead to emotion dysregulation (McEwen, 2012; Sinha, 2001), and that stress influenced the relationship between previous childhood maltreatment experiences and impulsive parenting behaviors (Craig & Sprang, 2007). In addition, given that childhood adversity predicted emotion dysregulation (Maughan & Cicchetti, 2002), that emotion dysregulation predicted substance use (Ammerman et al., 1999; Gross, 2006), that substance use was conceptualized as a means of emotion regulation (Kober, 2014), and that emotion dysregulation (Smith et al., 2014) and substance use (Ammerman et al., 1999; Ondersma, Chaffin, Mullins, & LeBreton, 2005) predicted child maltreatment potential, it also was

imperative to investigate the complex interplay amongst these variables in an effort to better predict child maltreatment potential in this population.

Although the intergenerational transmission of adversity was studied previously (e.g., Dixon et al., 2005a, 2005b), existing models needed further consideration of the unique characteristics, experiences, and situations of mothers who are substance-involved. Thus, the current study sought to elaborate upon existing theories of child maltreatment potential and intergenerational transmission of adversity for this population (see Figure 1). The structure of this model was based on previous research (by Lowell & Renk, 2017) that examined similar variables of interest and provided support for the directionality of the paths shown. For example, previous research suggested that childhood adversity would predict individuals' affectivity unidirectionally, with this relationship being altered by the current level of stress experienced. In addition, affectivity would predict emotion dysregulation unidirectionally. Next, the placement of emotion dysregulation in the model was informed by previous research demonstrating that emotion dysregulation mediated the relationship between childhood maltreatment and child maltreatment potential. Emotion regulation strategies, including substance use, were thought to alter the propensity for individuals to exhibit elevated child maltreatment potential, however. In other words, emotion regulation strategies (including substance use) were thought to influence the levels of child maltreatment potential for individuals that were dysregulated emotionally (following childhood maltreatment and current stress).

Overall, by identifying the interactions among these variables, the findings of this study could be used to improve prevention and intervention efforts customized for mothers who are substance-involved and have experienced childhood maltreatment themselves. As such, it was

our hope that such work would help inform interventions aimed at stopping the intergenerational transmission of adversity and breaking the cycle of adversity in this disadvantaged population.

The first purpose of this study was to investigate the relationships among mothers' childhood adversity, stress, affectivity, emotion dysregulation and regulation strategies, and child maltreatment potential in mothers who are substance-involved. In particular, it was postulated that mothers' childhood adversity and affectivity would be related significantly, with those who reported higher levels of childhood adversity reporting greater negative affect and lower positive affect. Next, it was hypothesized that childhood adversity and emotion dysregulation would be related significantly, with those who report higher levels of childhood adversity reporting greater emotion dysregulation. It also was postulated that childhood adversity would be related to child maltreatment potential, with those reporting higher degrees of childhood adversity also endorsing higher levels of child maltreatment potential.

In addition, it was hypothesized that stress would be related to affectivity, with higher levels of stress being related to higher levels of negative affect and lower levels of positive affect. It also was postulated that affectivity would be related to emotion dysregulation, with those reporting higher levels of negative affect and lower levels of positive affect reporting higher levels of emotion dysregulation. Stress also was hypothesized to be related to child maltreatment potential, with those reporting increased stress reporting increased child maltreatment potential.

Next, it was hypothesized that mothers' emotion dysregulation and child maltreatment potential would be related significantly, with those reporting higher levels of emotion dysregulation reporting higher levels of child maltreatment. Finally, it was hypothesized that mothers' emotion regulation strategies (i.e., cognitive reappraisal, expressive suppression,

substance use as a means of coping with negative emotions, and substance use as a means of enhancing positive emotions) would be related significantly to child maltreatment potential. In particular, it was expected that those reporting lower levels of cognitive reappraisal, higher levels of expressive suppression, higher levels of substance use coping, and higher levels of substance enhancement would report higher levels of child maltreatment potential.

The second purpose of the current study was to examine predictive relationships among mothers' childhood adversity, stress, affectivity (i.e., positive affect and negative affect), and emotion regulation and dysregulation strategies (i.e., cognitive reappraisal, expressive suppression, substance use as a means of coping, substance use as a means of emotional enhancement) in the prediction of child maltreatment potential in mothers who are substance-involved. Specifically, it was hypothesized that each of the predictors would add unique incremental variance to the prediction of child maltreatment potential. In order to examine this hypothesis, a hierarchical regression was performed. The specific placement of each of the predictor variables within the model was informed by previous literature supporting the directionality of the paths shown. For example, childhood adversity was shown previously to predict affectivity unidirectionally (Shackman & Pollak, 2014; Teicher et al., 2015). Stress also was shown to be related to affectivity unidirectionally (Kuiper & Martin, 1998). Next, prior researchers demonstrated that affectivity predicted emotion dysregulation in this direction (Calkins & Hill, 2007), and emotion dysregulation predicted child maltreatment potential as well (Bradley, 2011; Lowell & Renk, 2017; Smith et al., 2014). Finally, emotion regulation strategies (i.e., expressive suppression) were predictive of child maltreatment potential unidirectionally (Lowell & Renk, 2017). By examining the unique incremental variance accounted for by each of

the predictor variables in this order, the prediction of the intergenerational transmission of trauma in the substance-involved population would be enhanced.

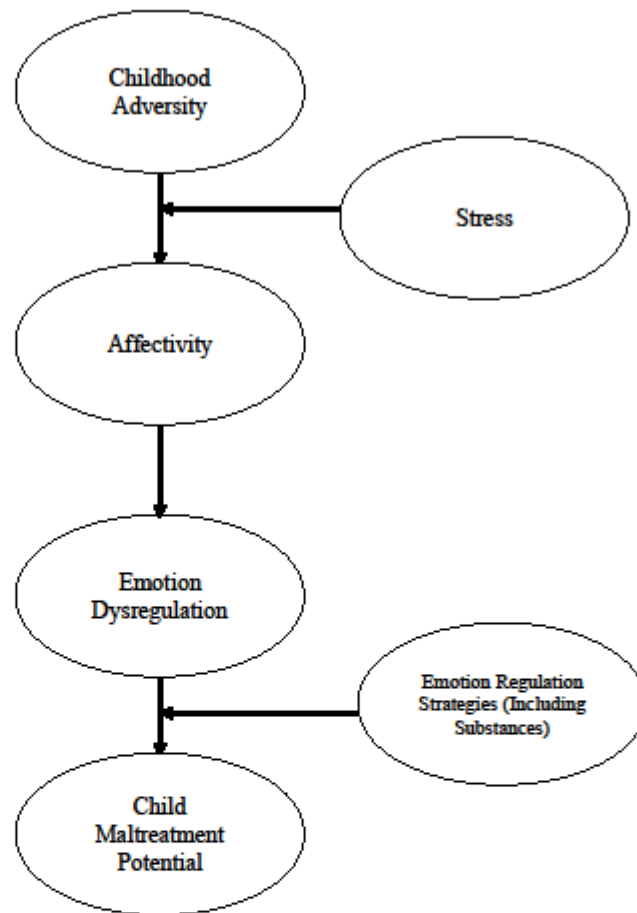


Figure 1. **Proposed Overall Model**

Further, this study aimed to examine potential moderators within the overall model depicted in Figure 1 above. First, it was postulated that the relationship between mothers' childhood adversity and affectivity would be moderated by stress (see Figure 2). In other words, we aimed to specify conditions (i.e., levels of stress) under which an independent variable (i.e., childhood adversity) would be predictive of an outcome (i.e., affectivity). It was expected that childhood adversity would predict high negative affect and low positive affect when high levels

of parenting stress also were present. In order to examine this hypothesis, an interaction term was created between childhood adversity and stress, and regression analyses were used to determine the relative contributions of the independent variable and moderator on affectivity. It was hoped that these analyses would shed light on the interactions among several variables of interest that comprise one component of the prediction of the intergenerational transmission of trauma in mothers who are substance-involved.

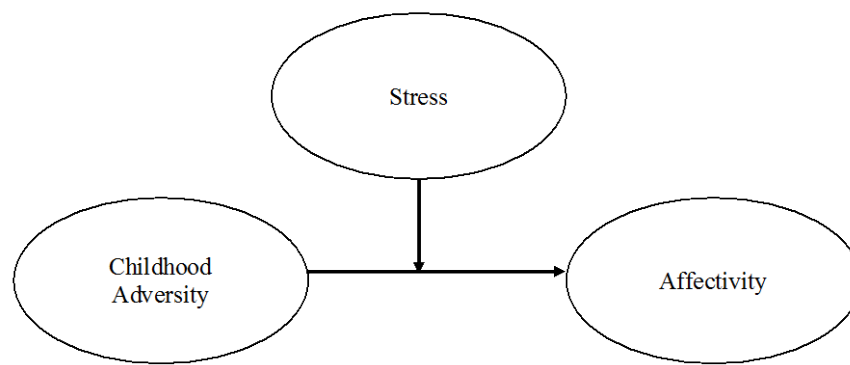


Figure 2. **Stress Moderating the Relationship between Childhood Adversity and Affectivity**

The current study also sought to examine an additional moderator within the overall model. In particular, it was hypothesized that the relationship between mothers' emotion dysregulation and child maltreatment potential would be moderated by their emotion regulation strategies (see Figure 3). Such strategies included cognitive reappraisal, expressive suppression, substance use as a means of coping with negative emotions, and substance use as a means of enhancing positive emotions. As such, we aimed to specify conditions (i.e., levels of different types of emotion regulation strategies) under which an independent variable (i.e., emotion dysregulation) was predictive of an outcome (i.e., child maltreatment potential). It was expected that emotion dysregulation would predict child maltreatment potential but that the magnitude of this relationship would be even more robust when participants also reported low levels of

cognitive reappraisal, high levels of expressive suppression, high levels of substance use as a means of coping, and high levels of substance use as a means of enhancement. In order to examine this hypothesis, interaction terms were created between emotion dysregulation and emotion regulation strategies, and regression analyses were used to determine the relative contributions of the independent variable and moderator on child maltreatment potential. It was hoped that these analyses would shed light on the interactions among several additional variables of interest that comprise another component of the prediction of the intergenerational transmission of trauma in the substance-involved population.

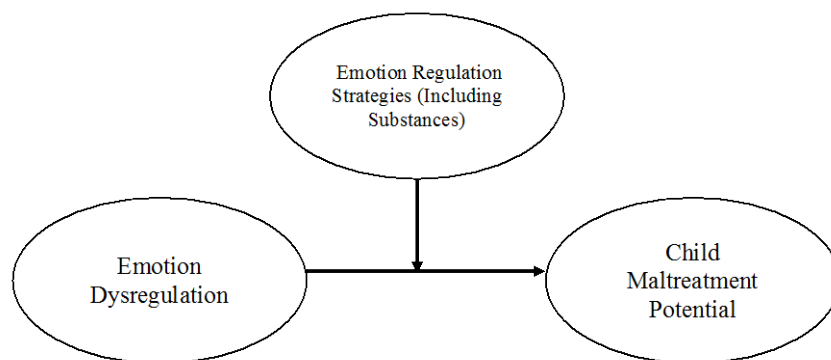


Figure 3. Emotion Regulation Strategies (Including Substances) Moderating the Relationship between Emotion Dysregulation and Child Maltreatment Potential

CHAPTER TWO: METHODOLOGY

Participants

As part of the current study, data were collected from 127 mothers who were substance-involved and who had young children ranging in age from 0- to 5-years. These mothers were recruited from a local community mental health agency in the Central Florida area. Data collection was coordinated with the directors of two programs run by this agency. Of the 127 mothers who participated, 61.4% were recruited through the agency's outpatient methadone clinic, and 38.6% were recruited through the agency's inpatient women's residential program. Regardless of recruitment location, all women were participating in methadone treatment. Methadone is a long-acting opioid agonist used to reduce cravings and prevent withdrawal symptoms without causing a "high" in individuals recovering from opiate addiction. It is taken by mouth daily and titrated over time to the point where an individual no longer will require it for the prevention of withdrawal symptoms. The recommended length of methadone treatment is at least 12 months (National Institute on Drug Abuse, 2012).

The suggested sample size for a hierarchical regression analysis ($p < .05$) with ten predictor variables (i.e., the most complex analysis proposed for this study) and a statistical power of .80 was 118 participants in order to detect a medium ($R = .36$) effect size (Cohen, 1992). There was no exclusion of participants as a result of their age, ethnicity, or other characteristics. Nonetheless, it was required that participants were English-speaking, were in treatment for a substance use problem, and had at least one child between the ages of 0- and 5-years.

With regard to demographic characteristics of the mothers who participated in the current study, participants' average age was 30.03-years ($SD=4.86$). These mothers had an average of

2.55 young children ($SD=1.46$) who ranged in age from 0- to 5-years ($M=2.34$, $SD=1.61$).

Participants had both sons and daughters. The majority of mothers who participated was Caucasian, with the remaining participants distributed across races (i.e., Hispanic, African American, Native American, Multiracial). Most participants were unemployed, had low levels of education, and had a household income of less than \$20,000 per year. The most common class of preferred substance used by mothers before entering treatment was opiates. More than half of the mothers surveyed for the current study were involved with the Department of Children and Families due to their substance use or child endangerment. See Table 1 for complete participant demographic and recruitment information.

Compared to the most current census data, the sample surveyed in the current study constituted a significantly underrepresented and at-risk group in several ways. The women surveyed in our study, of whom just 5.6% held a Bachelor's degree or higher, were significantly less educated than the general Orlando population, of which 34.2% held a Bachelor's degree or higher (United States Census Bureau, 2017). Our sample also consisted of a majority of women who were unemployed (67.0%), compared to a far smaller number of women who were unemployed in Orlando (31.3%). Finally, compared to 20.2% of adults in Orlando being below the poverty line, the majority of women in our sample (57.8%) made less than \$20,000 annually.

In contrast, our sample was comprised of a majority of Caucasian individuals (i.e., 81.0%), whereas the general population in Orlando was only 57.6% Caucasian. Our figure is representative of the changing demographics of opiate users nationally, however. Specifically, in recent decades, 90% of heroin users were Caucasian individuals in their late 20's (Cicero, Ellis, Surratt, & Kurtz, 2014). This demographic distribution was not always evident, as the rate of heroin use increased by 114% among Caucasian individuals between 2002 and 2013. In

contrast, the rates of heroin use among minorities remained stable (Centers for Disease Control and Prevention, 2015). This change is thought to be related, in part, to figures suggesting that Caucasian individuals are significantly more likely to receive opioid pain management than minority individuals (Pletcher, Kertesz, Kohn, & Gonzales, 2008).

Procedure

Following IRB approval from the University of Central Florida, directors of programs at the identified community mental health agency in Central Florida were contacted. In particular, the outpatient methadone clinic and the women's residential program of a local substance-use treatment facility (i.e., Aspire/The Center for Drug-Free Living) were used as the community-based data collection sites. The investigator contacted the directors to explain the study and request permission to recruit mothers from their facilities. Once consent was obtained from the directors and the appropriate review boards from these facilities, mothers were provided with information about the research study by staff, and flyers were placed in the facilities advertising this study. An investigator arranged data collection dates with the directors of the locations in order to recruit mothers who were substance-involved for participation.

The research packet of questionnaires was administered on site at the respective community venues in group format via a pencil-and-paper survey. A consent form was administered (see *Appendix A*), and participants were assured anonymity. Each mother was assigned an identification number for data organization purposes, and no names or identifying information were included in the research process. Participants completed the questionnaires in the presence of the graduate student investigator. In the case that any participants became distressed during administration of the questionnaires, they had the opportunity to discuss their distress with the graduate student investigator, her faculty advisor, and/or the director of the

facility. In other words, further assistance could be sought. Following completion of the survey packet, a debriefing form was provided that explained the purpose of the study and provided references to the relevant research literature about the topic area examined in this study as well as referrals to local providers of parenting intervention programs (see *Appendix B*). As an incentive for participation, all participants received a \$10.00 Wal-Mart gift card upon completion of their survey packet.

Each packet of questionnaires required approximately 30 to 60 minutes (depending on reading level) for participants to complete. Once questionnaire packets were returned to the graduate student investigator, this information was transported back to the University of Central Florida and stored securely in a locked cabinet inside the faculty supervisor's laboratory. To ensure anonymity, no personally identifying information, contact information, or signatures were required as part of the questionnaire packet or consent process. Finally, all data were analyzed in group format, and no individual packet was singled out for examination.

Measures

Demographics. Mothers completed a brief questionnaire regarding demographic information. The demographics questionnaire asked participants to provide information regarding themselves and their children on various variables, such as age, ethnicity, religion, occupation, household income, involvement with the child protective services, substance(s) of choice, and other related characteristics. See *Appendix C* for a sample of the demographics questionnaire.

Childhood Adversity. The *Adverse Childhood Experiences Study Questionnaire* (ACEs; Felitti et al., 1998), a 10-item retrospective self-report questionnaire, was used to measure mothers' exposure to general adverse experiences in childhood. Items were represented by ten

domains of adverse childhood experiences and trauma, including maltreatment (i.e., physical abuse, physical neglect, emotional abuse, emotional neglect, and sexual abuse) as well as exposure to divorce, domestic violence, mental illness, criminal behavior or incarceration, and substance use in the home (Felitti et al., 1998). All questions were introduced with the phrase, “While you were growing up during your first 18 years of life...” Participants were asked to respond in a dichotomous forced-choice *Yes* or *No* format. Participants’ “Yes” responses on the ACEs questionnaire were summed in order to yield a Total Exposure score that could range between 0 (unexposed) to 10 (exposed to all categories of adverse childhood experiences). The ACEs questionnaire was shown to demonstrate good internal consistency ($\alpha = .88$; Murphy, Steele, Dube, Bate, Bonuck, Meissner, &... Steele, 2014). This study utilized the Total Exposure scale of the ACEs questionnaire. This variable is referred to as “ACEs” throughout the results and remainder of the manuscript. The Cronbach alpha for the current study was good ($\alpha = .70$). See *Appendix D* for a sample of the ACEs questionnaire.

In addition, the *Childhood Trauma Questionnaire* (CTQ; Bernstein & Fink, 1998) was used as a more detailed measure of the severity of mothers’ experience of several specific forms of childhood maltreatment. This 28-item retrospective self-report measure asked participants to rate items on a five-point Likert scale ranging from *Never* (1) to *Very Often* (5). The CTQ assessed five specific types of childhood maltreatment experiences and yielded the following subscales: Physical Abuse ($\alpha = .88$), Physical Neglect ($\alpha = .60$), Emotional Abuse ($\alpha = .87$), Emotional Neglect ($\alpha = .91$), and Sexual Abuse ($\alpha = .94$; Spinhoven et al., 2014). Higher scores on each of these subscales indicated greater amounts of childhood maltreatment. The total subscale of the CTQ was used in the current study. This variable is referred to as “childhood

maltreatment” throughout the results and remainder of the manuscript. The Cronbach alpha for the current study was excellent ($\alpha = .92$). See *Appendix E* for a sample of the CTQ.

Stress. The *Parenting Stress Index-Fourth Edition-Short Form (PSI-4-SF)*; Abidin, 2012), a 36-item self-report questionnaire, was used to assess mothers’ perceived levels of stress related to parenting. The PSI-4-SF asked participants to rate items on a five-point Likert scale that ranged from *I fully agree* (1) to *I fully disagree* (5). The PSI-4-SF included three subscales: Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child. A Total Stress Scale also could be derived by combining these three subdomains. Cronbach alphas for all PSI-4-SF scales were over .90 in the development study (Abidin, 2012). The Total Stress scale of the PSI-4-SF was used in the current study. The Cronbach alpha for the current study was excellent ($\alpha = .92$). See *Appendix F* for a sample of the PSI-4-SF.

Affectivity. The *Positive and Negative Affect Schedule (PANAS)*; Watson, Clark, & Tellegan, 1988), a 20-item self-report questionnaire, was used to assess mothers’ current experience of affective states. The PANAS is divided into two 10-item subscales (i.e., Positive Affect and Negative Affect) consisting of single words that represent both positive affective states (e.g., proud, enthusiastic, excited) and negative affective states (e.g., upset, distressed, irritable). Participants were asked to rate the extent to which they currently felt each emotion on a 5-point Likert scale ranging from *Very Slightly or Not At All* (1) to *Extremely* (5). Higher scores on each subscale indicated higher levels of either positive affectivity or negative affectivity. The Positive Affect and Negative Affect subscales demonstrated acceptable internal consistencies in a previous study ($\alpha = .89$ and $\alpha = .85$, respectively; Crawford & Henry, 2004). This scale recently demonstrated excellent utility in a substance-involved population as well (i.e., Positive Affect $\alpha = .90$ and Negative Affect $\alpha = .91$; Serafini et al., 2016). Both the Positive

Affect and Negative Affect subscales of the PANAS were used in the current study. The Cronbach alphas for the Positive Affect ($\alpha = .89$) and Negative Affect ($\alpha = .91$) scales for the current study were excellent. See *Appendix G* for a sample of the PANAS.

Emotion Dysregulation. The *Difficulties in Emotion Regulation Scale (DERS)* (Gratz & Roemer, 2004) was used to measure mothers' degree of emotion dysregulation. This 36-item questionnaire asked participants to rate items on a five-point Likert scale ranging from *Almost Never or 0-10% of the time* (1) to *Almost Always or 91-100% of the time* (5). The DERS yielded a Total score ($\alpha = .93$; Gratz & Roemer, 2004) that assessed individuals' overall emotion dysregulation. This Total score also could be subdivided into six subscales including: Nonacceptance of Emotional Responses (i.e., Nonacceptance, $\alpha = .85$), Difficulties Engaging in Goal-Directed Behavior (i.e., Goals, $\alpha = .89$), Impulse Control Difficulties (i.e., Impulse, $\alpha = .86$), Lack of Emotional Awareness (i.e., Awareness, $\alpha = .80$), Limited Access to Emotion Regulation Strategies (i.e., Strategies, $\alpha = .88$), and Lack of Emotional Clarity (i.e., Clarity, $\alpha = .84$; Gratz & Roemer, 2004). Higher scores on each of the subscales indicated greater emotion dysregulation. The Total scale of the DERS was used in the current study. The Cronbach alpha for the current study was excellent ($\alpha = .94$). See *Appendix H* for a sample of the DERS.

Emotion Regulation Strategies. The *Emotion Regulation Questionnaire (ERQ)* (Gross & John, 2003), a 10-item self-report questionnaire, was used to assess mothers' self-reported emotion regulation strategies. The ERQ asked participants to rate items using a seven-point Likert scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (7). Consistent with Gross' (2006, 2015) process model of emotion regulation, the ERQ assessed two specific processes of emotion regulation: Cognitive Reappraisal (i.e., an antecedent-focused strategy) and Expressive Suppression (i.e., a response-focused strategy). Higher scores on these subscales indicated more

use of either cognitive change or response modulation as emotion regulation strategies, respectively. The Cognitive Reappraisal and Expressive Suppression subscales demonstrated acceptable internal consistencies previously ($\alpha = .75 - .82$ and $\alpha = .68 - .76$, respectively; Gross & John, 2003). Both the Cognitive Reappraisal and Expressive Suppression subscales of the ERQ were used in the current study. The Cronbach alpha for the Cognitive Reappraisal scale was good ($\alpha = .84$), whereas the Cronbach alpha for the Expressive Suppression scale was lower ($\alpha = .58$). See *Appendix I* for a sample of the ERQ.

Substance Involvement. The *Revised Drinking Motives Questionnaire (DMQR)* (Cooper, 1994) was used to measure mothers' use of substances as a means to downregulate or cope with distress and a means to upregulate or enhance positive emotions. The DMQR is a 20-item self-report questionnaire that assessed possible reasons that participants chose to drink. It has been adapted successfully to measure individuals' motives for using substances as well (Asberg & Renk, 2012). The DMQR asked participants to answer questions on a five-point Likert scale that included *Almost Never/Never* (1), *Some of the Time* (2), *Half of the Time* (3), *Most of the Time* (4), and *Almost Always/Always* (5). This measure yielded four subscales of drinking and substance use motives including: Social (i.e., using in order to socialize more effectively or feel comfortable in social situations), Conformity (i.e., using due to external social cues or in order to fit in with one's peer group), Coping (i.e., using in order to avoid distressing situations or downregulate negative affective states), and Enhancement (i.e., using in order to increase or upregulate positive affective states). With regard to internal consistency, each of the four subscales of the DMQR demonstrated acceptable Cronbach alphas previously ($\alpha = .89$, $\alpha = .87$, $\alpha = .85$, and $\alpha = .85$, respectively; Arterberry, Martens, Cadigan, & Smith, 2012). The Coping subscale of the DMQR also yielded excellent internal consistency when used to measure

substance use coping ($\alpha = .93$; Asberg & Renk, 2012). Higher scores on each of the DMQR subscales indicated greater motivation to drink or use substances for that given reason. For the current study, the Coping and Enhancement subscales were used given their theoretical association with emotion regulation. These constructs are referred to as Substance Use Coping and Substance Use Enhancement in this manuscript. The Cronbach alphas for the Substance Use Coping ($\alpha = .89$) and Substance Use Enhancement ($\alpha = .86$) scales were good. See *Appendix J* for a sample of the DMQR.

Child Maltreatment Potential. The *Child Abuse Potential Inventory* (CAP; Milner, 1986, 1994), a widely used risk assessment for screening the potential for perpetrating child physical abuse, was used to measure mothers' child maltreatment potential. It is the gold standard measure used to determine the likelihood that an individual will perpetrate child maltreatment. Therefore, it is used by research scientists involved in better understanding child maltreatment as well as by clinical professionals involved in the evaluation of parents in child welfare cases. The common use of the CAP as an outcome variable in similar research studies often is preferable to reports of actual incidents of maltreatment given that "if research or evaluation efforts inquire directly into ongoing abuse or neglect, there may be irreconcilable conflicts between the demands of mandatory child abuse reporting laws and ethical demands to protect the welfare of research participants and fully inform participants of the risks inherent in their participation" (Chaffin & Valle, 2003, p.464).

The CAP is a 160-item self-report questionnaire that ask parents to respond with a forced choice (i.e., *Agree* or *Disagree*) format. The 77-item Physical Child Abuse Scale ($\alpha = .92 - .96$; Milner, 1986) was used for the current study. Higher scores on this subscale indicated higher potential for perpetrating child maltreatment. A cutoff score of 166 was suggested previously as

appropriate for identifying respondents as exhibiting either High Maltreatment Potential or Low Maltreatment Potential (Milner & Campbell, 2007). The Physical Child Abuse Scale also contains six descriptive factor scales: Distress, Rigidity, Unhappiness, Problems with Child and Self, Problems with Family, and Problems from Others. In addition, the CAP could be used to derive three response distortion indexes (i.e., the faking-good index, the faking-bad index, and the random response index) from its three validity scales (i.e., a lie scale, a random response scale, and an inconsistency scale). Finally, the CAP contains two special scales (i.e., the ego-strength scale and the loneliness scale; Milner, 1988, 1990, 1994).

The CAP was developed via identification and grouping of traits that were shown in other studies to be characteristic of abusive adults. Clusters of traits included isolation/loneliness, depression, anxiety, vulnerability, insecurity, inadequacy, impulsivity, dependency, immaturity, unrealistic child-rearing expectations, inability to handle stress, rigid attitudes, childhood experiences of maltreatment, interpersonal relationship problems, problems in relationships with one's own parents, low level of education, poverty, substance use, and mental illness (Milner & Wimberley, 1979). The authors then generated 15 to 20 items representing each trait to create the inventory. Factor analytic methods were used to identify reliable and valid subscales within the inventory (Milner & Wimberley, 1979).

In subsequent studies, the CAP exhibited good construct validity (i.e., the ability of a measure to assess a theoretical construct) in several studies (Milner, 1986, 1994, 2004). Studies of concurrent predictive validity yielded between 85% to 96% accuracy in the classification of physical abuse perpetrators versus matched controls (Milner, 1989; Milner, Gold, & Wimberley, 1986; Milner & Robertson, 1990; Milner & Wimberley, 1980). For the small proportion of misclassified individuals, there is a higher false negative rate, meaning that the CAP is more

likely to fail to detect parents who are indeed maltreating than to categorize non-maltreating parents as maltreating (Couron, 1982; Milner, 1989).

Evidence for the CAP's future predictive validity also demonstrated its ability to accurately detect high-risk individuals who would come to maltreat their children in the future (Chaffin & Valle, 2003; Milner, Gold, Ayoub, & Jacewitz, 1984). In fact, the use of the CAP predicted future child maltreatment over and above demographic and historical variables (i.e., parent education level, household income, number of children in the home, having had a child removed previously) that placed parents at high risk for maltreating their children (Chaffin & Valle, 2003). For the current study, the Physical Child Abuse Scale was used. The Cronbach alpha for the current study was excellent ($\alpha = .95$). See *Appendix K* for a sample of the CAP.

CHAPTER THREE: RESULTS

Descriptive Information

In order to put the results of this study into context, descriptive statistics (i.e., means, standard deviations, ranges) were examined for each variable of interest. First, with regard to mothers' childhood adversity, participants reported moderate levels of adverse childhood experiences on the ACEs ($M = 4.15$, $SD = 2.41$; as scores were able to range from 0 to 10). The mean ACEs score found in the current study fell above the widely accepted clinical cutoff score of 4 (i.e., the number of ACEs categories at which individuals' risk for substance dependence, mental health problems, and chronic diseases increases exponentially; Dube et al., 2002; Felitti et al., 1998). In fact, 57.9% of participants endorsed scores ACEs scores of 4 or more, whereas 42.1% reported 3 or fewer ACEs. Mothers who participated in the current study also reported moderate levels of childhood maltreatment via the CTQ ($M = 51.67$, $SD = 19.67$, as scores were able to range from 25 to 125). The CTQ also divides total scores into severity quintiles: <36 "none/minimal," 37-51 "low to moderate," 52-68 "moderate to severe," and >69 "severe to extreme" (Bernstein & Fink, 1998). As a result, the mean CTQ score for the current study directly between the "low to moderate" and "moderate to severe" ranges, according to instrument developers. This average score was higher than those generally seen in large multinational clinical samples ($M = 45.91$, $SD = 18.79$) and community samples ($M = 38.78$, $SD = 14.98$; MacDonald, Thomas, Sciolla, Schneider, Pappas, Bleijenberg, & ... Wingenfeld, 2016). Other nonclinical community samples also have yielded lower mean CTQ scores than the current study ($M = 39.19$, $SD = 14.96$; Ritschel, Tone, Schoemann, & Lim, 2015).

With regard to mothers' self-reported stress (as measured by the PSI), participants reported moderate levels of overall parenting stress ($M = 75.75$, $SD = 19.85$, as scores were able

to range from 36 to 180). The mean PSI score obtained in this study was similar to mean PSI scores obtained from similar samples of mothers who were in substance use treatment ($M = 74.80$; Short, Gannon, Weingarten, Kaltenbach, LaNoue, & Abatemarco, 2017). In fact, this PSI score was similar to the mean PSI score found in the general community ($M = 79.23$) and was actually lower than that of a moderate risk sample ($M = 90.45$) and high risk sample ($M = 102.87$; Perez- Pérez-Padilla, Menéndez, & Lozano, 2015). This pattern was in contrast to previous literature suggesting that individuals who were substance-involved experience greater degrees of stress than the general population (Taplin & Mattick, 2015).

In terms of mothers' self-reported affectivity (as measured by the PANAS), participants reported moderate levels of positive affect ($M = 35.05$, $SD = 8.48$, as scores were able to range from 10 to 50). Participants also reported moderate levels of negative affect ($M = 20.46$, $SD = 8.85$, as scores were able to range from 10 to 50). These results were representative of the affectivity of individuals receiving substance use treatment, with previous studies finding similar mean positive affect scores ($M = 30.21$, $SD = 8.77$) and negative affect scores ($M = 20.25$, $SD = 8.37$; Serafini et al., 2016). These scores also were comparable to the nonclinical validation sample (i.e., positive affect: $M = 35.0$, $SD = 7.9$; negative affect: $M = 18.1$, $SD = 5.9$; Watson et al., 1988).

For mothers' self-reported emotion dysregulation (as measured by the DERS), participants reported moderate levels of difficulties regulating their emotions ($M = 83.61$, $SD = 23.88$, as scores were able to range from 36 to 180). This average score was slightly higher than the average DERS score found in a diverse community sample ($M = 77.18$, $SD = 22.37$).

In terms of mothers' self-reported emotion regulation strategies (as measured by the ERQ), participants reported moderate levels of cognitive reappraisal ($M = 29.28$, $SD = 7.93$; as

scores were able to range from 6 to 42). Participants also reported a moderate amount of expressive suppression ($M = 13.04$, $SD = 4.49$; as scores were able to range from 4 to 28). These scores were comparable to nonclinical mean cognitive reappraisal scores ($M = 29.49$, $SD = 6.12$) and expressive suppression scores ($M = 14.24$, $SD = 5.45$; Zelkowitz & Cole, 2016). In contrast, mothers endorsed very high levels of substance use as a strategy to downregulate negative emotions and upregulate positive emotions (as measured by the DMQR). Specifically, participants reported high levels of substance use coping ($M = 21.06$, $SD = 4.83$; as scores were able to range from 5 to 25). Participants also reported high levels of substance use enhancement ($M = 19.98$, $SD = 5.07$; as scores were able to range from 5 to 25). This pattern was consistent with previous studies showing that individuals who were alcohol-dependent scored significantly higher on this measure compared to both heavy drinkers and moderate drinkers (Mezquita, Stewart, Ibáñez, Ruipérez, Villa, Moya, & Ortet, 2011).

Finally, with regard to likelihood of perpetrating physical abuse (as measured by the CAP), mothers' reported a relatively elevated degree of child maltreatment potential ($M = 195.40$, $SD = 109.31$; as scores were able to range from 0 to 486). The mean score found in the current study fell above the suggested cutoff score of 166, which designated respondents as demonstrating either *high maltreatment potential* or *low maltreatment potential* (Milner & Campbell, 2007). The mean CAP score found in the current study also was higher than those of samples of mothers with substance use histories ($M = 174.29$, $SD = 108.96$) and without substance use histories ($M = 80.52$, $SD = 71.81$; Ammerman et al., 1999). See Table 2 and Table 3 for a complete listing of the ranges, means, standard deviations, and frequencies of the independent and dependent variables included in this study.

Preliminary Analyses

Prior to completing the proposed analyses, preliminary analyses were conducted on the variables of interest. Specifically, all data were screened for missing information, outliers, nonlinear relationships, multicollinearity, singularity, and differences between groups.

Multicollinearity

Evaluation of multicollinearity revealed that certain variables measuring childhood adversity exhibited multicollinearity. In particular, with regard to measures of childhood adversity, substance-involved mothers' scores on the ACEs and CTQ exhibited a variance proportion of .99. This variance proportion fell well above the suggested cutoff of .50 or less and suggested that there was dependency between these variables that would cause bias in the overall model (Field, 2009). This collinear relationship was evident due to the fact that, although the ACEs and CTQ were separate measures that examined childhood adversity in slightly different ways, these questionnaires measured the same construct (i.e., childhood adversity). As noted above, the ACEs questionnaire measured the quantity of broad childhood adversities experienced, whereas the CTQ measured the severity of experiences of childhood maltreatment in particular. As a result, these variables were examined in separate hierarchical regression analyses so their relationship would not interfere with the overall results of the equation.

The remainder of the variables examined as part of the current study did not exhibit multicollinearity. Specifically, the VIF for each predictor was less than 10 (i.e., scores ranged from 1.02 to 2.42), and variance proportions were relatively low (i.e., .50 or less; Field, 2009). Given that the ACEs questionnaire and CTQ were examined in separate hierarchical regression equations, these analyses of multicollinearity left nine predictor variables to be included in the most complex analyses for this study.

Nonlinear Relationships

Next, curvilinear relationships were assessed between child maltreatment potential and each independent variable. Curve estimations indicated that child maltreatment potential was related in a linear fashion to mothers' ACEs, childhood maltreatment, positive affect, negative affect, parenting stress, emotion dysregulation, cognitive reappraisal, expressive suppression, substance use coping, and substance use enhancement.

Multivariate Analysis of Variance (MANOVA)

Given the two treatment locations from which participants were recruited (i.e., a methadone clinic and women's residential treatment facility), analyses were conducted in order to determine if there were meaningful differences between the individuals recruited from each treatment location on the variables of interest in the current study. The results of the Multivariate Analysis of Variance (MANOVA) indicated that there was an overall significant difference among the variables based on recruitment site, $\Lambda = 0.84$, $F(11, 114) = 1.93$, $p < .04$. Tests of between subjects effects revealed that only one variable (i.e., negative affect) exhibited significant differences across recruitment sites. Mothers recruited from the residential treatment facility reported significantly higher levels of negative affect than mothers recruited from the outpatient methadone clinic ($p < .03$).

These differences between groups with regard to negative affect were considered in terms of contextual factors. It was not surprising that mothers who were recruited from a higher level of care (i.e., residential treatment) exhibited greater levels of distressing symptoms when compared to mothers recruited from a lower level of care (i.e., outpatient medication-assisted treatment). Therefore, despite this statistically significant difference in means between groups, this difference was not considered in further analyses. Rather, this difference was considered to

increase diversity in the sample. As noted above, given that there were not significant differences between groups with regard to participants' scores on the dependent variable and given literature suggesting that covariation may not be necessary in cases of natural variability in measured characteristics (e.g., Harris, Bisbee, & Evans, 1971), recruitment method was not used as a covariate. Further, when recruitment method was examined initially in the context of the overall model, the results of this analysis did not alter the model findings drastically. As a result, these differences were considered in terms of contextual factors only.

Correlations

To examine the relationships among childhood adversity, stress, affectivity, emotion dysregulation, emotion regulation strategies, substance use coping and enhancement, and child maltreatment potential, correlations among the variables were examined. Given that the variables did not demonstrate curvilinear relationships, Pearson correlations were examined and provide evidence for the hypotheses regarding the relationships among the aforementioned variables. Due to the number of correlations that were examined (i.e., 55), a Bonferroni correction also was considered, resulting in an adjusted p-value of .00091. Several pertinent relationships of all levels of significance are highlighted below. A complete correlation matrix of these findings can be found in Table 4.

First, mothers' childhood adversity was correlated with several other variables of interest. Specifically, in support of the hypothesis regarding the relationship between childhood adversity and affectivity, mothers' number of ACEs was correlated positively and significantly with self-reported negative affect ($r = .30, p < .001$). Similarly, mothers' childhood maltreatment also was correlated positively and significantly to self-reported negative affect ($r = .19, p < .03$). In

contrast, however, mothers' childhood experiences (as measured by both the ACEs and CTQ) did not demonstrate significant relationships with positive affect.

Further, mothers' ACEs were correlated positively and significantly to their emotion dysregulation ($r = .19, p < .03$). Mothers' childhood maltreatment also was correlated positively and significantly to their emotion dysregulation ($r = .23, p < .01$). In terms of emotion regulation strategies employed by mothers in the current study, mothers' ACEs were related positively and significantly to self-reported substance use coping ($r = .27, p < .003$). However, adverse childhood experiences and childhood maltreatment did not exhibit statistically significant relationships with other means of emotion regulation (i.e., cognitive reappraisal, expressive suppression, substance use enhancement). Finally, mothers' number of ACEs was related positively and significantly to child maltreatment potential ($r = .35, p < .001$). Similarly, mothers' childhood maltreatment also was related positively and significantly to child maltreatment potential ($r = .26, p < .004$).

Next, the relationship between stress and affectivity was examined. Specifically, mothers' parenting stress was related positively and significantly to negative affect ($r = .35, p < .001$). Conversely, mothers' parenting stress was related negatively and significantly to positive affect ($r = -.35, p < .001$). In other words, increased levels of stress experienced by mothers were related to increased negative affect and decreased positive affect. The relationship between stress and emotion dysregulation also was examined. Mothers' parenting stress was related positively and significantly to emotion dysregulation ($r = .54, p < .001$). Finally, mothers' parenting stress was related positively and significantly to child maltreatment potential ($r = .51, p < .001$).

The relationship between affectivity and emotion dysregulation then was examined. In particular, mothers' positive affect was related negatively and significantly to emotion

dysregulation ($r = -.41, p < .001$). In contrast, mothers' negative affect was related positively and significantly to emotion dysregulation ($r = .56, p < .001$). The relationship between affectivity and child maltreatment potential was examined next. Mothers' positive affect was related negatively and significantly to child maltreatment potential ($r = -.40, p < .001$), whereas mothers' negative affect was related positively and significantly to child maltreatment potential ($r = .53, p < .001$).

Next, the relationship between mothers' emotion dysregulation and child maltreatment potential was examined. In particular, mothers' emotion dysregulation was correlated positively and significantly to child maltreatment potential ($r = .67, p < .001$). Finally, the relationships between emotion regulation strategies and child maltreatment potential were examined. In particular, mothers' self-reported use of cognitive reappraisal was related negatively and significantly to child maltreatment potential ($r = -.24, p < .008$). Mothers' self-reported use of expressive suppression was related positively and significantly to child maltreatment potential ($r = .33, p < .001$). In contrast, mothers' substance use coping and substance use enhancement were not related significantly to child maltreatment potential. It should be noted, however, that a ceiling effect was discovered for participants' use of substance use coping and substance use enhancement. Given that a clinical sample was utilized for the current study, most respondents reported extremely high levels of substance use as a means of emotion regulation; therefore, there was not a significant degree of variability in participants' scores on these subscales. This restricted range may account for the lack of significant relationships among substance use coping, substance use enhancement, and child maltreatment potential.

Hierarchical Linear Regression Analyses

Next, hierarchical regression analyses were used to determine which variables were significant predictors of child maltreatment potential. In these analyses, mothers' childhood adversity, stress, affectivity, emotion dysregulation, and emotion regulation strategies served as predictor variables, and child maltreatment potential served as the criterion variable. Given the significant multicollinearity exhibited between mothers' adverse childhood experiences (ACEs) and childhood maltreatment (CTQ), two separate hierarchical regression analyses were performed, with each variable entered into Block 1 separately. Next, stress was entered into Block 2, affectivity variables (i.e., positive affect and negative affect) were entered into Block 3, emotion dysregulation was entered into Block 4, and emotion regulation strategy variables (i.e., cognitive reappraisal, expressive suppression, substance use coping, substance use enhancement) were entered into Block 5 so that incremental variance could be examined. See Table 4 and Table 5 for a summary of these results.

Adverse Childhood Experiences

First, substance-involved mothers' score on the ACEs questionnaire was used as the childhood adversity predictor variable. In Block 1, mothers' ACEs predicted significantly their child maltreatment potential, $F(1, 124) = 17.13, p < .001, R^2 = .12$. When parenting stress was entered into Block 2, the regression equation remained significant, $F(2, 123) = 32.48, p < .001, R^2 = .35$. With the entry of Block 2, mothers' ACEs remained a significant predictor of child maltreatment potential ($p < .001$), and mothers' parenting stress emerged as a significant individual predictor as well ($p < .001$). When affectivity was entered into Block 3, the regression equation remained significant, $F(4, 121) = 27.70, p < .001, R^2 = .48$. Specifically, mothers' ACEs ($p < .001$) and parenting stress ($p < .001$) continued to be significant individual predictors

of child maltreatment potential. Positive affect ($p < .004$) and negative affect ($p < .001$) also emerged as significant in the prediction of child maltreatment potential.

In Block 4 when emotion dysregulation was added, the regression equation remained significant, $F(5, 120) = 31.26, p < .001, R^2 = .57$. In particular, mothers' ACEs ($p < .001$), parenting stress ($p < .03$), positive affect ($p < .04$), and negative affect ($p < .03$) remained significant. It should be noted, however, that parenting stress, positive affect, and negative affect each decreased in significance when emotion dysregulation was added to the equation. Emotion dysregulation indeed emerged as a significant individual predictor ($p < .001$). Finally, when emotion regulation strategies were added into Block 5, the regression equation remained significant, $F(9, 116) = 18.02, p < .001, R^2 = .58$. Specifically, mothers' ACEs ($p < .002$), parenting stress ($p < .03$), and emotion dysregulation ($p < .001$) each remained significant predictors. Positive affect and negative affect no longer predicted child maltreatment significantly. In addition, none of the emotion regulation variables entered in Block 5 emerged as significant individual predictors of child maltreatment potential. See Table 5 for a summary of these results.

Childhood Maltreatment

The above analyses were conducted again with mothers' childhood maltreatment substituted as the childhood adversity predictor variable. Similar results were found. In Block 1, mothers' childhood maltreatment predicted significantly their child maltreatment potential, $F(1, 124) = 8.67, p < .004, R^2 = .07$. When parenting stress was entered into Block 2, the regression equation remained significant, $F(2, 123) = 28.07, p < .001, R^2 = .31$. Within this block, mothers' childhood maltreatment remained a significant predictor of child maltreatment potential ($p < .003$), and mothers' parenting stress emerged as a significant individual predictor as well ($p < .003$).

.001). When affectivity was entered into Block 3, the regression equation remained significant, $F(4, 121) = 25.92, p < .001, R^2 = .46$. Specifically, mothers' childhood maltreatment ($p < .01$) and parenting stress ($p < .001$) continued to be significant individual predictors of child maltreatment potential. Positive affect ($p < .008$) and negative affect ($p < .001$) also emerged as significant in the prediction of child maltreatment potential.

In Block 4, when emotion dysregulation was added, the regression equation remained significant, $F(5, 120) = 28.27, p < .001, R^2 = .54$. In particular, parenting stress ($p < .02$) and negative affect ($p < .007$) remained significant. Parenting stress decreased marginally in significance, whereas mothers' childhood maltreatment and positive affect both decreased to non-significance when emotion dysregulation was added to the equation. Emotion dysregulation emerged as a significant individual predictor ($p < .001$). Finally, when emotion regulation strategies were added into Block 5, the regression equation remained significant, $F(9, 116) = 16.35, p < .001, R^2 = .56$. Specifically, parenting stress ($p < .02$), negative affect ($p < .01$), and emotion dysregulation ($p < .001$) each remained significant predictors. None of the emotion regulation variables entered in Block 5 emerged as significant predictors of child maltreatment potential. See Table 6 for a summary of these results.

Moderation Analyses

In order to examine mechanisms of action within the overall predictive model, several moderation analyses were performed. In particular, stress was examined as a moderator in the relationship between childhood adversity and affectivity. Additionally, emotion regulation strategies were examined as moderators in the relationship between emotion dysregulation and child maltreatment potential. The results of these analyses are detailed below.

Stress Moderating Childhood Adversity and Affectivity

A series of regression analyses were conducted to determine whether parenting stress moderated the relationship between childhood adversity and affectivity. According to Baron and Kenny (1986), performing a moderation analysis requires several steps. To begin, all variables were standardized. The standardized independent variables (i.e., adverse childhood experiences, childhood maltreatment) then were multiplied by the standardized moderator variable (i.e., stress) in order to create the interaction terms. Hierarchical regression analyses then were performed. Within these analyses, mothers' childhood adversity and parenting stress first needed to predict affectivity in Block 1. Next, in Block 2, the interaction term needed to be significant, which would indicate that the moderating variables were active in the relationship between mothers' childhood adversity and affectivity, such that this relationship varied based upon levels of stress.

Stress Moderating ACEs and Positive Affect. To examine whether substance-involved mothers' parenting stress would moderate the relationship between their adverse childhood experiences and level of positive affect, the first regression equation revealed that mothers' adverse childhood experiences and parenting stress predicted significantly mothers' positive affect, $F(2, 123) = 8.86, p < .001$. When the interaction between mothers' adverse childhood experiences and parenting stress was entered into Block 2, the regression equation remained significant, $F(3, 122) = 6.47, p < .001$. The interaction term was not significant, however. These findings suggested that, although the overall regression equation (i.e., including adverse childhood experiences, parenting stress, and their interaction term) was significant, the interaction between substance-involved mothers' adverse childhood experiences and current parenting stress did not emerge as a significant predictor of positive affect. As a result, stress was

not a moderator in the relationship between adverse childhood experiences and positive affect. Such results demonstrate that current levels of parenting stress are independently predictive of current levels of positive affect for mothers who were substance-involved. See Table 7 for a summary of these results.

Stress Moderating Childhood Maltreatment and Positive Affect. To examine whether substance-involved mothers' parenting stress would moderate the relationship between their childhood maltreatment and level of positive affect, the first regression equation revealed that mothers' childhood maltreatment and parenting stress predicted significantly mothers' positive affect, $F(2, 123) = 8.63, p < .001$. When the interaction between mothers' childhood maltreatment and parenting stress was entered into Block 2, the regression equation remained significant, $F(3, 122) = 7.87, p < .001$. Within this overall regression equation (i.e., including childhood maltreatment, parenting stress, and their interaction term), the interaction between substance-involved mothers' childhood maltreatment and current parenting stress emerged as a significant predictor of positive affect ($p < .02$), and parenting stress remained a significant individual predictor as well, $\Delta R^2 = .04, \Delta F(1, 122) = 5.68, p < .02, b = .20, t(122) = 2.38, p < .02$. These findings suggested that, for substance-involved mothers, the interaction between severity of maltreatment (i.e., abuse and neglect) experienced during childhood and the level of parenting stress experienced currently was significant in the prediction of positive affect. As a result, parenting stress was shown to moderate the relationship between childhood maltreatment and positive affect.

Simple slopes analysis and examination of the interaction plot revealed that, at low levels of parenting stress, there was not a significant relationship between childhood maltreatment and positive affect, $b = -.06, t(122) = -1.02, p < .31$. Further, at average levels of parenting stress,

there was not a significant relationship between childhood maltreatment and positive affect, $b = .03$, $t(122) = .72$, $p < .47$. At high levels of parenting stress, however, there was a significant relationship between childhood maltreatment and positive affect, $b = .11$, $t(122) = 1.96$, $p < .05$. Using the Johnson-Neyman technique, a zone of significance was noted at levels of parenting stress above 96.71. In other words, when parenting stress scores were at least 96.71, childhood maltreatment and positive affect were related significantly, $b = .12$, $t(122) = 1.98$, $p < .05$. As parenting stress increased, the relationship between childhood maltreatment and positive affect became increasingly positive, with the highest parenting stress score (i.e., 135) being related to higher levels positive affect, $b = .28$, $t(122) = 2.16$, $p < .03$. Such results were contrary to the hypothesis that high levels of childhood adversity would predict low levels of positive affect, with higher levels of parenting stress enhancing this relationship (i.e., decreasing positive affect further). Rather, high levels of childhood maltreatment predicted higher positive affect at higher levels of parenting stress. See Table 8 for a summary of these results. See Figure 4 for a visual illustration of the moderation regression analyses.

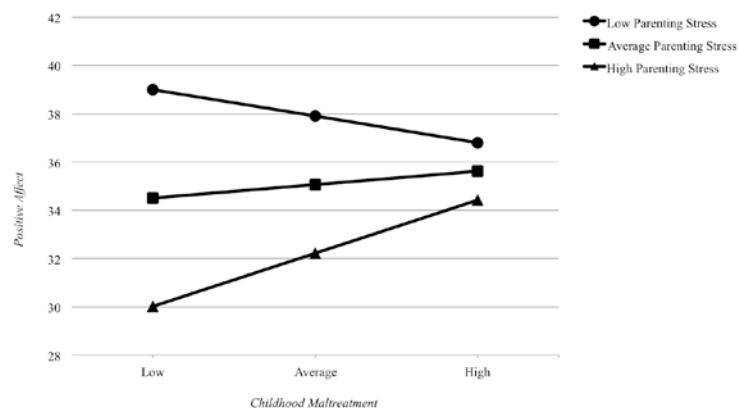


Figure 4. Interaction Plot Demonstrating the Moderating Effect of Parenting Stress on the Relationship Between Childhood Maltreatment and Positive Affect in Mothers Who Are Substance-Involved

Stress Moderating ACEs and Negative Affect. To examine whether substance-involved mothers' parenting stress would moderate the relationship between their adverse childhood experiences and level of negative affect, the first regression equation revealed that mothers' adverse childhood experiences and parenting stress predicted significantly mothers' negative affect, $F(2, 123) = 14.70, p < .001$. When the interaction between mothers' adverse childhood experiences and parenting stress was entered into Block 2, the regression equation remained significant, $F(3, 122) = 9.94, p < .001$. Although the overall regression equation (i.e., including adverse childhood experiences, parenting stress, and their interaction term) was significant, the interaction between substance-involved mothers' adverse childhood experiences and current parenting stress did not emerge as a significant individual predictor of negative affect. These findings suggested that, for substance-involved mothers, both the quantity of general adversities experienced during childhood in addition to current level of parenting stress predicted level of negative affect reported in adulthood, but their interaction did not influence this relationship. As a result, stress was not a moderator in the relationship between adverse childhood experiences and negative affect. See Table 9 for a summary of these results.

Stress Moderating Childhood Maltreatment and Negative Affect. To examine whether substance-involved mothers' parenting stress would moderate the relationship between their childhood maltreatment and level of negative affect, the first regression equation revealed that mothers' childhood maltreatment and parenting stress predicted significantly mothers' negative affect, $F(2, 123) = 11.36, p < .001$. When the interaction between mothers' childhood maltreatment and parenting stress was entered into Block 2, the regression equation remained significant, $F(3, 122) = 8.32, p < .001$. Although the overall regression equation (i.e., including childhood maltreatment, parenting stress, and their interaction term) was significant, the

interaction between substance-involved mothers' childhood maltreatment and current parenting stress did not emerge as a significant individual predictor of negative affect. These findings suggested that, for substance-involved mothers, both the severity of maltreatment (i.e., abuse and neglect) experienced during childhood in addition to current level of parenting stress predicted level of negative affect reported in adulthood. Nonetheless, stress was not a moderator in the relationship between childhood maltreatment and negative affect. See Table 10 for a summary of these results.

Emotion Regulation Strategies Moderating Emotion Dysregulation and Child Abuse Potential

Finally, additional regression analyses were conducted to determine whether emotion regulation strategies (i.e., cognitive reappraisal, expressive suppression, substance use as a means of coping, substance use as a means of enhancement) moderated the relationship between emotion dysregulation and child maltreatment potential. Again, according to Baron and Kenny (1986), several steps were required. To begin, all variables were standardized. The standardized independent variable (i.e., emotion dysregulation) then was multiplied by the standardized moderator variables (i.e., cognitive reappraisal, expressive suppression, substance use as a means of coping, substance use as a means of enhancement) in order to create interaction terms. Several hierarchical regressions then were performed. Each moderator (i.e., each emotion regulation strategy) was entered into separate hierarchical regression analyses so they could be examined individually. First, emotion dysregulation and emotion regulation strategies were entered into Block 1. Next, in Block 2, the interaction term needed to be significant, which would indicate that the moderating variables were active in the relationship between emotion dysregulation and

child maltreatment potential, such that this relationship varied based on the levels of each emotion regulation strategy used.

Cognitive Reappraisal Moderating Emotion Dysregulation and Child Maltreatment

Potential. To examine whether the emotion regulation strategy of cognitive reappraisal would moderate the relationship between substance-involved mothers' emotion dysregulation and child maltreatment potential, the first regression equation revealed that mothers' emotion dysregulation and cognitive reappraisal predicted significantly mothers' child maltreatment potential, $F(2, 123) = 50.77, p < .001$. When the interaction between mothers' emotion dysregulation and cognitive reappraisal was entered into Block 2, the regression equation remained significant, $F(3, 122) = 33.61, p < .001$. Although the overall regression equation (i.e., including emotion dysregulation, cognitive reappraisal, and their interaction term) was significant, the interaction between substance-involved mothers' emotion dysregulation and cognitive reappraisal did not emerge as a significant individual predictor of child maltreatment potential. These findings suggested that, for substance-involved mothers, emotion dysregulation was a strong predictor of child maltreatment potential but its effect was not influenced by varying levels of cognitive reappraisal as an emotion regulation strategy. See Table 11 for a summary of these results.

Expressive Suppression Moderating Emotion Dysregulation and Child

Maltreatment Potential. To examine whether the emotion regulation strategy of expressive suppression would moderate the relationship between substance-involved mothers' emotion dysregulation and child maltreatment potential, the first regression equation revealed that mothers' emotion dysregulation and expressive suppression predicted significantly mothers' child maltreatment potential, $F(2, 123) = 54.43, p < .001$. When the interaction between

mothers' emotion dysregulation and expressive suppression was entered into Block 2, the regression equation remained significant, $F(3, 122) = 37.35, p < .001$. Although the overall regression equation (i.e., including emotion dysregulation, expressive suppression, and their interaction term) was significant, the interaction term itself was not a significant individual predictor of child maltreatment potential. These findings suggested that, for substance-involved mothers, emotion dysregulation and expressive suppression predicted child maltreatment potential. Nonetheless, the effect of emotion dysregulation on child maltreatment potential did not vary depending on levels of expressive suppression employed by substance-involved mothers. See Table 12 for a summary of these results.

Substance Use Coping Moderating Emotion Dysregulation and Child Maltreatment Potential. To examine whether substance use coping as a form of emotion regulation would moderate the relationship between substance-involved mothers' emotion dysregulation and child maltreatment potential, the first regression equation revealed that mothers' emotion dysregulation and substance use coping predicted significantly mothers' child maltreatment potential, $F(2, 123) = 50.37, p < .001$. When the interaction between mothers' emotion dysregulation and expressive suppression was entered into Block 3, the regression equation remained significant, $F(3, 122) = 34.58, p < .001$. Although the overall regression equation (i.e., including emotion dysregulation, substance use coping, and their interaction term) was significant, the interaction between substance-involved mothers' emotion dysregulation and substance use coping did not emerge as a significant individual predictor of negative affect. These findings suggested that substance use coping did not exert an effect on the predictive relationship between emotion dysregulation and child maltreatment potential for substance-involved mothers. In other words, the relationship between mothers' emotion dysregulation and

child maltreatment potential did not vary at different levels of substance use as a means of coping (although substance use as a means of coping was restricted in range, as noted previously). See Table 13 for a summary of these results.

Substance Use Enhancement Moderating Emotion Dysregulation and Child Maltreatment Potential. Finally, to examine whether substance use emotional enhancement as a form of emotion regulation would moderate the relationship between substance-involved mothers' emotion dysregulation and child maltreatment potential, the first regression equation revealed that mothers' emotion dysregulation and substance use enhancement predicted significantly mothers' child maltreatment potential, $F(2, 123) = 52.00, p < .001$. When the interaction between mothers' emotion dysregulation and expressive suppression was entered into Block 3, the regression equation remained significant, $F(3, 122) = 34.44, p < .001$. Although the overall regression equation (i.e., including emotion dysregulation, substance use enhancement, and their interaction term) was significant, the interaction between substance-involved mothers' emotion dysregulation and substance use enhancement did not emerge as a significant individual predictor of child maltreatment potential. Such findings suggested that substance use enhancement did not exert an effect on the predictive relationship between emotion dysregulation and child maltreatment potential for substance-involved mothers. In other words, the relationship between mothers' emotion dysregulation and child maltreatment potential did not vary at different levels of substance use as a means of enhancing emotion. See Table 14 for a summary of these results.

Exploratory Analyses

The results of the proposed analyses completed above inspired additional questions regarding the unique characteristics of mothers who were substance-involved and how child

maltreatment may be best predicted in that population. In particular, we sought to determine if emotion dysregulation mediated the relationship between childhood adversity and child maltreatment potential (Smith et al., 2014), as has been noted in a previous study of mothers who were substance-involved. Additionally, exploratory analyses were used to test whether the variables of interest (i.e., childhood adversity, stress, affectivity, emotion dysregulation, and emotion regulation strategies) were predictive of actual involvement with DCF.

Mediation Analyses

It was clear from the analyses completed thus far that emotion dysregulation was a powerful driving factor in the prediction of child maltreatment potential for mothers who were substance-involved. In addition, given that emotion dysregulation was shown previously to be an outcome of childhood maltreatment (Dvir et al., 2014; Kim et al., 2013) as well as predictor of substance use (Vilhena-Churchill & Goldstein, 2014) and child maltreatment perpetration (Kelley et al., 2015), this construct was important to consider further. In fact, Smith and colleagues (2014) demonstrated that, within the general population, individuals' level of emotion dysregulation mediated the relationship between their experiences of maltreatment in childhood and their child maltreatment potential in adulthood. Given that emotion dysregulation also was intertwined so intimately with substance use, we postulated that this variable would be particularly relevant for mothers who were substance-involved. It was therefore important to examine this model within this study's sample in order to determine if these findings would be replicated.

According to Baron and Kenny's procedure (1986), a series of regression equations was performed. First, mothers' childhood adversity had to predict their emotion dysregulation (path a) as well as their child maltreatment potential (path b). In an additional regression equation,

mothers' emotion and behavior regulation needed to predict child maltreatment potential (path c). With the inclusion of mothers' emotion and behavior regulation in the final regression equation, the relationship between mothers' childhood adversity and child maltreatment potential needed to decrease to non-significance, indicating the mediational role of mothers' emotion dysregulation. This series of regression equations was conducted twice in order to examine mothers' adverse childhood experiences and childhood maltreatment as predictors separately.

Mediation 1: Adverse Childhood Experiences Predicting Emotion Dysregulation.

First, a series of regression analyses was performed to examine whether emotion dysregulation mediated the relationship between mothers' adverse childhood experiences (i.e., quantity of broad adversities experienced in childhood) and their child maltreatment potential. When examining the mediational role that emotion dysregulation played in the relationship between mothers' adverse childhood experiences and child maltreatment potential, the first regression equation revealed that mothers' adverse childhood experiences predicted their emotion dysregulation significantly, $F(1, 124) = 4.83, p < .03, R^2 = .04$

Adverse Childhood Experiences Predicting Child Maltreatment Potential. The second regression equation revealed that mothers' adverse childhood experiences predicted their child maltreatment potential significantly, $F(1, 124) = 17.13, p < .001, R^2 = .12$

Emotion Dysregulation Predicting Child Maltreatment Potential. The third regression equation revealed that mothers' emotion dysregulation predicted their child maltreatment potential significantly, $F(1, 124) = 101.55, p < .001, R^2 = .45$

Adverse Childhood Experiences and Emotion Dysregulation Predicting Child Maltreatment Potential. Finally, mothers' adverse childhood experiences and emotion dysregulation predicted significantly their child maltreatment potential $F(1, 123) = 61.45, p <$

.001, $R^2 = .50$. In particular, when entered individually, mothers' adverse childhood experiences predicted significantly their child maltreatment potential ($p < .001$). When mothers' emotion dysregulation was added to this equation, mothers' emotion dysregulation was a significant predictor of child maltreatment potential ($p < .001$), and adverse childhood experiences remained a significant predictor as well ($p < .001$). Thus, mothers' ratings of their emotion dysregulation did not mediate the relationship between their total number of adverse childhood experiences and child maltreatment potential. These results were presented in Table 15. See Figure 5 for a visual illustration of the mediation regression analyses.

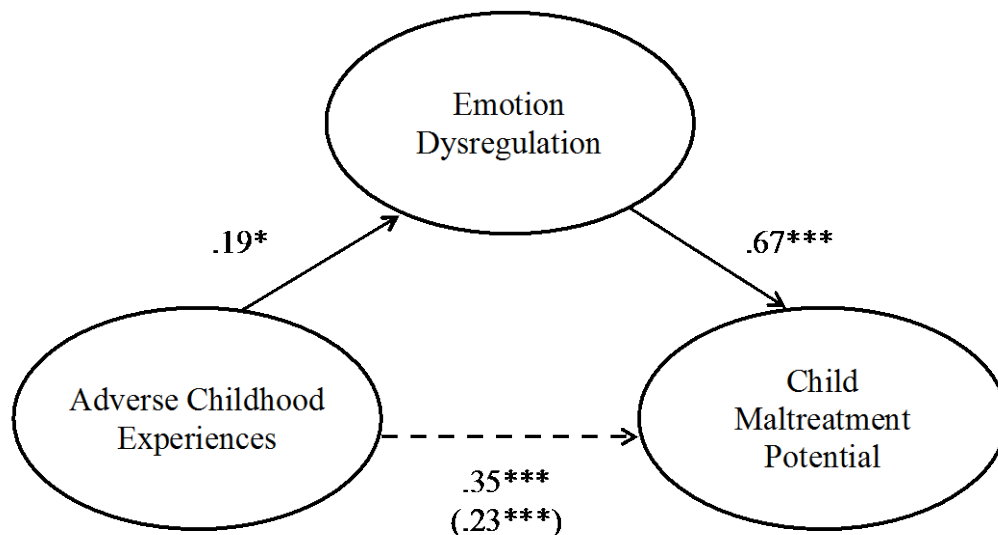


Figure 5. **Standardized Regression Coefficients for the Relationship Between Mothers' Adverse Childhood Experiences and Child Maltreatment Potential as Mediated by Emotion Dysregulation.** The standardized regression coefficient between adverse childhood experiences and child maltreatment potential, controlling for emotion dysregulation, is in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$.

Mediation 2: Childhood Maltreatment Predicting Emotion Dysregulation. For the second set of mediation analyses, a separate series of regression analyses was performed to examine whether emotion dysregulation mediated the relationship between mothers' experience of childhood maltreatment and their child maltreatment potential. When examining the mediational role that emotion dysregulation played in the relationship between mothers' childhood maltreatment and child maltreatment potential, the first regression equation revealed that mothers' childhood maltreatment predicted their emotion dysregulation significantly, $F(1, 124) = 6.66, p < .01, R^2 = .05$

Childhood Maltreatment Predicting Child Maltreatment Potential. The second regression equation revealed that mothers' childhood maltreatment predicted their child maltreatment potential significantly, $F(1, 124) = 8.67, p < .004, R^2 = .07$

Emotion Dysregulation Predicting Child Maltreatment Potential. The third regression equation revealed that mothers' emotion dysregulation predicted their child maltreatment potential significantly, $F(1, 124) = 101.55, p < .001, R^2 = .45$

Childhood Maltreatment and Emotion Dysregulation Predicting Child Maltreatment Potential. Finally, mothers' childhood maltreatment and emotion dysregulation predicted significantly their child maltreatment potential $F(1, 123) = 52.74, p < .001, R^2 = .46$. In particular, when entered individually, mothers' childhood maltreatment predicted significantly their child maltreatment potential ($p < .01$). When mothers' emotion dysregulation was added to this equation, however, childhood maltreatment decreased in significance ($p < .11$), and only mothers' emotion dysregulation was a significant predictor of child maltreatment potential ($p < .001$). Thus, mothers' ratings of their emotion dysregulation mediated the relationship between their childhood maltreatment (i.e., severity of maltreatment in childhood) and child maltreatment

potential. The mediational value of emotion dysregulation was confirmed with a significant Sobel Test ($z = 2.49, p < .01$). These results were presented in Table 16. See Figure 6 for a visual illustration of the mediation regression analyses.

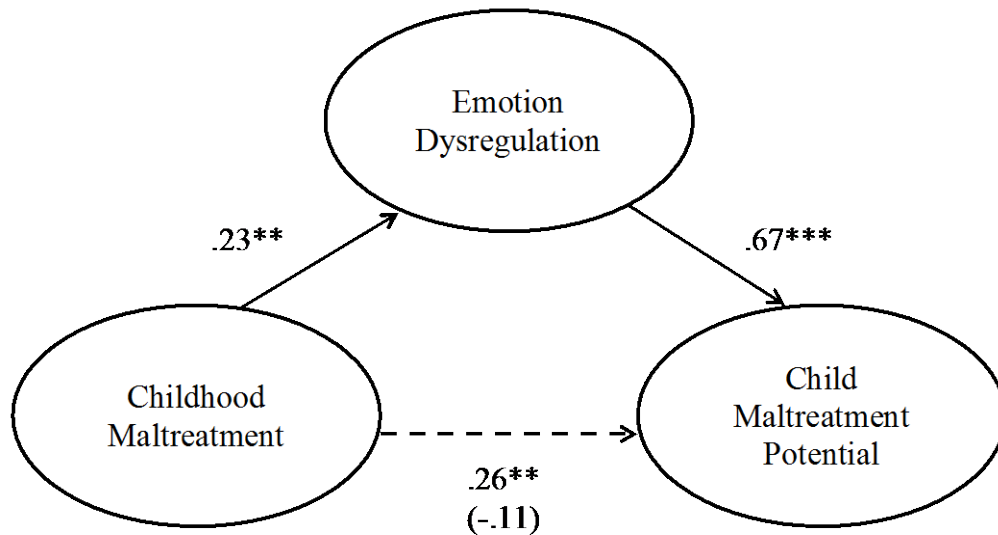


Figure 6. **Standardized Regression Coefficients for the Relationship Between Mothers' Childhood Maltreatment and Child Maltreatment Potential as Mediated by Emotion Dysregulation.** The standardized regression coefficient between childhood maltreatment and child maltreatment potential, controlling for emotion dysregulation, is in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$.

Binary Hierarchical Logistic Regression Analyses

To further examine the variables of interest as predictors of the likelihood of perpetrating child maltreatment, binary logistic hierarchical regression analyses were performed in order to predict the dichotomous outcome of involvement with the child welfare system. In other words, we were interested in determining if the variables included in the current study would be predictive of whether or not mothers had been investigated by the Department of Children and Families (DCF) due to child endangerment. As a result, the dichotomous variable of *DCF*

Involvement was used as a more proximal outcome variable in the prediction of child maltreatment and served as the criterion variable for these analyses. Similar to the hierarchical linear regression analyses, two separate sets of analyses were conducted, with ACEs and childhood maltreatment being entered independently in Block 1.

ACEs. For the first logistic regression analysis, mothers' ACEs were entered into Block 1, parenting stress was entered into Block 2, affectivity was entered into Block 3, emotion dysregulation was entered into Block 4, and emotion regulation strategies were entered into Block 5. In Block 1, the overall comprehensive logistic regression model was significant, $\chi^2(1) = 5.05, p < .03$. The model explained 5.4% of the variance in mothers' DCF involvement and correctly classified 67.5% of cases. Specifically, mothers' ACEs score was associated significantly with mothers' DCF involvement ($B = .18$, Wald = 4.81, $p < .03$, 95% CI [1.02, 1.41]). The odds ratio was 1.20, which indicated that for every one point increase in mothers' ACEs score, the odds of being involved with DCF is 1.20 times more likely. In Block 2, the overall comprehensive logistic regression model was marginally significant, $\chi^2(2) = 5.11, p < .08$. The model explained 5.5% of the variance in mothers' DCF involvement and correctly classified 67.5% of cases. Specifically, mothers' ACEs score was associated significantly with DCF involvement ($B = .18$, Wald = 4.85, $p < .03$, 95% CI [1.02, 1.41]), whereas mothers' parenting stress was not associated significantly with DCF involvement ($B = -.00$, Wald = .05, $p < .82$, 95% CI [.98, 1.01]). In Block 3, the overall comprehensive logistic regression model was not significant $\chi^2(4) = 5.16, p < .27$. The model explained 5.5% of the variance in DCF involvement and correctly classified 66.7% of cases. Specifically, mothers' ACEs score was associated significantly with DCF involvement ($B = .18$, Wald = 4.47, $p < .04$, 95% CI [1.01, 1.43]). In contrast, parenting stress ($B = -.00$, Wald = .01, $p < .92$, 95% CI [.98, 1.02]), positive

affect ($B = .00$, Wald = .03, $p < .86$, 95% CI [.96, 1.06]), and negative affect ($B = -.00$, Wald = .01, $p < .91$, 95% CI [.95, 1.05]) were not associated significantly with DCF involvement.

In Block 4, the overall comprehensive logistic regression model was not significant $\chi^2(5) = 7.84$, $p < .17$. The model explained 8.3% of the variance in DCF involvement and correctly classified 69.0% of cases. Specifically, mothers' ACEs score was associated significantly with DCF involvement ($B = .20$, Wald = 5.02, $p < .03$, 95% CI [1.03, 1.45]). In contrast, parenting stress ($B = .01$, Wald = .32, $p < .57$, 95% CI [.98, 1.03]), positive affect ($B = -.00$, Wald = .03, $p < .87$, 95% CI [.95, 1.05]), negative affect ($B = .02$, Wald = .29, $p < .59$, 95% CI [.96, 1.07]), and emotion dysregulation ($B = -.02$, Wald = 2.63, $p < .11$, 95% CI [.96, 1.00]) were not associated significantly with DCF involvement. Finally, in Block 5, the overall comprehensive logistic regression model was not significant $\chi^2(9) = 11.24$, $p < .26$. The model explained 11.8% of the variance in DCF involvement and correctly classified 67.5% of cases. Specifically, mothers' ACEs score was associated significantly with DCF involvement ($B = .19$, Wald = 4.36, $p < .04$, 95% CI [1.01, 1.45]). In contrast, parenting stress ($B = .00$, Wald = .02, $p < .89$, 95% CI [.98, 1.03]), positive affect ($B = -.02$, Wald = .49, $p < .49$, 95% CI [.93, 1.04]), negative affect ($B = .01$, Wald = .24, $p < .62$, 95% CI [.96, 1.07]), emotion dysregulation ($B = -.02$, Wald = 2.04, $p < .15$, 95% CI [.96, 1.01]), cognitive reappraisal ($B = .01$, Wald = .03, $p < .87$, 95% CI [.91, 1.12]), expressive suppression ($B = .04$, Wald = .61, $p < .43$, 95% CI [.95, 1.14]), substance use coping ($B = .01$, Wald = .03, $p < .87$, 95% CI [.91, 1.12]), and substance use enhancement ($B = .02$, Wald = .22, $p < .64$, 95% CI [.93, 1.13]) were not associated significantly with DCF involvement. See Table 17 for a summary of these results.

Childhood Maltreatment. For the second logistic regression analysis, mothers' childhood maltreatment was entered into Block 1, parenting stress was entered into Block 2,

affectivity was entered into Block 3, emotion dysregulation was entered into Block 4, and emotion regulation strategies were entered into Block 5. In Block 1, the overall comprehensive logistic regression model was not significant, $\chi^2(1) = 1.15, p < .28$. The model explained 1.3% of the variance in mothers' DCF involvement and correctly classified 65.1% of cases. Specifically, mothers' childhood maltreatment was not associated significantly with mothers' DCF involvement ($B = .01, \text{Wald} = 1.13, p < .29, 95\% \text{ CI } [.99, 1.03]$). In Block 2, the overall comprehensive logistic regression model was not significant, $\chi^2(1) = 1.15, p < .56$. The model explained 1.3% of the variance in mothers' DCF involvement and correctly classified 65.1% of cases. Specifically, mothers' childhood maltreatment ($B = .01, \text{Wald} = 1.12, p < .29, 95\% \text{ CI } [.99, 1.03]$) and parenting stress ($B = .00, \text{Wald} = .00, p < .98, 95\% \text{ CI } [.98, 1.02]$) were not associated significantly with DCF involvement. In Block 3, the overall comprehensive logistic regression model was not significant $\chi^2(1) = 1.39, p < .85$. The model explained 1.5% of the variance in DCF involvement and correctly classified 65.1% of cases. Specifically, mothers' childhood maltreatment ($B = .01, \text{Wald} = .92, p < .34, 95\% \text{ CI } [.99, 1.03]$), parenting stress ($B = .00, \text{Wald} = .00, p < .99, 95\% \text{ CI } [.98, 1.02]$), positive affect ($B = .01, \text{Wald} = .14, p < .71, 95\% \text{ CI } [1.01, 1.06]$), and negative affect ($B = .01, \text{Wald} = .14, p < .71, 95\% \text{ CI } [.96, 1.06]$) were not associated significantly with DCF involvement.

In Block 4, the overall comprehensive logistic regression model was not significant $\chi^2(1) = 4.24, p < .52$. The model explained 4.6% of the variance in DCF involvement and correctly classified 64.3% of cases. Specifically, mothers' childhood maltreatment ($B = .01, \text{Wald} = 1.65, p < .20, 95\% \text{ CI } [.99, 1.04]$), parenting stress ($B = .01, \text{Wald} = .47, p < .50, 95\% \text{ CI } [.99, 1.03]$), positive affect ($B = .00, \text{Wald} = .00, p < .98, 95\% \text{ CI } [.95, 1.05]$), negative affect ($B = .03, \text{Wald} = .99, p < .32, 95\% \text{ CI } [.97, 1.08]$), and emotion dysregulation ($B = -.02, \text{Wald} = 2.78, p < .10$,

95% CI [.96, 1.00]) were not associated significantly with DCF involvement. Finally, in Block 5, the overall comprehensive logistic regression model was not significant $\chi^2(1) = 8.52, p < .92$. The model explained 9.0% of the variance in DCF involvement and correctly classified 65.1% of cases. Specifically, mothers' childhood maltreatment ($B = .02$, Wald = 1.77, $p < .18$, 95% CI [.99, 1.04]), parenting stress ($B = .00$, Wald = .05, $p < .82$, 95% CI [.98, 1.03]), positive affect ($B = -.02$, Wald = .36, $p < .55$, 95% CI [.93, 1.04]), negative affect ($B = .02$, Wald = .73, $p < .39$, 95% CI [.97, 1.08]), emotion dysregulation ($B = -.02$, Wald = 2.64, $p < .10$, 95% CI [.96, 1.00]), cognitive reappraisal ($B = .03$, Wald = .03, $p < 1.38$, 95% CI [.98, 1.09]), expressive suppression ($B = .05$, Wald = .92, $p < .34$, 95% CI [.95, 1.15]), substance use coping ($B = .03$, Wald = .24, $p < .61$, 95% CI [.93, 1.13]), and substance use enhancement ($B = .03$, Wald = .26, $p < .61$, 95% CI [.93, 1.13]) were not associated significantly with DCF involvement. See Table 18 for a summary of these results.

CHAPTER FOUR: DISCUSSION

The overall objective of the current study was to shed light on the prediction of child maltreatment potential for mothers who were substance-involved in an effort to understand the intergenerational transmission of adversity within this population. Variables of interest in the current study included mothers' childhood adversity, stress, affectivity, emotion dysregulation, and emotion regulation strategies. By identifying characteristics that perpetuate the cycle of adversity, it was hoped that our findings would serve to inform appropriate interventions for this particularly at-risk population.

Relationships Among the Variables of Interest

Correlational results provided support for the hypotheses that substance-involved mothers' childhood adversity was related significantly to their child maltreatment potential. Those who reported higher degrees of ACEs and childhood maltreatment indeed endorsed a higher likelihood of perpetrating maltreatment. In terms of the mechanisms of action that were hypothesized to be active within that relationship, higher levels of ACEs and childhood maltreatment were related to greater negative affect and greater emotion dysregulation. The lack of a significant relationship between childhood adversity and positive affect could be explained by the moderating influence of parenting stress between these two variables (see below for further discussion of this phenomenon). Interestingly, higher levels of ACEs (but not childhood maltreatment) were related to greater substance use coping. In contrast, neither ACEs nor childhood maltreatment were related significantly to other emotion regulation strategies (i.e., cognitive reappraisal, expressive suppression, substance use enhancement).

Importantly, both childhood adversity and child maltreatment potential were related to mothers' negative affect and emotion dysregulation. These findings support Smith and

colleagues' (2014) choice to examine negative affect and emotion dysregulation as distinct psychological processes that both result from and lead to childhood adversity. Our results are in agreement that these are intermediary factors that drive the alternating pattern of adversity and substance use.

For mothers who were substance-involved, higher levels of stress were related to higher negative affect, lower positive affect, greater emotion dysregulation, greater substance use coping, and higher child maltreatment potential. These relationships were highly consistent with recent research demonstrating that parenting stress was related to higher levels of negative affect, with these variables predicting increased parental aggression toward children (Berkout & Kolko, 2016). Next, higher levels of negative affect were related to higher levels of emotion dysregulation, and both of these were related to higher child maltreatment potential in the current study. Conversely, higher levels of positive affect were related to lower levels of emotion dysregulation, and both of these were related to lower child maltreatment potential. These results were supported by previous studies demonstrating that negative affect and emotion dysregulation were related but separate constructs (Bradley, DeFife, Guarnaccia, Phifer, Fani, Ressler, & Westen, 2011). In turn, negative affect and emotion dysregulation were related to child maltreatment potential, as consistent with other current research (Bradley, 2011; Smith et al., 2014). Similar to our previous findings in a national community sample (e.g., Lowell & Renk, 2017), our correlations for mothers who were substance-involved in the current sample suggested that higher levels of cognitive reappraisal were related to lower child maltreatment potential and that higher levels of expressive suppression were related to higher child maltreatment potential.

Substance use as a form of emotion regulation (i.e., coping and enhancement) demonstrated few significant relationships with other variables in the current study. Consistent with previous literature (Mezquita et al., 2011), however, this finding was due in part to the fact that all participants were in treatment for substance use disorders and therefore provided a limited range of responses at the highest end on this measure (i.e., endorsing that they almost always used substances as a means of coping with negative emotions or increasing positive emotions). Nonetheless, substance use coping was indeed related to ACEs (but not childhood maltreatment) and emotion dysregulation in the current study. In contrast to our findings, studies of nonclinical samples indicated that women's substance use coping was related to childhood maltreatment specifically (Goldstein, Flett, & Wekerle, 2010).

Prediction of Child Maltreatment Potential Using the Variables of Interest

Further, this study examined the prediction of child maltreatment potential for mothers who were substance-involved. In hierarchical linear regression analyses, childhood adversity, parenting stress, affectivity, emotion dysregulation, and emotion regulation strategies were entered as predictors of child maltreatment potential. Given the multicollinear relationship between mothers' ACEs and childhood maltreatment, two separate hierarchical regression analyses were conducted with ACEs and childhood maltreatment being entered into Block 1 independently. For the first hierarchical regression analysis, ACEs, parenting stress, positive affect, negative affect, and emotion dysregulation served as significant individual predictors of child maltreatment potential. For the second hierarchical regression analysis (where childhood maltreatment served as the childhood adversity variable), similar results were found. In this analysis, childhood maltreatment, parenting stress, positive affect, negative affect, and emotion dysregulation again served as significant individual predictors of child maltreatment potential.

These results suggested that mothers' ratings of their own history of childhood adversity, level of parenting stress, affect, and emotion dysregulation all provided unique incremental variance in the prediction of substance-involved mothers' child maltreatment potential. Similar to previous findings, substance-involved mothers were at particular risk of exhibiting high child maltreatment potential if they had experienced childhood adversity (Appleyard et al., 2011) and also were experiencing high levels of parenting stress (Chaplin & Sinha, 2013; Rutherford, Potenza, & Mayes, 2013) as well as low levels of positive affect, high levels of negative affect, and high levels of emotion dysregulation currently (i.e., depressive symptoms; Kelley et al., 2015). Such findings supported the notion that there was an intergenerational transmission of adversity for individuals who were substance-involved. In addition, these results suggested that child maltreatment does not simply beget child maltreatment. Rather, the findings provided evidence in support of the hypotheses that there were variables that were active in the path that lead from mothers' own experience of adversity in childhood and their likelihood of perpetuating that cycle with their own children.

Upon further examination of the hierarchical regression that utilized childhood maltreatment as the childhood adversity predictor, it was evident that mothers' ratings of their childhood maltreatment, parenting stress, positive affect, and negative affect decreased in significance when emotion dysregulation was added to the equation. In fact, childhood maltreatment and positive affect no longer served as significant predictors of child maltreatment potential when emotion dysregulation was added to the equation. Similarly, when mothers' ACEs score was used as the childhood adversity predictor variable, ACEs, parenting stress, positive affect, and negative affect decreased in significance when emotion dysregulation was

entered into the equation. Unlike childhood maltreatment, ACEs remained a significant predictor of child maltreatment potential.

To understand these diverging results, we look to the nuanced similarities and differences between the ACEs and childhood maltreatment variables. As noted above, the ACEs questionnaire assessed the presence or absence of several categories of childhood adversity and yielded a total score based on the quantity of adversities to which participants were exposed. In contrast, the CTQ assessed the severity of adversity experienced. In addition, childhood maltreatment describes a small subset of ACEs referring specifically to abuse and neglect, whereas ACEs encompasses childhood maltreatment as well as household dysfunction (i.e., parental mental illness, substance use, incarceration, divorce, and domestic violence). Also of note, items on the CTQ did not all assess the perpetrators of childhood maltreatment, and participants were able to endorse childhood maltreatment that occurred via their parents as well as individuals outside of the family. In contrast, all items on the ACEs questionnaire refer explicitly to adversities that were present within the family of origin (i.e., respondents' attachment figures). Our results suggested that the number of adversities perpetrated by caregivers within the context of a dysfunctional household was directly predictive of mothers' child maltreatment potential. In contrast, mothers' experienced severity of childhood maltreatment across perpetrators and contexts was predictive of child maltreatment potential, but these effects were absorbed by intermediary variables (i.e., parenting stress, negative affect, emotion dysregulation).

These results are supported by research showing that adversity occurring within the family is a stronger predictor of negative outcome than maltreatment occurring extrafamilially (Cantón-Cortés, & Cantón, 2010). In addition, others have demonstrated that the number of

stressors or adversities faced is more predictive of child maltreatment potential than severity of exposure (Begle et al., 2010). Overall, these findings depicted the strong predictive relationship that childhood adversity has with child maltreatment potential as well as the role that emotion dysregulation exerts within the intergenerational transmission of child maltreatment (but not necessarily ACEs) for those who are substance-involved.

Interactions Among Variables of Interest in the Prediction of Child Maltreatment Potential

Moderation analyses were performed in order to examine several specific interactions that would fine-tune the prediction of child maltreatment potential for mothers who were substance-involved. In particular, regression analyses were conducted to determine whether parenting stress would moderate the relationship between mothers' childhood adversity and affectivity. Results from these analyses suggested that ACEs and childhood maltreatment did not predict positive affect. In contrast, ACEs and childhood maltreatment both predicted negative affect. With regard to the interaction of childhood adversity and parenting stress, only one interaction term emerged as a significant predictor of affectivity. In particular, when examining parenting stress as a moderator in the relationship between childhood maltreatment and positive affect, the interaction of childhood maltreatment and parenting stress was a significant predictor. As a result, consistent with the hypotheses, parenting stress was determined as active in this relationship.

In contrast to the hypotheses, the characteristics of this moderation were opposite from what would be expected. Specifically, we hypothesized that childhood maltreatment would predict low levels of positive affect, with this effect being even more robust when high levels of parenting stress were introduced. The results of slopes analysis demonstrated, however, that at high levels of childhood maltreatment, increasing levels of parenting stress predicted higher

levels of positive affect. This pattern may be explained by the possibility that individuals with the highest degrees of childhood maltreatment might experience incongruent affect in the face of high stress situations as a form of emotion dysregulation. The possibility of personality disorders occurring within our sample also should be considered, given that childhood adversity is one strong etiological factor in the development of personality disorders, particularly borderline personality disorder (Elices, Pascual, Carmona, Martín-Blanco, Feliu-Soler, Ruiz, & ... Soler, 2015; Westbrook & Berenbaum, 2017), and given that substance use disorders and personality disorders are often comorbid (Carpenter, Wood, & Trull, 2016). This is important to take into consideration within the context of our moderation results, given that individuals with personality disorders experience emotions and express affect in an atypical, maladaptive, sometimes incongruent manner (Kuo, Fitzpatrick, Metcalfe, & McMain, 2016), which may have influenced the outcome of our model. Further, recent research indicated that, compared to mothers who reported lower levels of childhood abuse, mothers who reported higher levels of childhood abuse were less able to adapt to emotional conflict and stress (Caldwell, Krug, Carter, & Minzenberg, 2014). This inability to adapt to emotional conflict may be related to maltreated individuals' reports of higher levels of positive affect as a form of adaptation to high levels of stress.

Another possibility is that this finding could be considered a *defense*, or a mental process that occurs outside of awareness in order to manage anxiety or distress (Vaillant, 2000). This idea is consistent with previous findings that individuals with childhood sexual abuse histories utilized significantly greater degrees of image-distorting defenses (i.e., distortion or misattribution of self image) than those who did not have history of sexual abuse (Callahan & Hilsenroth, 2005). Accordingly, mothers in this sample who reported a high severity of

childhood maltreatment may have endorsed greater positive affect in an attempt to minimize the compounded distress that they were experiencing in relation to high levels of parenting stress. In contrast, mothers who did not report high levels of childhood maltreatment but who reported high levels of current parenting stress were perhaps more realistic in their reports of lower levels of positive affect. It could be that those who did not experience childhood maltreatment were not employing similar image-distorting defenses as were shown previously to be employed by those with maltreatment histories (Callahan & Hilsenroth, 2005).

Additional moderation analyses were conducted to examine the effect that emotion regulation strategies would exert in the relationship between mothers' emotion dysregulation and their child maltreatment potential. Within these analyses, emotion dysregulation consistently predicted child maltreatment potential. In addition, expressive suppression was a significant individual predictor of child maltreatment potential, whereas cognitive reappraisal, substance use coping, and substance use enhancement were not significant individual predictors of child maltreatment potential. In addition, contrary to the hypotheses of the current study, none of the interaction terms (i.e., emotion dysregulation * cognitive reappraisal; emotion dysregulation * expressive suppression; emotion dysregulation * substance use coping; emotion dysregulation * substance use enhancement) emerged as significant predictors of child maltreatment potential. Thus, mothers' emotion regulation strategies did not moderate the relationship between mothers' emotion dysregulation and their child maltreatment potential. In other words, cognitive reappraisal, expressive suppression, substance use coping, and substance use enhancement did not alter mothers' propensity to report higher levels of child maltreatment potential at differing levels of emotion dysregulation. As noted above, mothers' responses on the substance use coping and substance use enhancement subscales fell within a restricted range. Given this lack of

variability, relationships and interactions with other variables of interest may have been less likely. Therefore, the lack of significant moderation findings was not surprising.

It was hoped that significant moderation results would elucidate which emotion regulation strategies might serve as appropriate targets of intervention to reduce child maltreatment potential and prevent child maltreatment perpetration. Nonetheless, it was clear that emotion dysregulation was a very powerful predictor of child maltreatment potential and that the emotion regulation strategies measured in this study were not related to its impact. This is not to say that emotion regulation skills are not a worthy target for intervention in this population. Rather, we postulate that the emotion regulation strategies measured in the current study do not necessarily represent the types of skills that have been shown previously to influence emotion dysregulation in clinical samples. For example, *Dialectical Behavioral Therapy (DBT)* (Linehan, 2015) has been shown by several randomized controlled trials to ameliorate emotion dysregulation for individuals with substance use disorders (Dimeff & Linehan, 2008). This treatment addresses emotion dysregulation by teaching emotion regulation skills including: understanding the functions of emotions; identifying obstacles to changing emotions; identifying and labeling emotions; checking the facts; problem solving; opposite action; building mastery and learning to cope ahead; mindfulness of current emotions; identifying one's typical point of emotional breakdown; taking care of the body; and accumulating positive emotions (Linehan, 2015). The clinical change that occurs as a result of engaging in such emotion regulation strategies tells a far more complex story than the two categories of emotion regulation measured in the current study (i.e., cognitive reappraisal and expressive suppression).

Exploratory analyses then were conducted in order to enhance the prediction of child maltreatment potential based on the results of the proposed analyses completed above. Given that emotion dysregulation was such a strong predictor of child maltreatment potential in the current study and given its close theoretical and empirical ties to childhood adversity, substance use, and child maltreatment perpetration, it was imperative to examine further. In particular, we sought to determine if the findings of Smith and colleagues (2014) would be replicated within this group of mothers who were substance-involved. Specifically, emotion dysregulation was examined as a potential mediator in the relationship between childhood adversity and child maltreatment potential. Results demonstrated that emotion dysregulation indeed mediated the relationship between childhood maltreatment and child maltreatment potential for mothers who were substance-involved. In other words, the path that lead from severity of maltreatment experiences in childhood and heightened maltreatment potential in adulthood could be explained through substance-involved mothers' emotion dysregulation. Therefore, we can surmise that childhood maltreatment is related indirectly to an elevated likelihood of perpetrating maltreatment, and this process is enacted through emotion dysregulation. Given that women in substance use treatment who report high levels of childhood maltreatment are likely to exhibit heightened child maltreatment potential due to their elevated emotion dysregulation, these significant mediation results confirm the importance of addressing emotion dysregulation as a primary treatment target for this population. Fortunately, previous research has shown that trauma-informed psychotherapy that also targets emotion dysregulation provides benefit for those who have experienced childhood sexual abuse (Bohus, Dyer, Priebe, Krüger, Kleindienst, Schmahl, Niedtfeld, & Steil, 2013). In the context of parenting specifically, a recent case study also demonstrated modest improvements in emotionally dysregulated mothers' parenting behaviors

following participation in emotion regulation skills training (Martin, Roos, Zalewski, & Cummins, 2016).

Interestingly, emotion dysregulation did not mediate the relationship between ACEs and child maltreatment potential. Both ACEs and emotion dysregulation were significant individual predictors of child maltreatment potential; however, when entered hierarchically, ACEs did not decrease in significance when emotion dysregulation was entered into the equation. In other words, ACEs remained a significant predictor of child maltreatment potential even after controlling for the effects of emotion dysregulation. In contrast to our findings that emotion dysregulation mediated the relationship between childhood maltreatment and child maltreatment potential, ACEs were directly predictive of child maltreatment potential regardless of emotion dysregulation. Findings such as these suggest that addressing emotion dysregulation may still be a fruitful avenue for treatment; however, given that ACEs remained a strong predictor of child maltreatment potential, it likely would be beneficial to take a trauma-informed and reflective approach to address the influences of ACEs directly to reduce child maltreatment potential. In conjunction with such intervention, a systems-level preventive stance aimed at reducing children's exposure to ACEs in the first place is necessary to reduce the need for substance use treatment and child maltreatment intervention.

Social learning theory (Bandura, 1977) provides one explanation for our finding that mothers often engage in behaviors that lead to DCF involvement in adulthood after experiencing adversity in childhood. This school of thought holds that individuals acquire and engage in behaviors that they have observed and then imitate within a social or family context. Thus, mothers may engage in abusive or neglectful behaviors that they learned from their own parents through observation. Attachment theory (Bowlby, 1980) provides yet another explanation for

why childhood maltreatment can lead to emotion dysregulation and subsequent elevated child maltreatment potential. Attachment theory holds that infants use their caregivers as secure bases from which to explore the world and obtain emotional reassurance and physical safety in the face of threats. As noted above, attachment can be conceptualized as “the dyadic regulation of emotion” (Sroufe, 1996, p. 172). Infants thus learn to regulate their emotions within the context of the caregiving relationship (Cicchetti & Toth, 1995). When infants do not have the experience of a secure attachment relationship with a caregiver who can help the infant regulate emotions in the face of stress, however, emotion dysregulation becomes more likely and increasingly chronic.

Interactions among these psychological constructs becomes even more compelling when biological bases for these interactions also are considered. For example, a recent study indicated that a cascade of risk begins with mothers’ experience of ACEs, which subsequently increases their infants’ physical and emotional problems via biomedical and psychosocial mechanisms, respectively (Madigan, Wade, Plamondon, Maguire, & Jenkins, in press). In addition, researchers are beginning to understand the epigenetics of how adversity in childhood (especially during early critical periods) alters gene expression to make subsequent generations biologically more susceptible to being emotionally dysregulated or engaging in risky, impulsive behavior. For example, animal research demonstrated recently that parents who experienced early adversity can go on to have offspring who become substance dependent due to altered genetic expression that was changed as a result of the parents’ early adversity (Cadet, 2016; Montalvo-Ortiz, Gelernter, Hudziak, & Kaufman, 2015; Philibert & Erwin, 2015). There still is more to be learned regarding the epigenetics of how gene expression may be altered in future generations as a result of substance use by parents and how psychosocial treatments may provide benefit.

Implications

Based on these results, in terms of child maltreatment prevention and intervention, individual psychotherapy with mothers who are substance-involved and who report high levels of childhood adversity should focus on both teaching emotion regulation skills as well as providing time and space to process and reflect on early childhood experiences. For example, as noted above, skills training components of DBT (Linehan, 2015) would be useful to address emotion dysregulation. In addition, if posttraumatic stress symptomatology is present, trauma-informed treatments such as *Cognitive Processing Therapy (CPT)* (Resick, Monson & Chard, 2016) may be beneficial. Parenting interventions that promote reflection on how mothers' own childhood experiences and adversity have influenced their current parenting behaviors, such as *Circle of Security (CoS)* (Powell, Cooper, Hoffman, & Marvin, 2014), also provide benefit. For example, a recent meta-analytic study found that participation in CoS was related to improvements in child attachment security, quality of caregiving, caregiver depression, and caregiver self-efficacy (Yaholkoski, Hurl, & Theule, 2016). Fortunately, the effectiveness of *Circle of Security* at lowering child maltreatment potential is being researched currently for mothers who are substance-involved (Renk, Boris, Lowell, Kolomeyer, Cunningham, & Khan, 2016). In addition, for mothers who have already perpetrated child maltreatment (including neglect as a result of engaging in substance use) and who are at risk for having their parental rights terminated, reflective relationship-based treatments such as *Child-Parent Psychotherapy (CPP)* (Lieberman, Gosh Ippen, Van Horn, 2016) are being utilized in the child welfare system across the country with encouraging outcomes. Specifically, the *Zero to Three Safe Babies Court Team* approach, which utilizes CPP, has demonstrated promising research evidence in the

successful reunification of young children with their families following maltreatment (California Evidence-Based Clearinghouse for Child Welfare, 2016; McCombs-Thornton, & Foster, 2012).

Fortunately, relationship-oriented interventions that focus on addressing attachment difficulties in mothers with substance-use problems and their young children have been developed for this population in particular. *Mothering from the Inside Out (MIO)* (Suchman, DeCoste, Ordway, & Bers, 2013; Suchman, Ordway, de las Heras, & McMahon, 2016) is one such intervention. In particular, this treatment was developed for substance-involved mothers of children who are 0- to 3-years of age in order to improve caregiving behavior and thereby enhance parent-child relationships and improve child outcomes. This 12-week individual parenting intervention utilizes a mentalization-based approach that targets reflective functioning and representational quality of mothers with substance use problems and other mental illnesses. To address these targets, this approach encourages mothers to reflect on their own internal states and their children's inner lives. It also aims to increase mothers' ability to recognize and modulate negative affect (i.e., regulate emotions) in high-stress parenting situations. There is emerging empirical evidence for the efficacy of MIO for mothers in treatment for substance use problems. For example, following participation in MIO, improvements were noted in mothers' capacity for reflective functioning, representational quality (i.e., more balanced internal working models of attachment to their young children), and caregiving behavior (Suchman, DeCoste, Castiglioni, McMahon, Rounsaville, & Mayes, 2010; Suchman, DeCoste, McMahon, Rounsaville, & Mayes, 2011). Interestingly, reflective functioning and representational quality were related uniquely to improvement in caregiving behavior, even when other mechanisms of change (e.g., abstinence from substance use, reduced depressive symptoms) were considered (Suchman, DeCoste, Rosenberger, & McMahon, 2012). As a result, these results suggested that,

in addition to mental health treatment, parenting intervention that utilizes a reflective, mentalization-based approach is necessary to improve parenting behaviors and thereby reduce child maltreatment potential for mothers who are substance-involved.

Though such treatments were shown to improve parenting behaviors, it is not yet clear whether such approaches actually reduce rates of child maltreatment perpetration, involvement with the child welfare system, or termination of parental rights. In addition, the studies mentioned above do not account for mothers' childhood adversity as a subject variable that may affect treatment outcome. Therefore, additional exploratory analyses in the current study sought to determine which of the variables of interest, including childhood adversity, would predict substance-involved mothers' actual self-reported involvement with DCF. Similar to the linear hierarchical regression analyses, ACEs and childhood maltreatment were examined separately as childhood adversity variables. Overall, only ACEs predicted whether or not mothers were involved with DCF. Childhood maltreatment, stress, affectivity, emotion dysregulation, and emotion dysregulation strategies did not predict this dichotomous outcome.

Again, these findings pointed to the direct influence that ACEs have on outcome. As discussed above, ACEs were predictive of child maltreatment potential directly, whereas childhood maltreatment was not. The same is true for the prediction of DCF involvement. This direct relationship can be attributed to the quantity of adversities experienced that were related to caregivers' actions within the context of household dysfunction. These were far stronger indicators of DCF involvement than the severity of maltreatment experienced regardless of perpetrator or context.

Such results harken back to Kaufman and Zigler's (1987) assertion that "being maltreated as a child puts one at risk for becoming abusive, but the path between these two points is far

from direct or inevitable” (p.190). We concluded that the path between exposure to maltreatment in childhood and DCF involvement with one’s own children in parenthood is indeed indirect and is influenced by mediating variables (particularly emotion regulation). It did appear, however, that the path leading from ACEs in childhood to DCF involvement with one’s own children in parenthood was direct in this study. As a result, our findings highlighted the importance of dedicating resources to the prevention of ACEs so that rates of substance use and DCF involvement decrease, and the cycle of adversity does not continue when children mature and become parents. Though the path leading from ACEs to DCF involvement is direct, prevention efforts may serve as the best investment for reducing the inevitability of this pattern.

Limitations

The findings of the current study should be interpreted within the context of its limitations. First, the sample was relatively homogeneous, with a majority of participants being Caucasian, low income, opiate using mothers. As a result, findings are less generalizable than would be the case if a more heterogeneous group was surveyed. Nonetheless, our sample was highly representative of the demographics of opiate users nationally (Centers for Disease Control and Prevention, 2015; Cicero et al., 2014), and findings can thus be thought of as generalizable to the population of opiate users in the United States. Next, mothers were chosen for the current study due to the fact that they were identified as having maltreated children more frequently than fathers in national statistics (U.S. Department of Health and Human Services, 2015). As a result, the findings are not necessarily generalizable to fathers of young children who are also substance-involved, and future researchers may wish to include male participants to determine if results are similar for the other sex.

In terms of generalizability, another point to consider was the fact that all mothers who completed this study were participating actively in substance use intervention and were receiving methadone treatment. This finding is noteworthy, given that methadone was shown previously to blunt both positive and negative affect (Savvas, Somogyi, & White, 2012). Such responses to methadone may possibly have influenced participants' ratings of their positive and negative affect in the current study. This type of response was mainly evident at *peak plasma methadone concentration* (i.e., 3 hours post-dose), whereas emotional reactivity of individuals on methadone was similar to that of controls during the pre-dose period. As a result, it is less likely that this blunting of affect was a confound in the current study, given that participants were surveyed for this study immediately (i.e., within minutes) after receiving their dose of methadone.

Given guidelines for best practice (Kleber, Weiss, Anton, George, Greenfield, Kosten, ... & Hennessy, 2007), the psychotherapy that participants were receiving as part of their substance use treatment should have involved cognitive-behavioral principles, such as emotion regulation skills training and anger management. Some participants also may have participated previously or were participating currently in parenting intervention. The characteristics of parenting intervention that participants were receiving varied. Some parenting interventions that participants spoke about receiving were behavioral and skills-based, whereas some were receiving parenting intervention that was reflective and relationship-oriented. Overall, such treatment effects were not accounted for in the current study and may serve as possible confounds. Nonetheless, the results of the study are applicable to those in treatment but may not hold true for individuals who are engaging in active substance use and who likely present with even higher risk for elevated maltreatment potential.

Participants also provided self-report ratings on the variables of interest, and such information cannot be assumed to be completely accurate due to the possibility that mothers in the sample may have provided answers in a socially desirable or defensive manner. Self-report measurement is considered the gold-standard data collection strategy in substance use research today, however, with such methods demonstrated as reliable and valid for individuals with substance use disorders (Murphy, Hser, Huang, Brecht, & Herbeck, 2010; Napper, Fisher, Johnson, & Wood, 2010).

Conclusions

Despite these limitations, the results of the current study added substantially to our understanding of the intergenerational transmission of adversity within the substance-involved population. The results highlighted the idea that emotion dysregulation is the nexus of the issues of childhood adversity, substance use, and child maltreatment potential. As such, it is an essential target for intervention with this population. Nonetheless, given that ACEs remained a significant predictor of child maltreatment potential within hierarchical linear regression analyses and mediation analyses, and given that ACEs predicted mothers' DCF involvement even when other mechanisms of action were included, it is imperative to take a trauma-informed approach in order to decrease child maltreatment potential. Further, prevention of ACEs altogether remains an important way to reduce substance use and child maltreatment perpetration.

Future Directions

Future research should continue examining the relationships among these variables further in order to uncover the nuances of how adversity is transmitted from generation to generation within the substance-involved population. In particular, prospective longitudinal research would be ideal in this field of study. For example, researchers may consider recruiting

pregnant women who are substance-involved and follow their (and their children's) trajectories by measuring and tracking actual maltreatment perpetration in addition to other parent characteristics (e.g., childhood adversity, stress, emotion dysregulation, income, social support, trauma in adulthood), child characteristics (e.g., neonatal abstinence syndrome, premature birth, temperament), and relationship characteristics (e.g., attachment, internal working models, attributions). In addition to the benefits of conducting longitudinal research, such projects would be enhanced by utilizing observational, interview, and cross-informant data collection methods. Results from these studies may serve to corroborate the findings of the current study and provide richer, more robust evidence of the mechanisms at play identified here.

In addition, it would be beneficial to measure more accurately emotion regulation strategies in order to determine which strategies indeed might influence the strong predictive relationship between emotion dysregulation and child maltreatment potential. Once these trends and relationships have been established more clearly through cross-sectional correlational studies, pilot studies, quasi-experimental designs, and randomized controlled trials (RCTs) then may examine whether teaching emotion regulation skills reduces emotion dysregulation and child maltreatment potential/perpetration. Such trials would examine child maltreatment potential and perpetration as outcome variables. For example, researchers ideally would randomize mothers who were substance-involved into treatment groups in order to compare post-treatment and follow-up outcomes after receiving treatment as usual, emotion regulation skills training (i.e., DBT), reflective parenting intervention (i.e., CoS, MIO), or trauma-informed dyadic intervention (i.e., CPP). Despite the many strengths of RCTs, studies of this nature represent significant challenges due to problems with feasibility and attrition in this population. Fortunately, non-randomized experiments have been found to yield accurate and meaningful

results that could be approximated to the results of randomized trials (Shadish, Clark & Steiner, 2008). Overall, there is still much to be learned about the intergenerational transmission of adversity in mothers who are substance-involved. Nonetheless, this study adds to the growing body of literature surrounding this issue and sheds light on important mechanisms of action that inform the intervention and prevention of childhood adversity in this population.

APPENDIX A: EXPLANATION OF RESEARCH FORM

Appendix A: Explanation of Research Form



Understanding the Relationships Among Childhood Experiences, Affectivity, Stress, Emotion Regulation, and Difficulties in Parenting

Informed Consent

Principal Investigator: Kimberly Renk, Ph.D.

Co-investigator: Amanda Lowell, M.S.

Faculty Supervisor: Kimberly Renk, Ph.D.

Investigational Site: University of Central Florida Department of Psychology with the permission of Aspire Health Partners

Introduction: Researchers at the University of Central Florida (UCF) study many topics. To do this, we need the help of people who agree to take part in a research study. You are being invited to take part in a research study, which will include up to 130 mothers from Aspire. You, as the parent, must be 18-years of age or older and have a child between the ages of birth to 5-years of age to be included in the research study.

The persons doing this research include Amanda Lowell, M.S., a Graduate Student in the Clinical Psychology Ph.D. Program at the University of Central Florida, and Kimberly Renk, Ph.D., an Associate Professor of Psychology at UCF.

What you should know about a research study:

- Someone will explain this research study to you.
- A research study is something you volunteer for.
- Whether or not you take part is up to you.
- You should take part in this study only because you want to.
- You can choose not to take part in the research study.
- You can agree to take part now and later change your mind.
- Whatever you decide it will not be held against you.
- Feel free to ask all the questions you want before you decide.

Purpose of the research study: Based on the 2001 National Household Survey on Drug Abuse, we know that almost 70 million children who were 18-years of age or younger lived

with one parent who has had difficulties with substances within the past year. Given the parenting difficulties that families can experience when a parent has had difficulty in childhood and is now having difficulties with substances, more work is needed to identify the factors that lead from difficult childhood experiences to difficulties with substances and to later difficulties with parenting. Therefore, the purpose of this research study is to examine the relationships among difficult childhood experiences, positive and negative feelings, stress, difficulties with emotions, and strategies to better manage those emotions, with particular emphasis on understanding which of these things can best help mothers parent their young children well.

Thus, the current study aims to evaluate which of these factors will be most important for helping mothers who are in substance use treatment to parent well. We hope to use the information collected to better understand where parenting interventions should be focused for parents who are seeking treatment for substance use.

What you will be asked to do in the study: As part of this study, you will be asked to complete nine questionnaires that will take approximately one hour of your time. Your responses as part of this study will be used to examine the relationships among difficult childhood experiences, positive and negative feelings, stress, difficulties with emotions, and strategies to better manage those emotions (including substance use) in the context of parenting behaviors. For the packet of questionnaires, we will be asking you to rate yourself on your own characteristics, your ideas about parenting, and things that you may have trouble with as you parent your young child(ren). At no time on these questionnaires will we ask you to list your name or other identifying information.

Time Required: We expect that you will participate in this research study for approximately one hour.

Risks: Although there are no anticipated risks that accompany your participation in this research study, it should be noted that some of the questionnaires that you will complete may bring up negative or unpleasant experiences from your childhood. Should you have a negative emotional reaction to any of the material presented, please notify the investigators or the faculty investigator listed on this form. In addition, you should consider obtaining counseling assistance or psychological treatment if such help is needed as a result of participation in the study. Should you feel that you need more time to talk about the issues that may come to mind with our packet of questionnaires, we can help you alert the Director at Aspire and make arrangements for further services there. In addition, there are certain limitations on confidentiality based on possible legal issues. Specifically, if the research team learns of abuse, neglect, or abandonment of a child, this information may be disclosed to appropriate authorities per Florida law.

Benefits: By participating in the research study described here, you will be adding to the information available to help mothers who are participating in a treatment program meant to help after someone has had difficulty with substances and is working hard on bettering their parenting. It is hoped that the information collected as part of this research study will help us to identify what specific factors may increase or decrease parenting difficulties for mothers who have had difficulty in their own childhoods and now are in treatment for substance use.

difficulties. You also will increase your awareness of your role as a parent and your perceptions of your own characteristics and those of your baby.

Compensation or Payment: You will be compensated with a \$10.00 WalMart gift card upon completion of your participation.

Confidentiality: Given the sensitive nature of some of the material that will be collected as part of this research study, we will not be asking for you to include your name or other identifiers on your consent form or your questionnaires. Your responses will be completely anonymous. You will be assigned a participant number which will be the only thing linking all your information once you have participated in this research study. Please be assured that your completed measures will be stored in a locked file cabinet in a secure laboratory in the Psychology Building at the University of Central Florida and will be used for research purposes only after your participation is completed.

Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints or think the research has hurt you, talk to Kimberly Renk, Ph.D., Faculty Supervisor, Department of Psychology, at 407-823-2218 or by email at Kimberly.Renk@ucf.edu.

IRB contact about your rights in the study or to report a complaint: Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901. You may also talk to them for any of the following:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You want to get information or provide input about this research.

Withdrawing from the study: There are no adverse consequences for choosing to withdraw from your participation in the study. The person in charge of the research study or the sponsor can remove you from the research study without your approval.

APPENDIX B: POST PARTICIPATION INFORMATION

Appendix B: Post Participation Information

POST PARTICIPATION INFORMATION

PROJECT: Understanding the Relationships Among Childhood Experiences, Affectivity, Stress, Emotion Regulation, and Difficulties in Parenting
PRINCIPAL INVESTIGATOR: Kimberly Renk, Ph.D.
CO-INVESTIGATOR: Amanda Lowell, M.S.

Thank you for participating in this research project. This project is being conducted so that we may find out more about the relationships among previous exposure to adverse childhood experiences, positive and negative feelings, stress, emotion dysregulation, and emotion regulation strategies. In particular, we hope to better understand which of these characteristics may be most important in predicting how mothers parent their young children when mothers are receiving treatments for their substance use. As part of your participation, you completed several questionnaires inquiring about your childhood (particularly interactions that may have been difficult), your positive and negative feelings, your parenting stress, your ability to regulate your emotions, and your parenting behaviors. The responses to these questionnaires will be used to explore the relationships among the characteristics noted here. In particular, we are expecting that mothers who report higher numbers of difficult childhood experiences will report more negative feelings and less positive feelings and greater difficulty managing their emotions. Next, we expect that mothers with greater difficulty managing their emotions and less helpful coping strategies will report more parenting difficulties. Overall, we are expecting that lower levels of stress and greater use of helpful coping strategies may most help mothers with their parenting, even if mothers themselves experience difficult things in their childhoods.

If you would like more information about adverse childhood experiences, feelings, stress, emotion regulation, and parenting, please refer to the following sources:

Dube, S. R., Anda, R. F., Felitti, V. J., Edwards, V. J., & Croft, J. B. (2002). Adverse childhood experiences and personal alcohol abuse as an adult. *Addictive Behaviors*, 27(5), 713-725. doi:10.1016/S0306-4603(01)00204-0

Edwards, V. J., Holden, G. W., Felitti, V. J., & Anda, R. F. (2003). Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: Results from the adverse childhood experiences study. *The American Journal of Psychiatry*, 160(8), 1453-1460. doi:10.1176/appi.ajp.160.8.1453

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85(2), 348-362. doi:10.1037/0022-3514.85.2.348

Renk, K., Roddenberry, A., & Oliveros, A. (2004). A cognitive reframing of ghosts in the nursery. *Journal of Child and Family Studies*, 13(4), 377-384. doi:10.1023/B:JCFS.0000044722.70627.79

If you have any further questions about this research study, please contact Kimberly Renk, Ph.D., by phone (407-823-2218) or e-mail (Kimberly.Renk@ucf.edu). If you feel that you would benefit from talking with a counselor about your own childhood experiences, please contact the Director of the Aspire location where you are receiving services. If you feel that you would benefit from parenting services, please contact the Young Child and Family Research Clinic at 407-257-2978.

APPENDIX C: DEMOGRAPHICS QUESTIONNAIRE

Appendix C: Demographics Questionnaire

Demographics

1. Your Age: _____

2. Your Ethnicity (please circle one): Caucasian Hispanic African-American Asian-American
 Native-American Multiracial Other _____

3. What, if any, is your religious affiliation? _____

On a scale of 1-10 (1 = not strong at all; 10 = very strong) how strong of a religious affiliation would you say you have? _____

4. Your Marital Status (please circle one): Married Divorced Separated Widowed Single
 Living with Partner Remarried (If so, how many previous marriages? _____)

5. How many children do you have? _____

6. Are you pregnant currently? (circle) Yes No

7. Below, please list the age and gender of your child(ren) and whether or not they live with you:

Age	Gender	Live with you?
_____	Male Female	Yes No
_____	Male Female	Yes No
_____	Male Female	Yes No
_____	Male Female	Yes No
_____	Male Female	Yes No
_____	Male Female	Yes No

8. Have you ever been involved with DCF? (circle) Yes No

9. If yes, how? _____

10. Does your child(ren)'s other parent live with you? (circle) Yes No

11. Do you live with any extended family members or friends? (circle) Yes No

12. If yes, who? _____

13. Your level of education:

Less than High School	Some College/Associates Degree
Some High School	College Degree (4-year Bachelors)
High School Diploma	Graduate Professional Training
Vocational Training	Post Doctorate

14. Your occupation: _____

15. Child's other parent's level of education:

Less than High School	Some College/Associates Degree
Some High School	College Degree (4-year Bachelors)
High School Diploma	Graduate Professional Training
Vocational Training	Post Doctorate

16. Your child's other parent's occupation: _____

17. Estimated yearly household income (please circle one):

Less than \$10,000	\$50,000 - \$60,000
\$10,000 - \$20,000	\$60,000 - \$70,000
\$20,000 - \$30,000	\$70,000 - \$80,000
\$30,000 - \$40,000	\$80,000 - \$90,000
\$40,000 - \$50,000	\$90,000 or above

18. What was the substance that you were using most frequently prior to beginning treatment at Aspire?

19. What other substances had you tried previously? _____

20. What was your age at your first use of any substance? _____

21. Did anyone in your family use substances during your childhood? (circle) Yes No
If yes, who? _____

22. Are you prescribed any of the following? (circle) Methadone Vivitrol Suboxone Other

APPENDIX D: ADVERSE CHILDHOOD EXPERIENCES QUESTIONNAIRE

Appendix D: Adverse Childhood Experiences Questionnaire

ACES

Prior to your 18th birthday:

1. Did a parent or other adult in the household often or very often... Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?	Yes	No
2. Did a parent or other adult in the household often or very often... Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured?	Yes	No
3. Did an adult or person at least 5 years older than you ever... Touch or fondle you or have you touch their body in a sexual way? or Attempt or actually have oral, anal, or vaginal intercourse with you?	Yes	No
4. Did you often or very often feel that ... No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other?	Yes	No
5. Did you often or very often feel that ... You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?	Yes	No
6. Were your parents ever separated or divorced?	Yes	No
7. Was your mother or stepmother: Often or very often pushed, grabbed, slapped, or had something thrown at her? or Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?	Yes	No
8. Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs?	Yes	No
9. Was a household member depressed or mentally ill, or did a household member attempt suicide?	Yes	No
10. Did a household member go to prison?	Yes	No

APPENDIX E: CHILDHOOD TRAUMA QUESTIONNAIRE

Appendix E: Childhood Trauma Questionnaire

CTQ

Please rate the frequency of each item during your childhood on a scale of 1 (Never) to 5 (Very Often) by completing the following sentence:

When I grew up...

		Never	Frequency				Very Often
		1	2	3	4	5	
1.	I didn't have enough to eat.	1	2	3	4	5	
2.	I knew that there was someone to take care of me and protect me.	1	2	3	4	5	
3.	People in your family called me things like "stupid," "lazy," or "ugly."	1	2	3	4	5	
4.	My parents were too drunk or high to take care of the family.	1	2	3	4	5	
5.	There was someone in my family who helped me feel that I was important or special.	1	2	3	4	5	
6.	I had to wear dirty clothes.	1	2	3	4	5	
7.	I felt loved.	1	2	3	4	5	
8.	I thought that my parents wished I had never been born.	1	2	3	4	5	
9.	I got hit so hard by someone in my family that I had to see a doctor or go to the hospital.	1	2	3	4	5	
10.	There was nothing I wanted to change about my family.	1	2	3	4	5	
11.	People in my family hit me so hard that it left me with bruises or marks.	1	2	3	4	5	
12.	I was punished with a belt, a board, a cord, or some other hard object.	1	2	3	4	5	
13.	People in my family looked out for each other.	1	2	3	4	5	
14.	People in my family said hurtful or insulting things to me.	1	2	3	4	5	
15.	I believe that I was physically abused.	1	2	3	4	5	

		Never	Frequency				Very Often
16.	I had the perfect childhood.	1	2	3	4	5	
17.	I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor, or doctor.	1	2	3	4	5	
18.	I felt that someone in my family hated me.	1	2	3	4	5	
19.	People in my family felt close to each other.	1	2	3	4	5	
20.	Someone tried to touch me in a sexual way, or tried to make me touch them.	1	2	3	4	5	
21.	Someone threatened to hurt me or tell lies about me unless I did something sexual with them.	1	2	3	4	5	
22.	I had the best family in the world.	1	2	3	4	5	
23.	Someone tried to make me do sexual things or watch sexual things.	1	2	3	4	5	
24.	Someone molested me.	1	2	3	4	5	
25.	I believe that I was emotionally abused.	1	2	3	4	5	
26.	There was someone to take me to the doctor if I needed it.	1	2	3	4	5	
27.	I believe that I was sexually abused.	1	2	3	4	5	
28.	My family was a source of strength and support.	1	2	3	4	5	

**APPENDIX F: PARENTING STRESS INVENTORY- FOURTH EDITION- SHORT
FORM**

Appendix F: Parenting Stress Inventory- Fourth Edition- Short Form

PSI-SF

Read each statement carefully. For each statement, **please focus on the child you are most concerned about**, and circle the response that best represents your opinion.

While you may not find a response that exactly states your feelings, please circle the response that comes closest to describing how you feel. **Your first reaction to each question should be your answer.**

	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
1. I often have the feeling that I cannot handle things very well.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
2. I find myself giving up more of my life to meet my children's needs than I ever expected.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
3. I feel trapped by my responsibilities as a parent.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
4. Since having this child, I have been unable to do new and different things.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
5. Since having a child, I feel that I am almost never able to do things that I like to do.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
6. I am unhappy with the last purchase of clothing I made for myself.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
7. There are quite a few things that bother me about my life.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
8. Having a child has caused more problems than I expected in my relationship with my spouse (or parenting partner).	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
9. I feel alone and without friends.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
10. When I go to a party, I usually expect not to enjoy myself.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
11. I am not as interested in people as I used to be.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
12. I don't enjoy things as I used to.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
13. My child rarely does things for me that make me feel good.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
14. When I do things for my child, I get the feeling that my efforts are not appreciated.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
15. My child smiles at me much less than I expected.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
16. Sometimes I feel my child doesn't like me and doesn't want to be close to me.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
17. My child is very emotional and gets upset easily	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
18. My child doesn't seem to learn as quickly as most children.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
19. My child doesn't seem to smile as much as most children.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
20. My child is not able to do as much as I expected.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
21. It takes a long time and it is very hard for my child to get used to new things	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree

22. I feel that I am (choose a response from the choices below): A very good parent A better than average parent An average parent A person who has some trouble being a parent Not very good at being a parent					
23. I expected to have closer and warmer feelings for my child than I do, and this bothers me.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
24. Sometimes my child does things that bother me just to be mean.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
25. My child seems to cry or fuss more often than most children.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
26. My child generally wakes up in a bad mood.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
27. I feel that my child is very moody and easily upset.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
28. Compared to the average child, my child has a great deal of difficulty in getting used to changes in schedules or changes around the house.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
29. My child reacts very strongly when something happens that my child doesn't like.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
30. When playing, my child doesn't often giggle or laugh.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
31. My child's sleeping or eating schedule was much harder to establish than I expected.	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
32. I have found that getting my child to do something or stop doing something is (choose a response from the choices below): Much easier than I expected Somewhat easier than I expected About as hard as I expected Somewhat harder than I expected Much harder than I expected					
33. Think carefully and count the number of things your child does that bother you. For example, dawdles, refuses to listen, overactive, cries, interrupts, fights, whines, etc. (choose a response from the choices below): 1-3 4-5 6-7 8-9 10+					
34. There are some things my child does that really bother me a lot	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
35. My child's behavior is more of a problem than I expected	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
36. My child makes more demands on me than most children	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree

APPENDIX G: POSITIVE AND NEGATIVE AFFECT SCHEDULE

Appendix G: Positive and Negative Affect Schedule

PANAS

Here are a number of words that describe different feelings and emotions. Indicate to what extent you feel this way currently.

	Very Slightly or Not at All	A Little	Moderately	Quite a Bit	Extremely
1. Interested	1	2	3	4	5
2. Distressed	1	2	3	4	5
3. Excited	1	2	3	4	5
4. Upset	1	2	3	4	5
5. Strong	1	2	3	4	5
6. Guilty	1	2	3	4	5
7. Scared	1	2	3	4	5
8. Hostile	1	2	3	4	5
9. Enthusiastic	1	2	3	4	5
10. Proud	1	2	3	4	5
11. Irritable	1	2	3	4	5
12. Alert	1	2	3	4	5
13. Ashamed	1	2	3	4	5
14. Inspired	1	2	3	4	5
15. Nervous	1	2	3	4	5
16. Determined	1	2	3	4	5
17. Attentive	1	2	3	4	5
18. Jittery	1	2	3	4	5
19. Active	1	2	3	4	5
20. Afraid	1	2	3	4	5

APPENDIX H: DIFFICULTIES IN EMOTION REGULATION SCALE

Appendix H: Difficulties in Emotion Regulation Scale

DERS

Please indicate how often the following statements apply to you:

	Almost Never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost Always (91-100%)
1. I am clear about my feelings	1	2	3	4	5
2. I pay attention to how I feel	1	2	3	4	5
3. I experience my emotions as overwhelming and out of control	1	2	3	4	5
4. I have no idea how I am feeling	1	2	3	4	5
5. I have difficulty making sense out of my feelings	1	2	3	4	5
6. I am attentive to my feelings	1	2	3	4	5
7. I know exactly how I am feeling	1	2	3	4	5
8. I care about what I am feeling	1	2	3	4	5
9. I am confused about how I feel	1	2	3	4	5
10. When I'm upset, I acknowledge my emotions	1	2	3	4	5
11. When I'm upset, I become angry with myself for feeling that way	1	2	3	4	5
12. When I'm upset, I become embarrassed for feeling that way	1	2	3	4	5
13. When I'm upset, I have difficulty getting work done	1	2	3	4	5
14. When I'm upset, I become out of control	1	2	3	4	5
15. When I'm upset, I believe that I will remain that way for a long time	1	2	3	4	5
16. When I'm upset, I believe that I'll end up feeling very depressed	1	2	3	4	5
17. When I'm upset, I believe that my feelings are valid and important	1	2	3	4	5
18. When I'm upset, I have difficulty focusing on other things	1	2	3	4	5
19. When I'm upset, I feel out of control	1	2	3	4	5
20. When I'm upset, I can still get things done	1	2	3	4	5
21. When I'm upset, I feel ashamed with myself for feeling that way	1	2	3	4	5
22. When I'm upset, I know that I can find a way to eventually feel better	1	2	3	4	5

	Almost Never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost Always (91-100%)
23. When I'm upset, I feel like I am weak	1	2	3	4	5
24. When I'm upset, I feel like I can remain in control of my behaviors	1	2	3	4	5
25. When I'm upset, I feel guilty for feeling that way	1	2	3	4	5
26. When I'm upset, I have difficulty concentrating	1	2	3	4	5
27. When I'm upset, I have difficulty controlling my behaviours	1	2	3	4	5
28. When I'm upset, I believe that there is nothing I can do to make myself feel better	1	2	3	4	5
29. When I'm upset, I become irritated with myself for feeling that way	1	2	3	4	5
30. When I'm upset, I start to feel very bad about myself	1	2	3	4	5
31. When I'm upset, I believe that wallowing in it is all I can do	1	2	3	4	5
32. When I'm upset, I lose control over my behaviours	1	2	3	4	5
33. When I'm upset, I have difficulty thinking about anything else	1	2	3	4	5
34. When I'm upset, I take time to figure out what I'm really feeling	1	2	3	4	5
35. When I'm upset, it takes me a long time to feel better	1	2	3	4	5
36. When I'm upset, my emotions feel overwhelming	1	2	3	4	5

APPENDIX I: EMOTION REGULATION QUESTIONNAIRE

Appendix I: Emotion Regulation Questionnaire

ERQ

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways.

	Strongly Disagree			Neutral			Strongly Agree	
1. When I want to feel more <i>positive</i> emotion (such as joy or amusement), I <i>change what I'm thinking about</i> .	1	2	3	4	5	6	7	
2. I keep my emotions to myself.	1	2	3	4	5	6	7	
3. When I want to feel less <i>negative</i> emotion (such as sadness or anger), I <i>change what I'm thinking about</i> .	1	2	3	4	5	6	7	
4. When I am feeling <i>positive</i> emotions, I am careful not to express them.	1	2	3	4	5	6	7	
5. When I'm faced with a stressful situation, I make myself <i>think about it</i> in a way that helps me stay calm.	1	2	3	4	5	6	7	
6. I control my emotions by <i>not expressing them</i> .	1	2	3	4	5	6	7	
7. When I want to feel more <i>positive</i> emotion, I <i>change the way I'm thinking about the situation</i> .	1	2	3	4	5	6	7	
8. I control my emotions by <i>changing the way I think about the situation I'm in</i> .	1	2	3	4	5	6	7	
9. When I am feeling <i>negative</i> emotions, I make sure not to express them.	1	2	3	4	5	6	7	
10. When I want to feel less <i>negative</i> emotion, I <i>change the way I'm thinking about the situation</i> .	1	2	3	4	5	6	7	

**APPENDIX J: ITEMS FROM THE COPING AND ENHANCEMENT SUBSCALES OF
THE REVISED DRINKING MOTIVES QUESTIONNAIRE**

Appendix J: Items from the Coping and Enhancement Subscales of the Revised Drinking Motives Questionnaire

DMQR

Listed below are reasons people might use substances. Decide how frequently your own substance use was motivated by the reasons listed.

I Used Substances...

	Almost Never/ Never	Some of the time	Half of the time	Most of the time	Almost Always/Always
1. ...to forget my worries.	1	2	3	4	5
2. ...because it helped me when I felt depressed or nervous.	1	2	3	4	5
3. ...to cheer up when I was in a bad mood.	1	2	3	4	5
4. ...because I liked the feeling.	1	2	3	4	5
5. ...because it was exciting.	1	2	3	4	5
6. ...to get high.	1	2	3	4	5
7. ...because it gave me a pleasant feeling.	1	2	3	4	5
8. ...because I felt more self-confident and sure of myself.	1	2	3	4	5
9. ...to forget about my problems.	1	2	3	4	5
10. ...because it was fun.	1	2	3	4	5

**APPENDIX K: ITEMS FROM THE PHYSICAL ABUSE SCALE OF THE CHILD
ABUSE POTENTIAL INVENTORY**

Appendix K: Items from the Physical Abuse Scale of the Child Abuse Potential Inventory

CAP

Read each of the statements and determine if you **AGREE** or **DISAGREE** with the statement. Be honest when giving your answers. Remember to read each statement; **it is important not to skip any statement.**

1.	I have always been strong and healthy	Agree	Disagree
2.	I am a confused person	Agree	Disagree
3.	People expect too much from me	Agree	Disagree
4.	I am often mixed up	Agree	Disagree
5.	You cannot depend on others	Agree	Disagree
6.	I am a happy person	Agree	Disagree
7.	I am often angry inside	Agree	Disagree
8.	Sometimes I feel all alone in the world	Agree	Disagree
9.	Everything in a home should always be in its place	Agree	Disagree
10.	I often feel rejected	Agree	Disagree
11.	I am often lonely inside	Agree	Disagree
12.	Little boys should never learn sissy games	Agree	Disagree
13.	I often feel very frustrated	Agree	Disagree
14.	Children should never disobey	Agree	Disagree
15.	Sometimes I fear that I will lose control of myself	Agree	Disagree
16.	I sometimes wish that my father would have loved me more	Agree	Disagree
17.	My telephone number is unlisted	Agree	Disagree
18.	I sometimes worry that I will not have enough to eat	Agree	Disagree
19.	I am an unlucky person	Agree	Disagree
20.	I am usually a quiet person	Agree	Disagree
21.	Things have usually gone against me in life	Agree	Disagree
22.	I have a child who is bad	Agree	Disagree
23.	I sometimes feel worthless	Agree	Disagree
24.	I am sometimes very sad	Agree	Disagree
25.	I often feel worried	Agree	Disagree
26.	A child should never talk back	Agree	Disagree
27.	I am often easily upset	Agree	Disagree
28.	I am often worried inside	Agree	Disagree
29.	People have caused me a lot of pain	Agree	Disagree
30.	Children should stay clean	Agree	Disagree
31.	I have a child who gets into trouble a lot	Agree	Disagree
32.	I find it hard to relax	Agree	Disagree
33.	These days a person doesn't really know on whom one can count	Agree	Disagree
34.	My life is happy	Agree	Disagree
35.	I have a physical handicap	Agree	Disagree
36.	Children should have play clothes and good clothes	Agree	Disagree
37.	Other people do not understand how I feel	Agree	Disagree
38.	Children should be quiet and listen	Agree	Disagree

39.	I have several close friends in my neighborhood	Agree	Disagree
40.	My family fights a lot	Agree	Disagree
41.	I have headaches	Agree	Disagree
42.	I do not laugh very much	Agree	Disagree
43.	I have fears no one knows about	Agree	Disagree
44.	My family has problems getting along	Agree	Disagree
45.	Life often seems useless to me	Agree	Disagree
46.	People do not understand me	Agree	Disagree
47.	I often feel worthless	Agree	Disagree
48.	Other people have made my life unhappy	Agree	Disagree
49.	Sometimes I do not know why I act as I do	Agree	Disagree
50.	I have many personal problems	Agree	Disagree
51.	I often feel very upset	Agree	Disagree
52.	My life is good	Agree	Disagree
53.	A home should be spotless	Agree	Disagree
54.	I am easily upset by my problems	Agree	Disagree
55.	My parents did not understand me	Agree	Disagree
56.	Many things in life make me angry	Agree	Disagree
57.	My child has special problems	Agree	Disagree
58.	Children should be seen and not heard	Agree	Disagree
59.	I am often depressed	Agree	Disagree
60.	I am often upset	Agree	Disagree
61.	A good child keeps his toys and clothes neat and orderly	Agree	Disagree
62.	Children should always be neat	Agree	Disagree
63.	I have a child who is slow	Agree	Disagree
64.	A parent must use punishment if he wants to control a child's behavior	Agree	Disagree
65.	Children should never cause trouble	Agree	Disagree
66.	A child needs very strict rules	Agree	Disagree
67.	I often feel better than others	Agree	Disagree
68.	I am often upset and do not know why	Agree	Disagree
69.	I have a good sex life	Agree	Disagree
70.	I often feel very alone	Agree	Disagree
71.	I often feel alone	Agree	Disagree
72.	Right now, I am deeply in love	Agree	Disagree
73.	My family has many problems	Agree	Disagree
74.	Other people have made my life hard	Agree	Disagree
75.	I laugh some almost every day	Agree	Disagree
76.	I sometimes worry that my needs will not be met	Agree	Disagree
77.	I often feel afraid	Agree	Disagree

APPENDIX L: IRB APPROVAL LETTER

Appendix L: IRB Approval Letter



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Human Research

From: **UCF Institutional Review Board #1
FWA00000351, IRB00001138**

To: **Kimberly D. Renk and Co-PI: Amanda Lowell**

Date: **January 20, 2016**

Dear Researcher:

On 01/20/2016, the IRB approved the following human participant research until 01/19/2017 inclusive:

Type of Review: UCF Initial Review Submission Form
Project Title: Understanding the Relationships Among Childhood
Experiences, Affectivity, Stress, Emotion Regulation, and
Difficulties in Parenting
Investigator: Kimberly D Renk
IRB Number: SBE-16-11913
Funding Agency:
Grant Title:
Research ID: n/a

The scientific merit of the research was considered during the IRB review. The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at <https://iris.research.ucf.edu>.

If continuing review approval is not granted before the expiration date of 01/19/2017, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

All data, including signed consent forms if applicable, must be retained and secured per protocol for a minimum of five years (six if HIPAA applies) past the completion of this research. Any links to the identification of participants should be maintained and secured per protocol. Additional requirements may be imposed by your funding agency, your department, or other entities. Access to data is limited to authorized individuals listed as key study personnel.

In the conduct of this research, you are responsible to follow the requirements of the [Investigator Manual](#).

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

APPENDIX M: TABLES

Appendix M: Tables

Table 1. Participant Demographic Information

Variables	(N=127)
Mother Age Years	Mean (Standard Deviation) 30.03 (4.86)
Child Age Years	Mean (Standard Deviation) 2.34 (1.61)
Child Gender	Percent
Male	52.5%
Female	47.5%
Number of Children	Mean (Standard Deviation) 2.55 (1.46)
Data Collection Site	Percent
Methadone Clinic	61.4%
Women's Residential	38.6%
Race/Ethnicity	Percent
Caucasian	81.0%
Hispanic	8.7%
African American	6.3%
Native American	0.8%
Multiracial	3.2%
Yearly Household Income	Percent
<\$10,000	38.8%
\$10,000-\$20,000	19.0%
\$20,000-\$30,000	13.2%
\$30,000-\$40,000	11.6%
\$40,000-\$50,000	6.6%
\$50,000-\$60,000	2.5%
\$60,000-\$70,000	3.3%
\$70,000-\$80,000	0.0%
\$80,000-\$90,000	1.7%
>\$90,000	3.3%
Education Level	Percent
Less than High School	10.3%
Some High School	21.4%
High School Diploma	30.2%
Vocational Training	6.3%
Some College/Associate's Degree	26.2%
Bachelor's Degree	4.0%
Graduate/Professional Training	1.6%

Variables	(N=127)
Employment Status	
Unemployed	67.0%
Employed	33.0%
Marital Status	Percent
Single	49.2%
Living with Partner	20.2%
Married	15.3%
Separated	8.1%
Divorced	6.5%
Widowed	0.8%
Preferred Substance Type	Percent
Opiates	84.7%
Stimulants	11.8%
Alcohol	1.7%
Benzodiazepines	1.7%
DCF Involvement	Percent
Yes	65.1%
No	34.9%

Table 2. Descriptive Statistics for Variables of Interest

Variables (Available Range)	<i>M</i>	<i>SD</i>	Actual Range
Childhood Adversity			
Adverse Childhood Experiences (0-10)	4.15	2.41	0-10
Childhood Maltreatment (25-125)	51.67	19.67	25-111
Stress			
Parenting Stress (36-180)	75.75	19.85	34-135
Affectivity			
Positive Affect (10-50)	35.05	8.48	13-50
Negative Affect (10-50)	20.46	8.85	10-47
Emotion Dysregulation			
Difficulties with Emotion Regulation (36-180)	83.61	23.88	38-145
Emotion Regulation Strategies			
Cognitive Reappraisal (6-42)	29.28	7.93	6-42
Expressive Suppression (4-28)	13.04	4.49	4-25
Substance Use Coping (5-25)	21.06	4.83	5-25
Substance Use Enhancement (5-25)	19.98	5.07	5-25
Child Maltreatment Potential			
Physical Abuse Potential (0-486)	195.40	109.31	5-430

Table 3. Frequencies of Adverse Childhood Experiences

Variables	(N=127)
Number of ACEs	Percent
0	5.6%
1	9.5%
2	15.9%
3	11.1%
4	13.5%
5	12.7%
6	10.3%
7	12.7%
8	7.1%
9	0.8%
10	0.8%
Number of ACEs by cutoff score	Percent
0 to 3	42.1%
4 or more	57.9%

Table 4. Correlations among Adverse Childhood Experiences, Stress, Affectivity, Emotion Dysregulation, Emotion Regulation Strategies, and Child Maltreatment Potential

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Adverse Childhood Experiences	-										
2. Childhood Maltreatment	.71***	-									
3. Parenting Stress	.12	.05	-								
4. Positive Affect	.02	.02	-.35***	-							
5. Negative Affect	.30***	.19*	.35***	-.29***	-						
6. Emotion Dysregulation	.19*	.23*	.54***	-.41***	.56***	-					
7. Cognitive Reappraisal	-.06	-.08	-.05	.32***	-.20*	-.29***	-				
8. Expressive Suppression	.15	.08	.28**	-.11	.24**	.29***	.04	-			
9. Substance Use Coping	.27**	.08	.17	.03	.17	.25**	.17	.01	-		
10. Substance Use Enhancement	.16	.02	.09	.15	.06	.09	.11	-.07	.61***	-	
11. Child Maltreatment Potential	.35***	.26**	.51***	-.40***	.53***	.67***	-.24**	.33***	.15	-.04	-

Note. * $p < .05$ ** $p < .01$ *** $p < .001$; Items in bold are significant after Bonferroni Correction.

Table 5. **Hierarchical Regression Analysis: ACEs Predicting Child Maltreatment Potential**

Variables	<i>B</i>	<i>SE B</i>	β
Block 1. $F(1, 124) = 17.13, p < .001, R^2 = .12$			
Adverse Childhood Experiences	15.78	3.81	.35***
Block 2. $F(2, 123) = 32.48, p < .001, R^2 = .35$			
Adverse Childhood Experiences	13.30	3.33	.29***
Parenting Stress	2.63	.40	.48***
Block 3. $F(4, 121) = 27.70, p < .001, R^2 = .48$			
Adverse Childhood Experiences	10.37	3.14	.23***
Parenting Stress	1.68	.40	.30***
Positive Affect	-2.75	.93	-.21**
Negative Affect	3.78	.95	.30***
Block 4. $F(5, 120) = 31.26, p < .001, R^2 = .57$			
Adverse Childhood Experiences	9.40	2.88	.21***
Parenting Stress	.90	.40	.16*
Positive Affect	-1.84	.87	-.14*
Negative Affect	2.02	.94	.16*
Emotion Dysregulation	1.87	.38	.40***
Block 5. $F(9, 116) = 18.02, p < .001, R^2 = .58$			
Adverse Childhood Experiences	9.40	2.96	.21**
Parenting Stress	.92	.41	.17*
Positive Affect	-1.47	.91	-.11
Negative Affect	1.85	.94	.15
Emotion Dysregulation	1.77	.40	.38***
Cognitive Reappraisal	-.52	.94	-.04
Expressive Suppression	2.05	1.58	.09
Substance Use Coping	.82	1.84	.04
Substance Use Enhancement	-2.44	1.66	-.11

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 6. Hierarchical Regression Analysis: Childhood Maltreatment Predicting Child Maltreatment Potential

Variables	<i>B</i>	<i>SE B</i>	<i>β</i>
Block 1. $F(1, 124) = 8.67, p < .004, R^2 = .07$			
Childhood Maltreatment	1.42	.48	.26**
Block 2. $F(2, 123) = 28.07, p < .001, R^2 = .31$			
Childhood Maltreatment	1.28	.42	.23**
Parenting Stress	2.75	.41	.50***
Block 3. $F(4, 121) = 25.92, p < .001, R^2 = .46$			
Childhood Maltreatment	.99	.38	.18**
Parenting Stress	1.73	.41	.32***
Positive Affect	-2.55	.94	.20**
Negative Affect	4.22	.94	.33***
Block 4. $F(5, 120) = 28.27, p < .001, R^2 = .54$			
Childhood Maltreatment	.68	.36	.12
Parenting Stress	.97	.41	.18*
Positive Affect	-1.65	.89	-.13
Negative Affect	2.58	.94	.20**
Emotion Dysregulation	1.80	.40	.39***
Block 5. $F(9, 116) = 16.35, p < .001, R^2 = .56$			
Childhood Maltreatment	.65	.36	.12
Parenting Stress	.97	.42	.18*
Positive Affect	-1.34	.94	-.10
Negative Affect	2.36	.95	.19*
Emotion Dysregulation	1.64	.42	.35***
Cognitive Reappraisal	-.72	.96	-.05
Expressive Suppression	2.53	1.62	.10
Substance Use Coping	1.78	1.86	.08
Substance Use Enhancement	-2.32	1.71	-.11

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 7. Moderation Analyses for Adverse Childhood Experiences, Parenting Stress, and Positive Affect

Variables	<i>B</i>	<i>SE B</i>	<i>β</i>
Block 1. $F(2, 123) = 8.86, p < .001, R^2 = .13$			
Adverse Childhood Experiences	.54	.71	.06
Parenting Stress	-3.10	.74	-.36***
Block 2. , $F(3, 122) = 6.47, p < .001, R^2 = .14$			
Adverse Childhood Experiences	.57	.71	.07
Parenting Stress	-3.08	.74	-.35***
Adverse Childhood Experiences * Parenting Stress	.92	.73	.11

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 8. Moderation Analyses for Childhood Maltreatment, Parenting Stress, and Positive Affect

Variables	<i>B</i>	<i>SE B</i>	<i>β</i>
Block 1. $F(2, 123) = 8.63, p < .001, R^2 = .12$			
Childhood Maltreatment	.29	.72	.04
Parenting Stress	-3.05	.74	-.35***
Block 2. $F(3, 122) = 7.87, p < .001, R^2 = .16$			
Childhood Maltreatment	.60	.72	.07
Parenting Stress	-2.89	.73	-.33***
Childhood Maltreatment * Parenting Stress	1.70	.72	.20*

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 9. Moderation Analyses for Adverse Childhood Experiences, Parenting Stress, and Negative Affect

Variables	<i>B</i>	<i>SE B</i>	<i>β</i>
Block 1. $F(2, 123) = 14.70, p < .001, R^2 = .19$			
Adverse Childhood Experiences	2.24	.70	.26**
Parenting Stress	2.88	.73	.32***
Block 2. $F(3, 122) = 9.94, p < .001, R^2 = .20$			
Adverse Childhood Experiences	2.26	.70	.26**
Parenting Stress	2.89	.73	.33***
Adverse Childhood Experiences * Parenting Stress	.52	.72	.06

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 10. **Moderation Analyses for Childhood Maltreatment, Parenting Stress, and Negative Affect**

Variables	<i>B</i>	<i>SE B</i>	<i>β</i>
Block 1. $F(2, 123) = 11.36, p < .001, R^2 = .16$			
Childhood Maltreatment	1.52	.72	.18*
Parenting Stress	3.07	.74	.35***
Block 2. $F(3, 122) = 8.32, p < .001, R^2 = .17$			
Childhood Maltreatment	1.33	.73	.15
Parenting Stress	2.97	.74	.33***
Childhood Maltreatment * Parenting Stress	-1.04	.73	-.12

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 11. **Moderation Analyses for Emotion Dysregulation, Cognitive Reappraisal, and Child Maltreatment Potential**

Variables	<i>B</i>	<i>SE B</i>	β
Block 1. $F(2, 123) = 50.77, p < .001, R^2 = .45$			
Emotion Dysregulation	72.64	7.70	.66***
Cognitive Reappraisal	-5.04	7.59	-.05
Block 2. $F(3, 122) = 33.61, p < .001, R^2 = .45$			
Emotion Dysregulation	72.58	7.74	.66***
Cognitive Reappraisal	-5.16	7.63	-.05
Emotion Dysregulation * Cognitive Reappraisal	-2.04	7.80	-.02

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 12. **Moderation Analyses for Emotion Dysregulation, Expressive Suppression, and Child Maltreatment Potential**

Variables	<i>B</i>	<i>SE B</i>	β
Block 1. $F(2, 123) = 54.43, p < .001, R^2 = .47$			
Emotion Dysregulation	69.39	7.59	.63***
Expressive Suppression	16.08	7.61	.15*
Block 2. $F(3, 122) = 37.35, p < .001, R^2 = .48$			
Emotion Dysregulation	69.22	7.56	.63***
Expressive Suppression	17.45	7.63	.16*
Emotion Dysregulation * Expressive Suppression	-10.24	6.95	-.10

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 13. Moderation Analyses for Emotion Dysregulation, Substance Use Coping, and Child Maltreatment Potential

Variables	<i>B</i>	<i>SE B</i>	<i>β</i>
Block 1. $F(2, 123) = 50.37, p < .001, R^2 = .45$			
Emotion Dysregulation	74.26	7.60	.67***
Substance Use Coping	-.58	7.47	-.01
Block 2. $F(3, 122) = 34.58, p < .001, R^2 = .46$			
Emotion Dysregulation	78.72	8.17	.71***
Substance Use Coping	-4.70	7.97	-.04
Emotion Dysregulation* Substance Use Coping	-13.55	9.37	-.11

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 14. **Moderation Analyses for Emotion Dysregulation, Substance Use Enhancement, and Child Maltreatment Potential**

Variables	<i>B</i>	<i>SE B</i>	β
Block 1. $F(2, 123) = 52.00, p < .001, R^2 = .46$			
Emotion Dysregulation	74.90	7.36	.68***
Substance Use Enhancement	-9.69	7.22	-.09
Block 2. $F(3, 122) = 34.44, p < .001, R^2 = .46$			
Emotion Dysregulation	75.07	7.41	.68***
Substance Use Enhancement	-9.83	7.27	-.09
Emotion Dysregulation * Substance Use Enhancement	-2.08	7.40	-.02

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 15. Mediation Regression Analyses for Adverse Childhood Experiences, Emotion Dysregulation, and Child Maltreatment Potential

Regression/Variables	β	t	p
<i>Mediator: Emotion Dysregulation, Predictor: Adverse Childhood Experiences</i>			
Adverse Childhood Experiences and Emotion Dysregulation: $F(1, 124) = 4.83, p < .03, R^2 = .04$			
Adverse Childhood Experiences	.19	2.20	.03*
Emotion Dysregulation and Child Maltreatment Potential: $F(1, 124) = 101.55, p < .001, R^2 = .45$			
Emotion Dysregulation	.67	10.08	.001***
Adverse Childhood Experiences and Child Maltreatment Potential: $F(1, 124) = 17.13, p < .001, R^2 = .12$			
Adverse Childhood Experiences	.35	4.14	.000***
Adverse Childhood Experiences, Emotion Dysregulation, and Child Maltreatment Potential: $F(1, 123) = 61.45, p < .001, R^2 = .50$			
Adverse Childhood Experiences	.23	3.49	.001***
Emotion Dysregulation	.63	9.64	.001***

Table 16. **Mediational Regression Analyses for Childhood Maltreatment, Emotion Dysregulation, and Child Maltreatment Potential**

Regression/Variables	β	t	p
<i>Mediator: Emotion Dysregulation, Predictor: Childhood Maltreatment</i>			
Childhood Maltreatment and Emotion Dysregulation: $F(1, 124) = 6.66, p < .01, R^2 = .05$			
Childhood Maltreatment	.23	2.58	.01**
Emotion Dysregulation and Child Maltreatment Potential: $F(1, 124) = 101.55, p < .001, R^2 = .45$			
Emotion Dysregulation	.67	10.08	.001***
Childhood Maltreatment and Child Maltreatment Potential: $F(1, 124) = 8.67, p < .004, R^2 = .07$			
Childhood Maltreatment	.26	2.94	.004**
Childhood maltreatment, Emotion Dysregulation, and Child Maltreatment Potential: $F(1, 123) = 52.74, p < .001, R^2 = .46$			
Childhood Maltreatment	.11	1.62	.11
Emotion Dysregulation	.65	9.52	.001***
<i>Note.</i> * $p < .05$, ** $p < .01$, *** $p < .001$			

Table 17. **Binary Logistic Regression Analyses Predicting DCF Involvement using Adverse Childhood Experiences**

Variables	<i>B</i>	<i>SE B</i>	<i>Wald</i>	<i>Lower</i>	<i>Exp(B)</i>	<i>Upper</i>	<i>p</i>
Block 1. $R^2 = .05$ (Nagelkerke), Model $\chi^2(1) = 5.05, p < .03$							
Adverse Childhood Experiences	.18	.08	4.81	1.02	1.20	1.41	.03*
Block 2. $R^2 = .06$ (Nagelkerke), Model $\chi^2(2) = 5.11, p < .08$							
Adverse Childhood Experiences	.18	.08	4.85	1.02	1.20	1.41	.03*
Parenting Stress	-.00	.01	.05	.98	1.00	1.01	.82
Block 3. $R^2 = .06$ (Nagelkerke), Model $\chi^2(4) = 5.16, p < .27$							
Adverse Childhood Experiences	.18	.09	4.47	1.01	1.20	1.43	.04*
Parenting Stress	-.00	.01	.01	.98	1.00	1.02	.92
Positive Affect	.00	.03	.03	.96	1.00	1.06	.86
Negative Affect	-.00	.03	.01	.95	1.00	1.05	.91
Block 4. $R^2 = .08$ (Nagelkerke), Model $\chi^2(5) = 7.84, p < .17$							
Adverse Childhood Experiences	.20	.09	5.02	1.03	1.22	1.45	.03*
Parenting Stress	.01	.01	.32	.98	1.01	1.03	.57
Positive Affect	-.00	.03	.03	.95	1.00	1.05	.87
Negative Affect	.02	.03	.29	.96	1.02	1.07	.59
Emotion Dysregulation	-.02	.01	2.63	.96	.98	1.00	.11
Block 5. $R^2 = .12$ (Nagelkerke), Model $\chi^2(9) = 11.24, p < .26$							
Adverse Childhood Experiences	.19	.09	4.36	1.01	1.21	1.45	.04*
Parenting Stress	.00	.01	.02	.98	1.00	1.03	.89
Positive Affect	-.02	.03	.49	.93	.98	1.04	.49
Negative Affect	.01	.03	.24	.96	1.01	1.07	.62
Emotion Dysregulation	-.02	.01	2.04	.96	.98	1.01	.15
Cognitive Reappraisal	.01	.05	.03	.91	1.01	1.12	.87
Expressive Suppression	.04	.05	.61	.95	1.04	1.14	.43
Substance Use Coping	.01	.05	.03	.91	1.01	1.12	.87
Substance Use Enhancement	.02	.05	.22	.93	1.02	1.13	.64

Table 18. **Binary Logistic Regression Analyses Predicting DCF Involvement using Childhood Maltreatment**

Variables	<i>B</i>	<i>SE B</i>	<i>Wald</i>	<i>Lower</i>	<i>Exp(B)</i>	<i>Upper</i>	<i>p</i>
Block 1. $R^2 = .01$ (Nagelkerke), Model $\chi^2(1) = 1.15, p < .28$							
Childhood Maltreatment	.01	.01	1.13	.99	1.01	1.03	.29
Block 2. $R^2 = .01$ (Nagelkerke), Model $\chi^2(1) = 1.15, p < .56$							
Childhood Maltreatment	.01	.01	1.12	.99	1.01	1.03	.29
Parenting Stress	.00	.01	.00	.98	1.00	1.02	.98
Block 3. $R^2 = .02$ (Nagelkerke), Model $\chi^2(1) = 1.39, p < .85$							
Childhood Maltreatment	.01	.01	.92	.99	1.01	1.03	.34
Parenting Stress	.00	.01	.00	.98	1.00	1.02	.99
Positive Affect	.01	.02	.14	.96	1.01	1.06	.71
Negative Affect	.01	.02	.14	.96	1.01	1.06	.71
Block 4. $R^2 = .05$ (Nagelkerke), Model $\chi^2(1) = 4.24, p < .52$							
Childhood Maltreatment	.01	.01	1.65	.99	1.01	1.04	.20
Parenting Stress	.01	.01	.47	.99	1.01	1.03	.50
Positive Affect	.00	.03	.00	.95	1.00	1.05	.98
Negative Affect	.03	.03	.99	.97	1.03	1.08	.32
Emotion Dysregulation	-.02	.01	2.78	.96	.98	1.00	.10
Block 5. $R^2 = .09$ (Nagelkerke), Model $\chi^2(1) = 8.52, p < .92$							
Childhood Maltreatment	.02	.01	1.77	.99	1.02	1.04	.18
Parenting Stress	.00	.01	.05	.98	1.00	1.03	.82
Positive Affect	-.02	.03	.36	.93	.98	1.04	.55
Negative Affect	.02	.03	.73	.97	1.02	1.08	.39
Emotion Dysregulation	-.02	.01	2.64	.96	.98	1.00	.10
Cognitive Reappraisal	.03	.03	1.38	.98	1.03	1.09	.24
Expressive Suppression	.05	.05	.92	.95	1.05	1.15	.34
Substance Use Coping	.03	.05	.24	.93	1.03	1.13	.61
Substance Use Enhancement	.03	.05	.26	.93	1.03	1.13	.61

REFERENCES

- Abidin, R. R. (2012). *Parenting Stress Index, Fourth Edition: Professional manual*. Odessa, FL: Psychological Assessment Resources, Inc.
- Abravanel, B. T., & Sinha, R. (2015). Emotion dysregulation mediates the relationship between lifetime cumulative adversity and depressive symptomatology. *Journal of Psychiatric Research*, 61(1), 89-96. doi:10.1016/j.jpsychires.2014.11.012
- Achenbach, T. M. (2009). *ASEBA: Development, findings, theory, and applications*. Burlington, VT: University of Vermont Research Center for Children, Youth and Families.
- American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders (3rd ed., revised)*. Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.)*. Washington, DC: Author.
- Ammerman, R. T. (1990). Etiological models of child maltreatment: A behavioral perspective. Special issue: Child abuse and neglect. *Behavior Modification*, 14(3), 230-254. doi:10.1177/01454455900143002
- Ammerman, R. T., Kolko, D. J., Kirisci, L., Blackson, T. C., & Dawes, M. A. (1999). Child abuse potential in parents with histories of substance use disorder. *Child Abuse & Neglect*, 23(12), 1225-1238. doi:10.1016/S0145-2134(99)00089-7
- Appleyard, K., Berlin, L. J., Rosanbalm, K. D., & Dodge, K. A. (2011). Preventing early child maltreatment: Implications from a longitudinal study of maternal abuse history, substance use problems, and offspring victimization. *Prevention Science*, 12(2), 139-149. doi:10.1007/s11121-010-0193-2

- Appleyard, K., Egeland, B., van Dulmen, M. M., & Sroufe, L. A. (2005). When more is not better: The role of cumulative risk in child behavior outcomes. *Journal of Child Psychology and Psychiatry*, 46(3), 235-245. doi:10.1111/j.1469-7610.2004.00351.x
- Arterberry, B. J., Martens, M. P., Cadigan, J. M., & Smith, A. E. (2012). Assessing the dependability of drinking motives via generalizability theory. *Measurement and Evaluation in Counseling and Development*, 45(4), 292-302.
doi:10.1177/0748175612449744
- Asberg, K., & Renk, K. (2012). Substance use coping as a mediator of the relationship between trauma symptoms and substance use consequences among incarcerated females with childhood sexual abuse histories. *Substance Use & Misuse*, 47(7), 799-808.
doi:10.3109/10826084.2012.669446
- Baer, J. C., & Martinez, C. D. (2006). Child maltreatment and insecure attachment: A meta-analysis. *Journal of Reproductive and Infant Psychology*, 24(3), 187-197.
doi:10.1080/02646830600821231
- Baker, T. B., Piper, M. E., McCarthy, D. E., Majeskie, M. R., & Fiore, M. C. (2004). Addiction motivation reformulated: An affective processing model of negative reinforcement. *Psychological Review*, 111(1), 33-51. doi:10.1037/0033-295X.111.1.33
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182. doi:10.1037/0022-3514.51.6.1173

- Barth, R. P., Courtney, M., Berrick, J. D., & Albert, V. (1994). *From child abuse to permanency planning: Child welfare services pathways and placements*. Hawthorne, NY: Aldine de Gruyter.
- Barth, R. P. (1994). Long-term in-home services. In D. J. Besharov (Ed.), *When drug addicts have children* (pp. 175-194). Washington, DC: Child Welfare League of America.
- Barth, R. P., Gibbons, C., & Guo, S. (2006). Substance abuse treatment and the recurrence of maltreatment among caregivers with children living at home: A propensity score analysis. *Journal of Substance Abuse Treatment, 30*(2), 93-104. doi:10.1016/j.jsat.2005.10.008
- Barton, K., & Baglio, C. (1993). The nature of stress in child-abusing families: A factor analytic study. *Psychological Reports, 73*(3, Pt 1), 1047-1055. doi:10.2466/pr0.1993.73.3.1047
- Begle, A., Dumas, J. E., & Hanson, R. F. (2010). Predicting child abuse potential: An empirical investigation of two theoretical frameworks. *Journal of Clinical Child and Adolescent Psychology, 39*(2), 208-219. doi:10.1080/15374410903532650
- Belsky, J. (1980). Child maltreatment: An ecological integration. *American Psychologist, 35*(4), 320-335. doi:10.1037/0003-066X.35.4.320
- Belsky, J. (1993). Etiology of child maltreatment: A developmental ecological analysis. *Psychological Bulletin, 114*(3), 413-434. doi:10.1037/0033-2909.114.3.413
- Berger, L. M. (2004). Income, family structure, and child maltreatment risk. *Children and Youth Services Review, 26*(8), 725-748. doi:10.1016/j.childyouth.2004.02.017
- Berkout, O. V., & Kolko, D. J. (2016). Understanding child directed caregiver aggression: An examination of characteristics and predictors associated with perpetration. *Child Abuse & Neglect, 56*(1), 44-53. doi:10.1016/j.chiabu.2016.04.004

- Berlin, L. J., Appleyard, K., & Dodge, K. A. (2011). Intergenerational continuity in child maltreatment: Mediating mechanisms and implications for prevention. *Child Development*, 82(1), 162-176. doi:10.1111/j.1467-8624.2010.01547.x
- Bernstein, D. P., & Fink, L. (1998). *Childhood Trauma Questionnaire: A retrospective self-report manual*. San Antonio, TX: The Psychological Corporation.
- Black, D. A., Heyman, R. E., & Slep, A. (2001). Risk factors for child physical abuse. *Aggression and Violent Behavior*, 6(2-3), 121-188. doi:10.1016/S1359-1789(00)00021-5
- Black, R., & Mayer, J. (1980). Parents with special problems: Alcoholism and opiate addiction. *Child Abuse & Neglect* 4(1), 45-54.
- Bohus, M., Dyer, A. S., Priebe, K., Krüger, A., Kleindienst, N., Schmahl, C., Niedtfeld, & Steil, R. (2013). Dialectical behaviour therapy for post-traumatic stress disorder after childhood sexual abuse in patients with and without borderline personality disorder: A randomised controlled trial. *Psychotherapy and Psychosomatics*, 82(4), 221-233. doi:10.1159/000348451
- Bowlby, J. (1980). *Attachment and loss*. New York, NY, US: Basic Books.
- Bradley, B. (2011). *Intergenerational risk and resilience in traumatized mothers and their children*. Paper presented at the 45th annual meeting of the Association for Behavior and Cognitive Therapies: Toronto, Ontario.
- Bradley, B., DeFife, J. A., Guarnaccia, C., Phifer, J., Fani, N., Ressler, K. J., & Westen, D. (2011). Emotion dysregulation and negative affect: Association with psychiatric symptoms. *The Journal of Clinical Psychiatry*, 72(5), 685-691. doi:10.4088/JCP.10m06409blu

- Brems, C., Johnson, M. E., Neal, D., & Freemon, M. (2004). Childhood abuse history and substance use among men and women receiving detoxification services. *The American Journal of Drug and Alcohol Abuse*, 30(4), 799-821. doi:10.1081/ADA-200037546
- Brems, C., & Namyniuk, L. (2002). The relationship of childhood abuse history and substance use in an Alaska sample. *Substance Use & Misuse*, 37(4), 473-494. doi:10.1081/JA-120002806
- Brenning, K. M., & Braet, C. (2013). The emotion regulation model of attachment: An emotion-specific approach. *Personal Relationships*, 20(1), 107-123. doi:10.1111/j.1475-6811.2012.01399.x
- Budd, K. S., Heilman, N. E., & Kane, D. (2000). Psychosocial correlates of child abuse potential in multiply disadvantaged adolescent mothers. *Child Abuse & Neglect*, 24(5), 611-625. doi:10.1016/S0145-2134(00)00122-8
- Bulik, C. M., Prescott, C. A., & Kendler, K. S. (2001). Features of childhood sexual abuse and the development of psychiatric and substance use disorders. *The British Journal of Psychiatry*, 179(5), 444-449. doi:10.1192/bjp.179.5.444
- Burke, L. (2003). The impact of maternal depression on familial relationships. *International Review of Psychiatry*, 15(3), 243-255. doi:10.1080/0954026031000136866
- Cadet, J. L. (2016). Epigenetics of stress, addiction, and resilience: Therapeutic implications. *Molecular Neurobiology*, 53(1), 545-560. doi:10.1007/s12035-014-9040-y
- Caldwell, J. G., Krug, M. K., Carter, C. S., & Minzenberg, M. J. (2014). Cognitive control in the face of fear: Reduced cognitive-emotional flexibility in women with a history of child abuse. *Journal of Aggression, Maltreatment & Trauma*, 23(5), 454-472. doi:10.1080/10926771.2014.904466

- California Evidence-Based Clearinghouse for Child Welfare (2016, November). *The Safe Babies Court Team*TM. Retrieved from <http://www.cebc4cw.org/program/safe-babies-court-teams-project/>
- Calkins, S. D., & Hill, A. (2007). Caregiver influences on emerging emotion regulation: biological and environmental transactions in early development. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 229-248). New York, NY: Guilford Press.
- Cantos, A. L., Neale, J. M., O'Leary, K., & Gaines, R. W. (1997). Assessment of coping strategies of child abusing mothers. *Child Abuse & Neglect*, 21(7), 631-636.
doi:10.1016/S0145-2134(97)00022-7
- Carlson, V., Cicchetti, D., Barnett, D., & Braunwald, K. (1989). Disorganized/disoriented attachment relationships in maltreated infants. *Developmental Psychology*, 25(4), 525-531. doi:10.1037/0012-1649.25.4.525
- Callahan, K. L., & Hilsenroth, M. J. (2005). Childhood sexual abuse and adult defensive functioning. *Journal of Nervous and Mental Disease*, 193(7), 473-479.
doi:10.1097/01.nmd.0000168237.26124.47
- Carpenter, R. W., Wood, P. K., & Trull, T. J. (2016). Comorbidity of borderline personality disorder and lifetime substance use disorders in a nationally representative sample. *Journal of Personality Disorders*, 30(3), 336-350.
doi:10.1521/pedi_2015_29_197
- Centers for Disease Control and Prevention. (2015, July). *Today's Heroin Epidemic*. Retrieved from <https://www.cdc.gov/vitalsigns/heroin/infographic.html>

- Chaffin, M., & Valle, L. A. (2003). Dynamic prediction characteristics of the Child Abuse Potential Inventory. *Child Abuse & Neglect*, 27(5), 463-481. doi:10.1016/S0145-2134(03)00036-X
- Chaffin, M., Kelleher, K., & Hollenberg, J. (1996). Onset of physical abuse and neglect: Psychiatric, substance abuse, and social risk factors from prospective community data. *Child Abuse & Neglect*, 20(3), 191-203. doi:10.1016/S0145-2134(95)00144-1
- Chan, D. A., & Perry, M. A., (1981). *Child abuse, discriminating factors toward a positive outcome*. Paper presented at the biennial meeting of the Society for Research in Child Development: Boston, MA.
- Chaplin, T. M., & Sinha, R. (2013). Stress and parental addiction. In N. E. Suchman, M. Pajulo, & L. C. Mayes (Eds.), *Parenting and substance abuse: Developmental approaches to intervention* (pp. 24-43). New York, NY: Oxford University Press.
- Cicchetti, D., Ganiban, J., & Barnett, D. (1991). Contributions from the study of high-risk populations to understanding the development of emotion regulation. In J. Garber, K. A. Dodge, J. Garber, & K. A. Dodge (Eds.), *The development of emotion regulation and dysregulation* (pp. 15-48). New York, NY: Cambridge University Press.
doi:10.1017/CBO9780511663963.003
- Cicchetti, D., & Rizley, R. (1981). Developmental perspectives on the etiology, intergenerational transmission, and sequelae of child maltreatment. *New Directions for Child & Adolescent Development*, 1981(11), 31. doi:10.1002/cd.23219811104
- Cicchetti, D., & Toth, S. L. (1995). A developmental psychopathology perspective on child abuse and neglect. *Journal of the American Academy of Child & Adolescent Psychiatry*, 34(5), 541-565. doi:10.1097/00004583-199505000-00008

- Cicero, T. J., Ellis, M. S., Surratt, H. L., & Kurtz, S. P. (2014). The changing face of heroin use in the United States: A retrospective analysis of the past 50 years. *JAMA Psychiatry*, 71(7), 821-826. doi:10.1001/jamapsychiatry.2014.366
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159. doi:10.1037/0033-2909.112.1.155
- Conrod, P. J., & Nikolaou, K. (2016). Annual research review: On the developmental neuropsychology of substance use disorders. *Journal of Child Psychology and Psychiatry*, 57(3), 371-394. doi:10.1111/jcpp.12516
- Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological Assessment*, 6(2), 117-128. doi:10.1037/1040-3590.6.2.117
- Cooper, M. L., Frone, M. R., Russell, M., & Mudar, P. (1995). Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *Journal of Personality and Social Psychology*, 69(5), 990-1005. doi:10.1037/0022-3514.69.5.990
- Couron, B. L. (1982, February). Assessing parental potentials for child abuse in contrast to nurturing. *Dissertation Abstracts International*, 42, 3412.
- Craig, C. D., & Sprang, G. (2007). Trauma exposure and child abuse potential: Investigating the cycle of violence. *American Journal of Orthopsychiatry*, 77(2), 296-305. doi:10.1037/0002-9432.77.2.296
- Crawford, J. R., & Henry, J. D. (2004). The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, 43(3), 245-265. doi:10.1348/0144665031752934

- Cross, D., Fani, N., Powers, A., & Bradley, B. (2017). Neurobiological development in the context of childhood trauma. *Clinical Psychology: Science and Practice*, 24(2), 111-124. doi:10.1111/cpsp.12198
- Crouch, J. L., Milner, J. S., & Thomsen, C. (2001). Childhood physical abuse, early social support, and risk for maltreatment: Current social support as a mediator of risk for child physical abuse. *Child Abuse & Neglect*, 25(1), 93-107. doi:10.1016/S0145-2134(00)00230-1
- Crowe, H. P., & Zeskind, P. S. (1992). Psychophysiological and perceptual responses to infant cries varying in pitch: Comparison of adults with low and high scores on the Child Abuse Potential Inventory. *Child Abuse & Neglect*, 16(1), 19-29. doi:10.1016/0145-2134(92)90005-C
- Crugnola, C. R., Tambelli, R., Spinelli, M., Gazzotti, S., Caprin, C., & Albizzati, A. (2011). Attachment patterns and emotion regulation strategies in the second year. *Infant Behavior & Development*, 34(1), 136-151. doi:10.1016/j.infbeh.2010.11.002
- Cunningham, R. (1992). Developmentally appropriate psychosocial care for children affected by parental chemical dependence. *Journal of Health Care for the Poor and Underserved*, 3(1), 208-221. doi:10.1353/hpu.2010.0473
- da Silva Ferreira, G. C., Crippa, J. S., & de Lima Osório, F. (2014). Facial emotion processing and recognition among maltreated children: A systematic literature review. *Frontiers in Psychology*, 5(1), 1-10. doi: 10.3389/fpsyg.2014.01460
- Dannlowski, U., Kugel, H., Huber, F., Stuhrmann, A., Redlich, R., Grotegerd, D., Dohm, K., Sehlemeyr, C., Konrad, C., Baune, B. T., Arolt, V., Heindel, W., Zwisterlood, P., & Suslow, T. (2013). Childhood maltreatment is associated with an automatic negative

- emotion processing bias in the amygdala. *Human Brain Mapping*, 34(11), 2899-2909.
doi:10.1002/hbm.22112
- Daro, D., & McCurdy, K. (1991). *Current trends in child abuse reporting and fatalities: The results of the 1990 annual fifty state survey*. Chicago, IL: National Committee for Prevention of Child Abuse.
- Davis, S. K. (1990). Chemical dependency in women: A description of its effects and outcome on adequate parenting. *Journal of Substance Abuse Treatment*, 7(4), 225-232.
doi:10.1016/0740-5472(90)90045-R
- Davis, S. (1994). Effects of chemical dependency in parenting women. In R. R. Watson (Ed.), *Drug and alcohol abuse reviews: Addictive behaviors in women* (Vol. 5; pp. 381- 414). Totowa NJ: Humana Press.
- De Bortoli, L., Coles, J., & Dolan, M. (2014). Linking illicit substance misuse during pregnancy and child abuse: What is the quality of the evidence? *Child & Family Social Work*, 19(2), 136-148. doi:10.1111/cfs.12002
- de Paul, J., & Domenech, L. (2000). Childhood history of abuse and child abuse potential in adolescent mothers: A longitudinal study. *Child Abuse & Neglect*, 24(5), 701-713.
doi:10.1016/S0145-2134(00)00124-1
- DePaulo, B. M., Kashy, D. A., Kirkendol, S. E., Wyer, M. M., & Epstein, J. A. (1996). Lying in everyday life. *Journal of Personality and Social Psychology*, 70(5), 979-995.
doi:10.1037/0022-3514.70.5.979
- Dimeff, L. A., & Linehan, M. M. (2008). Dialectical behavior therapy for substance abusers. *Addiction Science & Clinical Practice*, 4(2), 39–47. doi: 10.1151/ascp084239

- Dixon, L., Browne, K., & Hamilton-Giachritsis, C. (2005a). Risk factors of parents abused as children: A mediational analysis of the intergenerational continuity of child maltreatment (Part I). *Journal of Child Psychology and Psychiatry*, 46(1), 47-57. doi:10.1111/j.1469-7610.2004.00339.x
- Dixon, L., Hamilton-Giachritsis, C., & Browne, K. (2005b). Attributions and behaviours of parents abused as children: A mediational analysis of the intergenerational continuity of child maltreatment (Part II). *Journal of Child Psychology and Psychiatry*, 46(1), 58-68. doi:10.1111/j.1469-7610.2004.00340.x
- Dore, M. M., & Doris, J. M. (1998). Preventing child placement in substance-abusing families: research-informed practice. *Child Welfare*, 77(4), 407–426.
- Dore, M. M., Doris, J. M., & Wright, P. (1995). Identifying substance abuse in maltreating families: A child welfare challenge. *Child Abuse & Neglect*, 19(5), 531-543. doi:10.1016/0145-2134(95)00013-X
- Dube, S. R., Anda, R. F., Felitti, V. J., Edwards, V. J., & Croft, J. B. (2002). Adverse childhood experiences and personal alcohol abuse as an adult. *Addictive Behaviors*, 27(5), 713-725. doi:10.1016/S0306-4603(01)00204-0
- Edwards, V. J., Holden, G. W., Felitti, V. J., & Anda, R. F. (2003). Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: Results from the adverse childhood experiences study. *The American Journal of Psychiatry*, 160(8), 1453-1460. doi:10.1176/appi.ajp.160.8.1453
- Eiden, R. D., Foote, A., & Schuetze, P. (2007). Maternal cocaine use and caregiving status: Group differences in caregiver and infant risk variables. *Addictive Behaviors*, 32(3), 465-476. doi:10.1016/j.addbeh.2006.05.013

- Etkin, A., Büchel, C., & Gross, J. J. (2015). The neural bases of emotion regulation. *Nature Reviews Neuroscience*, 16(11), 693-700. doi:10.1038/nrn4044
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London: Sage.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine*, 14(4), 245-258. doi:10.1016/S0749-3797(98)00017-8
- Fleming, J., Mullen, P. E., Sibthorpe, B., & Bammer, G. (1999). The long-term impact of childhood sexual abuse in Australian women. *Child Abuse & Neglect*, 23(2), 145-159. doi:10.1016/S0145-2134(98)00118-5
- Fraiberg, S., Adelson, E., & Shapiro, V. (1975). Ghosts in the nursery: A psychoanalytic approach to the problems of impaired infant–mother relationships. *Journal of the American Academy of Child Psychiatry*, 14(3), 387-421. doi: 10.1016/S0002-7138(09)61442-4
- Frodi, A. M., & Lamb, M. E. (1980). Infants at risk for child abuse. *Infant Mental Health Journal*, 1(4), 240-247. doi:10.1002/1097-0355(198024)1:4<240::AID-IMHJ2280010407>3.0.CO;2-H
- Gaines, R., Sandgrund, A., Green, A. H., & Power, E. (1978). Etiological factors in child maltreatment: A multivariate study of abusing, neglecting, and normal mothers. *Journal of Abnormal Psychology*, 87(5), 531-540. doi:10.1037/0021-843X.87.5.531
- Gilbert, L. K., Breiding, M. J., Merrick, M. T., Thompson, W. W., Ford, D. C., Dhingra, S. S., & Parks, S. E. (2015). Childhood adversity and adult chronic disease: An update from ten

- states and the District of Columbia, 2010. *American Journal of Preventive Medicine*, 48(3), 345-349. doi:10.1016/j.amepre.2014.09.006
- Gilman, T. L., Latsko, M., Matt, L., Flynn, J., de la Cruz Cabrera, O., Douglas, D., & ... Coifman, K. G. (2015). Variation of 5-HTTLPR and deficits in emotion regulation: A pathway to risk?. *Psychology & Neuroscience*, 8(3), 397-413. doi:10.1037/pne0000017
- Goldstein, A. L., Flett, G. L., & Wekerle, C. (2010). Child maltreatment, alcohol use and drinking consequences among male and female college students: An examination of drinking motives as mediators. *Addictive Behaviors*, 35(6), 636-639. doi:10.1016/j.addbeh.2010.02.002
- Gottfredson, N. C., & Hussong, A. M. (2013). Drinking to dampen affect variability: Findings from a college student sample. *Journal of Studies on Alcohol and Drugs*, 74(4), 576-583. doi:10.15288/jsad.2013.74.576
- Grabe, H. J., Schwahn, C., Mahler, J., Schulz, A., Spitzer, C., Fenske, K., & ... Freyberger, H. J. (2012). Moderation of adult depression by the serotonin transporter promoter variant (5-HTTLPR), childhood abuse and adult traumatic events in a general population sample. *American Journal of Medical Genetics Part B: Neuropsychiatric Genetics*, 159B(3), 298-309. doi:10.1002/ajmg.b.32027
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41-54. doi:10.1023/B:JOBA.00000007455.08539.94
- Green, B. L., Rockhill, A., & Furrer, C. (2006). Understanding patterns of substance abuse treatment for women involved with child welfare: The influence of the Adoption and

- Safe Families Act (ASFA). *The American Journal of Drug and Alcohol Abuse*, 32(2), 149-176. doi:10.1080/00952990500479282
- Grella, C. E., Hser, Y., & Huang, Y. (2006). Mothers in substance abuse treatment: Differences in characteristics based on involvement with child welfare services. *Child Abuse & Neglect*, 30(1), 55-73. doi:10.1016/j.chiabu.2005.07.005
- Grietens, H., De Haene, L., & Uyttenbroek, K. (2007). Cross-cultural validation of the Child Abuse Potential Inventory in Belgium (Flanders): Relations with demographic characteristics and parenting problems. *Journal of Family Violence*, 22(4), 223-229. doi:10.1007/s10896-007-9074-2
- Gross, J. J. (2014). *Handbook of emotion regulation (2nd ed.)*. New York, NY: Guilford Press.
- Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, 26(1), 1-26. doi:10.1080/1047840X.2014.940781
- Gross, A. B., & Keller, H. R. (1992). Long-term consequences on childhood physical and psychological maltreatment. *Aggressive Behavior*, 18(3), 171-185. doi:10.1002/1098-2337(1992)18:3<171::AID-AB2480180302>3.0.CO;2-I
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85(2), 348-362. doi:10.1037/0022-3514.85.2.348
- Gross, J. J., Richards, J. M., & John, O. P. (2006). Emotion regulation in everyday life. In D. K. Snyder, J. Simpson, & J. N. Hughes (Eds.), *Emotion regulation in couples and families: Pathways to dysfunction and health* (pp. 13-35). Washington, DC: American Psychological Association. doi:10.1037/11468-001

- Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundations. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3-24). New York, NY: Guilford Press.
- Gruber, K. J., & Taylor, M. F. (2006). A family perspective for substance abuse: Implications from the literature. *Journal of Social Work Practice in the Addictions*, 6(1-2), 1-29.
doi:10.1300/J160v06n01_01
- Gunnar, M., & Quevedo, K. (2007). The neurobiology of stress and development. *Annual Review of Psychology*, 58(1)145-173. doi:10.1146/annurev.psych.58.110405.085605
- Gustavsson, N. S. (1991). Chemically exposed children: the child welfare response. *Child and Adolescent Social Work Journal*, 8(4), 297–307. doi: 10.1007/BF00756299
- Hall, L. A., Sachs, B., & Rayens, M. K. (1998). Mothers' potential for child abuse: The roles of childhood abuse and social resources. *Nursing Research*, 47(2), 87-95.
doi:10.1097/00006199-199803000-00007
- Hanson, J. L., Nacewicz, B. M., Sutterer, M. J., Cayo, A. A., Schaefer, S. M., Rudolph, K. D., & ... Davidson, R. J. (2015). Behavioral problems after early life stress: Contributions of the hippocampus and amygdala. *Biological Psychiatry*, 77(4), 314-323.
doi:10.1016/j.biopsych.2014.04.020
- Harris, D. R., Bisbee, C. T., & Evans, S. H. (1971). Further comments: Misuse of analysis of covariance. *Psychological Bulletin*, 75(3), 220-222. doi:10.1037/h0030416
- Hien, D., Cohen, L. R., Caldeira, N. A., Flom, P., & Wasserman, G. (2010). Depression and anger as risk factors underlying the relationship between maternal substance involvement and child abuse potential. *Child Abuse & Neglect*, 34(2), 105-113.
doi:10.1016/j.chiabu.2009.05.006

- Hien, D., & Honeyman, T. (2000). A closer look at the drug abuse-maternal aggression link. *Journal of Interpersonal Violence, 15*(5), 503-522.
doi:10.1177/088626000015005004
- Holden, E., & Banez, G. A. (1996). Child abuse potential and parenting stress within maltreating families. *Journal of Family Violence, 11*(1), 1-12. doi:10.1007/BF02333337
- Holden, E., Willis, D. J., & Foltz, L. (1989). Child abuse potential and parenting stress: Relationships in maltreating parents. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 1*(1), 64-67. doi:10.1037/1040-3590.1.1.64
- Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine, 4*(1), 1-39. doi:10.1007/BF00844845
- Kaufman, J., & Zigler, E. (1987). Do abused children become abusive parents? *American Journal of Orthopsychiatry, 57*(2), 186-192. doi:10.1111/j.1939-0025.1987.tb03528.x
- Kelleher, K., Chaffin, M., Hollenberg, J., & Fischer, E. (1994). Alcohol and drug disorders among physically abusive and neglectful parents in a community-based sample. *American Journal of Public Health, 84*(10), 1586-1590.
doi:10.2105/AJPH.84.10.1586
- Kelley, S. J. (1992). Parenting stress and child maltreatment in drug-exposed children. *Child Abuse & Neglect, 16*(3), 317-328. doi:10.1016/0145-2134(92)90042-P
- Kelley, M. L., Lawrence, H. R., Milletich, R. J., Hollis, B. F., & Henson, J. M. (2015). Modeling risk for child abuse and harsh parenting in families with depressed and substance-abusing parents. *Child Abuse & Neglect, 43*(1), 42-52. doi:10.1016/j.chiabu.2015.01.017

- Kendler, K. S., Bulik, C. M., Silberg, J., Hettema, J. M., Myers, J., & Prescott, C. A. (2000). Childhood sexual abuse and adult psychiatric and substance use disorders in women: An epidemiological and cotwin control analysis. *Archives of General Psychiatry*, 57(10), 953-959. doi:10.1001/archpsyc.57.10.953
- Khantzian, E. J. (1985). The self-medication hypothesis of addictive disorders: Focus on heroin and cocaine dependence. *The American Journal of Psychiatry*, 142(11), 1259-1264. doi:10.1176/ajp.142.11.1259
- Khantzian, E. J. (1989). Addiction: Self-destruction or self-repair? *Journal of Substance Abuse Treatment*, 6(2), 75. doi:10.1016/0740-5472(89)90032-9
- Khantzian, E. J. (2013). Addiction as a self-regulation disorder and the role of self-medication. *Addiction*, 108(4), 668-669. doi: 10.1111/add.12004
- Kim, P., Evans, G. W., Angstadt, M., Ho, S. S., Sripada, C. S., Swain, J. E., Liberzon, I., & Phan, K. L. (2013). Effects of childhood poverty and chronic stress on emotion regulatory brain function in adulthood. *PNAS Proceedings of the National Academy of Sciences of the United States of America*, 110(46), 18442-18447. doi:10.1073/pnas.1308240110
- Kim, B., Stifter, C. A., Philbrook, L. E., & Teti, D. M. (2014). Infant emotion regulation: Relations to bedtime emotional availability, attachment security, and temperament. *Infant Behavior & Development*, 37(4), 480-490. doi:10.1016/j.infbeh.2014.06.006
- Kleber, H. D., Weiss, R. D., Anton, R. F., George, T. P., Greenfield, S. F., Kosten, T. R., ... & Hennessy, G. (2007). Practice guideline for the treatment of patients with substance use disorders: Second edition. *The American Journal of Psychiatry*, 164(4 Suppl), 5-123.

- Kober, H. (2014). Emotion regulation in substance use disorders. In J. J. Gross (Ed.), *Handbook of emotion regulation* (2nd ed.; pp. 428-446). New York, NY: Guilford Press.
- Koob, G., & Kreek, M. J. (2007). Stress, dysregulation of drug reward pathways, and the transition to drug dependence. *The American Journal of Psychiatry*, 164(8), 1149-1159. doi:10.1176/appi.ajp.2007.05030503
- Krueger, R. F. (1999). The structure of common mental disorders. *Archives of General Psychiatry*. 56(10):921– 926. doi:10.1001/archpsyc.56.10.921
- Kuiper, N. A., & Martin, R. A. (1998). Laughter and stress in daily life: Relation to positive and negative affect. *Motivation and Emotion*, 22(2), 133-153. doi:10.1023/A:1021392305352
- Kuntsche, E., & Bruno, R. (2015). Moody booze: Introducing the special section on affect regulation and substance use. *Drug and Alcohol Review*, 34(6), 569-570. doi:10.1111/dar.12349
- Laulik, S., Allam, J., & Browne, K. (2015). The use of the Child Abuse Potential Inventory in the assessment of parents involved in care proceedings. *Child Abuse Review*, 24(5), 332-345. doi:10.1002/car.2294
- Leigh, H. (2015). Affect, mood, emotions: Depressive disorders and bipolar and related disorders. In H. Leigh & J. Streltzer, (Eds.), *Handbook of consultation-liaison psychiatry*, 2nd ed (pp. 225-235). New York, NY: Springer Science + Business Media. doi:10.1007/978-3-319-11005-9_15
- Lieberman, A., Ghosh Ippen, C., & Van Horn, P. (2015). *Don't hit my mommy!: A manual for child-parent psychotherapy with young children exposed to violence and other trauma*, 2nd ed. Washington, DC: Zero to Three.
- Linehan, M. (2015). *DBT skills training manual*, 2nd ed. New York, NY: Guilford Press.

- Leonard, K. E., & Eiden, R. D. (2007). Marital and family processes in the context of alcohol use and alcohol disorders. *Annual Review of Clinical Psychology*, 3(1), 285-310.
doi:10.1146/annurev.clinpsy.3.022806.091424
- Logrip, M. L., Zorrilla, E. P., & Koob, G. F. (2012). Stress modulation of drug self-administration: Implications for addiction comorbidity with post-traumatic stress disorder. *Neuropharmacology*, 62(2), 552-564. doi:10.1016/j.neuropharm.2011.07.007
- Lowell, A., & Renk, K. (2017) Predictors of child maltreatment potential in a national sample of mothers of young children: Emotion dysregulation as a mediator between maternal difficult temperament and maternal child maltreatment potential. *Journal of Aggression, Maltreatment, and Trauma*, 26(4), 335-353. doi:10.1080/10926771.2017.1299825.
- Lowell, A., Renk, K., & Adgate, A. H. (2014). The role of attachment in the relationship between child maltreatment and later emotional and behavioral functioning. *Child Abuse & Neglect*, 38(9), 1436-1449. doi:10.1016/j.chiabu.2014.02.006
- MacDonald, K., Thomas, M. L., Sciolla, A. F., Schneider, B., Pappas, K., Bleijenberg, G., & ... Wingenfeld, K. (2016). Minimization of childhood maltreatment is common and consequential: Results from a large, multinational sample using the Childhood Trauma Questionnaire. *Plos ONE*, 11(1), 1-16. doi:10.1371/journal.pone.0146058
- MacKenzie, M. J., Kotch, J. B., & Lee, L. (2011). Toward a cumulative ecological risk model for the etiology of child maltreatment. *Children and Youth Services Review*, 33(9), 1638-1647. doi:10.1016/j.childyouth.2011.04.018
- Macleod, J., Hickman, M., Jones, H. E., Copeland, L., McKenzie, J., de Angelis, D., Kimber, J., & Robertson, J. R. (2013). Early life influences on the risk of injecting drug use: Case

- control study based on the Edinburgh Addiction Cohort. *Addiction*, 108(4), 743-750.
doi:10.1111/add.12056
- Madigan, S., Wade, M., Plamondon, A., Maguire, J. L., & Jenkins, J. M. (In press). Maternal adverse childhood experience and infant health: Biomedical and psychosocial risks as intermediary mechanisms. *The Journal of Pediatrics*, Online First Articles.
doi:10.1016/j.jpeds.2017.04.052
- Mammen, O. K., Kolko, D. J., & Pilkonis, P. A. (2002). Negative affect and parental aggression in child physical abuse. *Child Abuse & Neglect*, 26(4), 407-424. doi:10.1016/S0145-2134(02)00316-2
- Martin, C. G., Roos, L. E., Zalewski, M., & Cummins, N. (2016). A dialectical behavior therapy skills group case study on mothers with severe emotion dysregulation. *Cognitive and Behavioral Practice*, Online First Articles. doi:10.1016/j.cbpra.2016.08.002
- Mash, E. J., Johnston, C., & Kovitz, K. (1983). A comparison of the mother-child interactions of physically abused and non-abused children during play and task situations. *Journal of Clinical Child Psychology*, 12(3), 337-346. doi:10.1080/15374418309533154
- Maughan, A., & Cicchetti, D. (2002). Impact of child maltreatment and interadult violence on children's emotion regulation abilities and socioemotional adjustment. *Child Development*, 73(5), 1525-1542. doi:10.1111/1467-8624.00488
- McCauley, J., Kern, D. E., Kolodner, K., Dill, L., & Schroeder, A. F. (1997). Clinical characteristics of women with a history of childhood abuse: Unhealed wounds. *JAMA: Journal of the American Medical Association*, 277(17), 1362-1368.
doi:10.1001/jama.277.17.1362

- McCombs-Thornton, K. L., & Foster, E. M. (2012). The effect of the Zero to Three Court Teams initiative on types of exits from the foster care system — A competing risks analysis. *Children and Youth Services Review*, 34(1), 169-178.
doi:10.1016/j.chilyouth.2011.09.013
- McEwen, B. S. (2012). Brain on stress: How the social environment gets under the skin. *PNAS Proceedings of the National Academy of Sciences of the United States of America*, 109(2), 17180-17185. doi:10.1073/pnas.1121254109
- McKee, G. R., & Bramante, A. (2010). Maternal filicide and mental illness in Italy: A comparative study. *Journal of Psychiatry & Law*, 38(3), 271-282.
doi:10.1177/009318531003800303
- McKee, A., & Egan, V. (2013). A case series of twenty-one maternal filicides in the UK. *Child Abuse & Neglect*, 37(10), 753-761. doi:10.1016/j.chiabu.2013.02.008
- Merikangas, K. R., Mehta, R. L., Molnar, B. E., Walters, E. E., Swendsen, J. D., Auilar-Gaziola, S., & ... Kessler, R. C. (1998). Comorbidity of substance use disorders with mood and anxiety disorders: Results of the international consortium in psychiatric epidemiology. *Addictive Behaviors*, 23(6), 893-908. doi:10.1016/S0306-4603(98)00076-8
- Mersky, J. P., Topitzes, J., & Reynolds, A. J. (2013). Impacts of adverse childhood experiences on health, mental health, and substance use in early adulthood: A cohort study of an urban, minority sample in the U.S. *Child Abuse & Neglect*, 37(11), 917-925.
doi:10.1016/j.chiabu.2013.07.011

- Mezquita, L., Stewart, S. H., Ibáñez, M. I., Ruipérez, M. A., Villa, H., Moya, J., & Ortet, G. (2011). Drinking motives in clinical and general populations. *European Addiction Research, 17*(5), 250-261. doi:10.1159/000328510
- Milner, J. (1986). *The Child Abuse Potential Inventory: Manual (2nd ed.)*. Webster, NC: Psytec.
- Milner, J. S. (1993). Social information processing and physical child abuse. *Clinical Psychology Review, 13*(3), 275-294. doi:10.1016/0272-7358(93)90024-G
- Milner, J. S. (1994). Assessing physical child abuse risk: The Child Abuse Potential Inventory. *Clinical Psychology Review, 14*(6), 547-583. doi:10.1016/0272-7358(94)90017-5
- Milner, J. S. (2004). The Child Abuse Potential (CAP) inventory. In M. J. Hilsenroth, D. L. Segal, M. J. Hilsenroth, D. L. Segal (Eds.), *Comprehensive handbook of psychological assessment, Vol. 2: Personality assessment* (pp. 237-246). Hoboken, NJ John Wiley & Sons Inc.
- Milner, J. S., & Campbell, J. C. (2007). Prediction issues for practitioners. In J. C. Campbell, J. C. Campbell (Eds.), *Assessing dangerousness: Violence by batterers and child abusers, 2nd ed.* (pp. 25-43). New York, NY: Springer Publishing Co.
- Milner, J. S., Gold, R. G., Ayoub, C., & Jacewitz, M. M. (1984). Predictive validity of the Child Abuse Potential Inventory. *Journal of Consulting and Clinical Psychology, 52*(5), 879-884. doi:10.1037/0022-006X.52.5.879
- Milner, J. S., Gold, R. G., & Wimberley, R. C. (1986). Prediction and explanation of child abuse: Cross-validation of the Child Abuse Potential Inventory. *Journal of Consulting and Clinical Psychology, 54*(6), 865-866. doi:10.1037/0022-006X.54.6.865

- Milner, J. S., & Robertson, K. R. (1990). Comparison of physical child abusers, intrafamilial sexual child abusers, and child neglecters. *Journal of Interpersonal Violence*, 5(1), 37-48. doi:10.1177/088626090005001003
- Milner, J. S., & Wimberley, R. C. (1979). An inventory for the identification of child abusers. *Journal of Clinical Psychology*, 35(1), 95-100. doi:10.1002/1097-4679(197901)35:1<95::AID-JCLP2270350112>3.0.CO;2-K
- Milner, J. S., & Wimberley, R. C. (1980). Prediction and explanation of child abuse. *Journal of Clinical Psychology*, 36(4), 875-884. doi: 10.1002/1097-4679(198010)36:4<875::AID-JCLP2270360407>3.0.CO;2-1
- Mohr, C. D., Arpin, S., & McCabe, C. T. (2015). Daily affect variability and context- specific alcohol consumption. *Drug and Alcohol Review*, 34(6), 581-587. doi:10.1111/dar.12253
- Montalvo-Ortiz, J. L., Gelernter, J., Hudziak, J., & Kaufman, J. (2016). RDoC and translational perspectives on the genetics of trauma-related psychiatric disorders. *American Journal of Medical Genetics Part B: Neuropsychiatric Genetics*, 171(1), 81-91. doi:10.1002/ajmg.b.32395
- Moor, A., & Silvern, L. (2006). Identifying pathways linking child abuse to psychological outcome: The mediating role of perceived parental failure of empathy. *Journal of Emotional Abuse*, 6(4), 91-114. doi:10.1300/J135v06n04_05
- Moutsiana, C., Fearon, P., Murray, L., Cooper, P., Goodyer, I., Johnstone, T., & Halligan, S. (2014). Making an effort to feel positive: Insecure attachment in infancy predicts the neural underpinnings of emotion regulation in adulthood. *Journal of Child Psychology and Psychiatry*, 55(9), 999-1008. doi:10.1111/jcpp.12198

- Mullen, P. E., Martin, J. L., Anderson, J. C., Romans, S. E., & Herbison, G. P. (1996). The long-term impact of the physical, emotional, and sexual abuse of children: A community study. *Child Abuse & Neglect*, 20(1), 7-21. doi:10.1016/0145-2134(95)00112-3
- Murphy, D. A., Hser, Y.-I., Huang, D., Brecht, M.-L., & Herbeck, D. M. (2010). Self-report of longitudinal substance use: A comparison of the UCLA natural history interview and the addiction severity index. *Journal of Drug Issues*, 40(2), 495–516.
- Murphy, J. M., Jellinek, M. S., Quinn, D., Smith, G., Poitras, F. G., & Goshko, M. (1991). Substance abuse and serious child mistreatment: Prevalence, risk, and outcome in a court sample. *Child Abuse & Neglect*, 15(3), 197-211. doi:10.1016/0145-2134(91)90065-L
- Murphy, A., Steele, M., Dube, S. R., Bate, J., Bonuck, K., Meissner, P., Goldman, H., & Steele, H. (2014). Adverse childhood experiences (ACEs) questionnaire and adult attachment interview (AAI): Implications for parent child relationships. *Child Abuse & Neglect*, 38(2), 224-233. doi:10.1016/j.chiabu.2013.09.004
- Napper, L. E., Fisher, D. G., Johnson, M. E., & Wood, M. M. (2010). The reliability and validity of drug users' self reports of amphetamine use among primarily heroin and cocaine users. *Addictive Behaviors*, 35(4), 350. doi:http://doi.org/10.1016/j.addbeh.2009.12.006
- National Institute on Drug Abuse. (2012). *Principles of drug addiction treatment: A research-based guide*. Bethesda, MD: National Institute on Drug Abuse. Retrieved June 2017 from https://d14rmgtrwzf5a.cloudfront.net/sites/default/files/podat_1.pdf
- Ondersma, S. J., Chaffin, M. J., Mullins, S. M., & LeBreton, J. M. (2005). A brief form of the child abuse potential inventory: Development and validation. *Journal of Clinical Child and Adolescent Psychology*, 34(2), 301-311. doi:10.1207/s15374424jccp3402_9

- Oshri, A., Sutton, T. E., Clay-Warner, J., & Miller, J. D. (2015). Child maltreatment types and risk behaviors: Associations with attachment style and emotion regulation dimensions. *Personality and Individual Differences*, 73(1), 127-133.
doi:10.1016/j.paid.2014.09.015
- Palacio-Quitin, E. (2005). Risk factors of child neglect and physical abuse. In H. Grietens, W. Lahaye, W. Hellinckx, & L. Vandemeulebroecke (Eds.), *In the best interests of children and youth: International perspectives* (pp. 77-94). Leuven: Leuven University Press.
- Perez-Albeniz, A., & de Paul, J. (2004). Gender differences in empathy in parents at high- and low-risk of child physical abuse. *Child Abuse & Neglect*, 28(3), 289-300.
doi:10.1016/j.chiabu.2003.11.017
- Pérez-Padilla, J., Menéndez, S., & Lozano, O. (2015). Validity of the Parenting Stress Index Short Form in a sample of at-risk mothers. *Evaluation Review*, 39(4), 428-446.
doi:10.1177/0193841X15600859
- Philibert, R., & Erwin, C. (2015). A review of epigenetic markers of tobacco and alcohol consumption. *Behavioral Sciences & The Law*, 33(5), 675-690. doi:10.1002/bsl.2202
- Plant, C. P., Donohue, B., & Holland, J. M. (2016). Examination of life satisfaction, child maltreatment potential and substance use in mothers referred for treatment by child protective services for child neglect and substance abuse: Implications for intervention planning. *Applied Research in Quality of Life*, 11(3), 805-816. doi:10.1007/s11482-015-9398-7
- Pletcher, M. J., Kertesz, S. G., Kohn, M. A., & Gonzales, R. (2008). Trends in opioid prescribing by race/ethnicity for patients seeking care in us emergency departments. *JAMA: Journal of the American Medical Association*, 299(1), 70-78. doi:10.1001/jama.2007.64

Powell, B., Cooper, G., Hoffman, K., & Marvin, B. (2014). *The circle of security intervention: Enhancing attachment in early parent–child relationships*. New York, NY: Guilford Press.

Renk, K., Boris, N. W., Lowell, A., Kolomeyer, E., Cunningham, A., & Khan, M. (2016). Predicting child maltreatment potential in substance involved mothers participating in a residential treatment program. *Infant Mental Health Journal*, 37, Supplement 1. (Published Abstract.)

Renk, K., Roddenberry, A., & Oliveros, A. (2004). A cognitive reframing of ghosts in the nursery. *Journal of Child and Family Studies*, 13(4), 377-384.
doi:10.1023/B:JCFS.0000044722.70627.79

Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: Family social environments and the mental and physical health of offspring. *Psychological Bulletin*, 128(2), 330-366. doi:10.1037/0033-2909.128.2.330

Resick, P., Monson, C., & Chard, K. (2016). *Cognitive processing therapy for PTSD: A comprehensive manual, 1st ed.* New York, NY: Guilford Press.

Ritschel, L. A., Tone, E. B., Schoemann, A. M., & Lim, N. E. (2015). Psychometric properties of the Difficulties in Emotion Regulation Scale across demographic groups. *Psychological Assessment*, 27(3), 944-954. doi:10.1037/pas0000099

Robinson, L. R., Morris, A., Heller, S., Scheeringa, M. S., Boris, N. W., & Smyke, A. T. (2009). Relations between emotion regulation, parenting, and psychopathology in young maltreated children in out of home care. *Journal of Child and Family Studies*, 18(4), 421-434. doi:10.1007/s10826-008-9246-6

- Rodriguez, C. M. (2010). Personal contextual characteristics and cognitions: Predicting child abuse potential and disciplinary style. *Journal of Interpersonal Violence*, 25(2), 315-335. doi:10.1177/0886260509334391
- Rodriguez, C. M., & Green, A. J. (1997). Parenting stress and anger expression as predictors of child abuse potential. *Child Abuse & Neglect*, 21, 367-377. doi: 10.1016/S0145-2134(96)00177-9
- Rosenberg, M. S., & Reppucci, N. (1983). Abusive mothers: Perceptions of their own and their children's behavior. *Journal of Consulting and Clinical Psychology*, 51(5), 674-682. doi:10.1037/0022-006X.51.5.674
- Rutherford, H. V., Potenza, M. N., & Mayes, L. C. (2013). The neurobiology of addiction and attachment. In N. E. Suchman, M. Pajulo, & L. C. Mayes (Eds.), *Parenting and substance abuse: Developmental approaches to intervention* (pp. 3-23). New York, NY: Oxford University Press. doi:10.1093/med:psych/9780199743100.003.0001
- Sameroff, A. J., & Fiese, B. H. (2000). Models of development and developmental risk. In C. R. Zeanah (Ed.), *Handbook of infant mental health* (2nd ed.; pp. 3-19). New York: Guilford Press.
- Savvas, S. M., Somogyi, A. A., & White, J. M. (2012). The effect of methadone on emotional reactivity. *Addiction*, 107(2), 388-392. doi:10.1111/j.1360-0443.2011.03634.x
- Seo, D., Lacadie, C. M., & Sinha, R. (2016). Neural correlates and connectivity underlying stress-related impulse control difficulties in alcoholism. *Alcoholism: Clinical and Experimental Research*, 40(9), 1884-1894. doi:10.1111/acer.13166
- Serafini, K., Malin-Mayor, B., Nich, C., Hunkele, K., & Carroll, K. M. (2016). Psychometric properties of the Positive and Negative Affect Schedule (PANAS) in a heterogeneous

- sample of substance users. *The American Journal of Drug and Alcohol Abuse*, 42(2), 203-212. doi:10.3109/00952990.2015.1133632
- Shackman, J. E., & Pollak, S. D. (2014). Impact of physical maltreatment on the regulation of negative affect and aggression. *Development and Psychopathology*, 26(4), 1021-1033. doi:10.1017/S0954579414000546
- Shadur, J. M., Hussong, A. M., & Haroon, M. (2015). Negative affect variability and adolescent self-medication: The role of the peer context. *Drug and Alcohol Review*, 34(1), 571-580. doi:10.1111/dar.12260
- Shiffman, S., & Waters, A. J. (2004). Negative affect and smoking lapses: A prospective analysis. *Journal of Consulting and Clinical Psychology*, 72(2), 192-201. doi:10.1037/0022-006X.72.2.192
- Short, V. L., Gannon, M., Weingarten, W., Kaltenbach, K., LaNoue, M., & Abatemarco, D. J. (2017). Reducing stress among mothers in drug treatment: A description of a mindfulness based parenting intervention. *Maternal and Child Health Journal*, Online First Articles. doi:10.1007/s10995-016-2244-1
- Silverman, A. B., Reinherz, H. Z., & Giaconia, R. M. (1996). The long-term sequelae of child and adolescent abuse: A longitudinal community study. *Child Abuse & Neglect*, 20(8), 709-723. doi:10.1016/0145-2134(96)00059-2
- Sinha, R. (2001). How does stress increase risk of drug abuse and relapse? *Psychopharmacology*, 158(4), 343-359. doi:10.1007/s002130100917
- Sinha, R. (2008). Chronic stress, drug use, and vulnerability to addiction. In G. R. Uhl (Ed.), *Addiction reviews 2008* (pp. 105-130). Malden: Blackwell Publishing.

- Sinha, R. (2013). Stress and addiction. In P. M. Miller, S. A. Ball, M. E. Bates, A. W. Blume, K. M. Kampman, D. J. Kavanagh, ... P. De Witte (Eds.), *Comprehensive addictive behaviors and disorders, Vol. 1: Principles of addiction* (pp. 223-234). San Diego, CA: Elsevier Academic Press.
- Schlauch, R. C., Gwynn-Shapiro, D., Stasiewicz, P. R., Molnar, D. S., & Lang, A. R. (2013). Affect and craving: Positive and negative affect are differentially associated with approach and avoidance inclinations. *Addictive Behaviors*, 38(4), 1970-1979. doi:10.1016/j.addbeh.2012.12.003
- Shadish, W. R., Clark, M. H., Steiner, P. M., & Hill, J. (2008). Can nonrandomized experiments yield accurate answers? A randomized experiment comparing random and nonrandom assignments. *Journal of the American Statistical Association*, 103(484). 1334-1356. doi: 10.1198/016214508000000733
- Small, E., & Kohl, P. L. (2012). African American caregivers and substance abuse in child welfare: Identification of multiple risk profiles. *Journal of Family Violence*, 27(5), 415-426. doi: 10.1007/s10896-012-9442-4
- Smith, A. L., Cross, D., Winkler, J., Jovanovic, T., & Bradley, B. (2014). Emotional dysregulation and negative affect mediate the relationship between maternal history of child maltreatment and maternal child abuse potential. *Journal of Family Violence*, 29(5), 483-494. doi:10.1007/s10896-014-9606-5
- Smith, K. Z., Smith, P. H., & Grekin, E. R. (2014). Childhood sexual abuse, distress, and alcohol-related problems: Moderation by drinking to cope. *Psychology of Addictive Behaviors*, 28(2), 532-537. doi:10.1037/a0035381

- Solomon, D., Morgan, B., Asberg, K., & McCord, D. (2014). Treatment implications based on measures of child abuse potential and parent mental health: Are we missing an intervention opportunity? *Children and Youth Services Review*, 43(1), 153-159. doi:10.1016/j.chidyouth.2014.05.016
- Spinetta, J. J. (1978). Parental personality factors in child abuse. *Journal of Consulting and Clinical Psychology*, 46(6), 1409-1414. doi:10.1037/0022-006X.46.6.1409
- Spinhoven, P., Penninx, B. W., Hickendorff, M., van Hemert, A. M., Bernstein, D. P., & Elzinga, B. M. (2014). Childhood Trauma Questionnaire: Factor structure, measurement invariance, and validity across emotional disorders. *Psychological Assessment*, 26(3), 717-729. doi:10.1037/pas0000002
- Springer, K. W., Sheridan, J., Kuo, D., & Carnes, M. (2007). Long-term physical and mental health consequences of childhood physical abuse: Results from a large population-based sample of men and women. *Child Abuse & Neglect*, 31(5), 517-530. doi:10.1016/j.chiabu.2007.01.003
- Sroufe, L. A. (1996). *Emotional development: The organization of emotional life in the early years*. New York: Cambridge University Press.
- Sroufe, L. A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment and Human Development*, 7(4), 349-367. doi:10.1080/14616730500365928
- Starling, S. P., Sirotnak, A. P., Heisler, K. W., & Barnes-Eley, M. L. (2007). Inflicted skeletal trauma: The relationship of perpetrators to their victims. *Child Abuse & Neglect*, 31(9), 993-999. doi:10.1016/j.chiabu.2007.02.010

Steele, H., Bate, J., Steele, M., Dube, S. R., Danskin, K., Knafo, H., & ... Murphy, A. (2016).

Adverse childhood experiences, poverty, and parenting stress. *Canadian Journal of Behavioural Science / Revue Canadienne Des Sciences Du Comportement*, 48(1), 32-38.
doi:10.1037/cbs0000034

Stith, S. M., Liu, T., Davies, L., Boykin, E. L., Alder, M. C., Harris, J. M., Som, A., McPherson, M., & Dees, J. G. (2009). Risk factors in child maltreatment: A meta-analytic review of the literature. *Aggression and Violent Behavior*, 14(1), 13-29.
doi:10.1016/j.avb.2006.03.006

Straus, M. A., Hamby, S. L., Finkelhor, D., Moore, D. W., & Runyan, D. (1998). Identification of child maltreatment with the Parent-Child Conflict Tactics Scales: Development and psychometric data for a national sample of American parents. *Child Abuse & Neglect*, 22(4), 249-270. doi: 10.1016/S0145-2134(97)00174-9

Substance Abuse and Mental Health Services Administration, (2014). *Results from the 2013 national survey on drug use and health: Summary of national findings*. Rockville, MD: Substance Abuse and Mental Health Services Administration. Retrieved August 2015 from
<http://www.samhsa.gov/data/sites/default/files/NSDUHresultsPDFWHTML2013/Web/NSDUHresults2013.htm#3.1.2>

Suchman, N., DeCoste, C., Castiglioni, N., McMahon, T., Rounsaville, B., & Mayes, L. (2010). The Mothers and Toddlers Program, an attachment-based parenting intervention for substance-using women: Results from a randomized clinical pilot. *Attachment and Human Development*, 12(5), 483-504. doi:10.1080/14616734.2010.501983

- Suchman, N., DeCoste, C., McMahon, T., Rounsaville, B., & Mayes, L. (2011). The Mothers and Toddlers Program, an attachment-based parenting intervention for substance-using women: Results at 6-week follow up in a randomized clinical pilot. *Infant Mental Health Journal*, 32(4), 427–449. doi: asdf 10.1002/imhj.20303
- Suchman, N., DeCoste, C., Ordway, M. R., & Bers, S. (2013). Mothering from the inside out: A mentalization-based individual therapy for mothers with substance use disorders. In N. E. Suchman, M. Pajulo, & L. C. Mayes, (Eds.). *Parenting and substance abuse: Developmental approaches to intervention* (pp. 407-433). New York, NY: Oxford University Press. doi:10.1093/med:psych/9780199743100.003.0020
- Suchman, N., Decoste, C., Rosenberger, P., & McMahon, T. J. (2012). Attachment-based intervention for substance-using mothers: A preliminary test of the proposed mechanisms of change. *Infant Mental Health Journal*, 33(4), 360-371. doi:10.1002/imhj.21311
- Suchman, N., Ordway, M. R., de las Heras, L., & McMahon, T. J. (2016). Mothering from the Inside Out: Results of a pilot study testing a mentalization-based therapy for mothers enrolled in mental health services. *Attachment & Human Development*, 18(6), 596-617. doi:10.1080/14616734.2016.1226371
- Suh, J. J., Ruffins, S., Robins, C. E., Albanese, M. J., & Khantzian, E. J. (2008). Self-medication hypothesis: Connecting affective experience and drug choice. *Psychoanalytic Psychology*, 25(3), 518-532. doi:10.1037/0736-9735.25.3.518
- Sullivan, P. M., & Knutson, J. F. (2000). Maltreatment and disabilities: A population-based epidemiological study. *Child Abuse & Neglect*, 24(10), 1257-1273. doi:10.1016/S0145-2134(00)00190-3

- Taplin, S., & Mattick, R. P. (2015). The nature and extent of child protection involvement among heroin- using mothers in treatment: High rates of reports, removals at birth and children in care. *Drug and Alcohol Review*, 34(1), 31-37. doi:10.1111/dar.12165
- Teicher, M. H., Ohashi, K., Lowen, S. B., Polcari, A., & Fitzmaurice, G. M. (2015). Mood dysregulation and affective instability in emerging adults with childhood maltreatment: An ecological momentary assessment study. *Journal of Psychiatric Research*, 70(1), 1-8. doi:10.1016/j.jpsychires.2015.08.012
- Teisl, M., & Cicchetti, D. (2008). Physical abuse, cognitive and emotional processes, and aggressive/disruptive behavior problems. *Social Development*, 17(1), 1-23. doi:10.1111/j.1467-9507.2007.00412.x
- United States Census Bureau. (2017). *Quick facts: Orlando city*. Retrieved June 2017 from <https://www.census.gov/quickfacts/table/PST045215/1253000>
- U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (1999). *Child maltreatment 1999*. Washington, DC: US Government Printing Office. Retrieved August 2015 from http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can
- U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2000). *Child maltreatment 2000*. Washington, DC: US Government Printing Office. Retrieved August 2015 from http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can
- U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2001). *Child maltreatment 2001*. Washington, DC: US

Government Printing Office. Retrieved August 2015 from

http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can

U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2002). *Child maltreatment 2002*. Washington, DC: US

Government Printing Office. Retrieved August 2015 from

http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can

U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2003). *Child maltreatment 2003*. Washington, DC: US

Government Printing Office. Retrieved August 2015 from

http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can

U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2004). *Child maltreatment 2004*. Washington, DC: US

Government Printing Office. Retrieved August 2015 from

http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can

U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2005). *Child maltreatment 2005*. Washington, DC: US

Government Printing Office. Retrieved August 2015 from

http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can

U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2006). *Child maltreatment 2006*. Washington, DC: US

Government Printing Office. Retrieved August 2015 from

http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can

- U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2007). *Child maltreatment 2007*. Washington, DC: US Government Printing Office. Retrieved August 2015 from http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can
- U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2008). *Child maltreatment 2008*. Washington, DC: US Government Printing Office. Retrieved August 2015 from http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can
- U.S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2009). *Child maltreatment 2009*. Washington, DC: US Government Printing Office. Retrieved August 2015 from http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can
- U. S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2011). *Child maltreatment 2010*. Washington, DC: US Government Printing Office. Retrieved August 2015 from http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can
- U. S. Department of Health and Human Services, Administration on Children, Youth and Families, Children's Bureau. (2015). *Child Maltreatment 2015*. Washington, DC: US Government Printing Office. Retrieved July 2015 from http://www.acf.hhs.gov/programs/cb/stats_research/index.htm#can
- Vaillant, G. E. (2000). Adaptive mental mechanisms: Their role in a positive psychology. *American Psychologist*, 55(1), 89-98. doi:10.1037/0003-066X.55.1.89

- Vilhena-Churchill, N., & Goldstein, A. L. (2014). Child maltreatment and marijuana problems in young adults: Examining the role of motives and emotion dysregulation. *Child Abuse & Neglect*, 38(5), 962-972. doi:10.1016/j.chiabu.2013.10.009
- Walsh, C., MacMillan, H. L., & Jamieson, E. (2003). The relationship between parental substance abuse and child maltreatment: Findings from the Ontario Health Supplement. *Child Abuse & Neglect*, 27(12), 1409-1425. doi:10.1016/j.chiabu.2003.07.002
- Wasserman, S. (1967). The abused parent of the abused child. *Children*, 14(5), 175-179.
- Watson, D. & Clark, L. A. (1992). Affects separable and inseparable: On the hierarchical arrangement of the negative affects. *Journal of Personality and Social Psychology*, 62(3):489–505. doi:10.1037/0022-3514.62.3.489
- Watson, D., Clark, L. A., & Tellegan, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. doi: 10.1037/0022-3514.54.6.1063
- Westbrook, J., & Berenbaum, H. (2017). Emotional awareness moderates the relationship between childhood abuse and borderline personality disorder symptom factors. *Journal of Clinical Psychology*, 73(7), 910-921. doi:10.1002/jclp.22389
- Westermeyer, J., Wahmanholm, K., & Thuras, P. (2001). Effects of childhood physical abuse on course and severity of substance abuse. *The American Journal on Addictions*, 10(2), 101-110. doi:10.1080/105504901750227769
- Widom, C. S., & Hiller-Sturmhofel, S. (2001). Alcohol abuse as a risk factor for and consequence of child abuse. *Alcohol Research & Health*, 25(1), 52-57.

- Williams, S., Anderson, J., McGee, R., & Silva, P. A. (1990). Risk factors for behavioral and emotional disorder in preadolescent children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 29(3), 413-419. doi:10.1097/00004583-199005000-00013
- Widom, C. S., White, H. R., Czaja, S. J., & Marmorstein, N. R. (2007). Long-term effects of child abuse and neglect on alcohol use and excessive drinking in middle adulthood. *Journal of Studies on Alcohol and Drugs*, 68(3), 317-326. doi:10.15288/jsad.2007.68.317
- Witkiewitz, K. (2011). Predictors of heavy drinking during and following treatment. *Psychology of Addictive Behaviors*, 25(3), 426-438. doi:10.1037/a0022889
- Witkiewitz, K., Bowen, S., & Donovan, D. M. (2011). Moderating effects of a craving intervention on the relation between negative mood and heavy drinking following treatment for alcohol dependence. *Journal of Consulting and Clinical Psychology*, 79(1), 54-63. doi:10.1037/a0022282
- Witkiewitz, K., & Villarroel, N. A. (2009). Dynamic association between negative affect and alcohol lapses following alcohol treatment. *Journal of Consulting and Clinical Psychology*, 77(4), 633-644. doi:10.1037/a0015647
- Wong, C. F., Silva, K., Kecojevic, A., Schrage, S. M., Bloom, J. J., Iverson, E., & Lankenau, S. E. (2013). Coping and emotion regulation profiles as predictors of nonmedical prescription drug and illicit drug use among high-risk young adults. *Drug and Alcohol Dependence*, 132(1-2), 165-171. doi:10.1016/j.drugalcdep.2013.01.024
- Yaholkoski, A., Hurl, K., & Theule, J. (2016). Efficacy of the Circle of Security intervention: A meta-analysis. *Journal of Infant, Child & Adolescent Psychotherapy*, 15(2), 95-103. doi:10.1080/15289168.2016.1163161

Young, J. C., & Widom, C. S. (2014). Long-term effects of child abuse and neglect on emotion processing in adulthood. *Child Abuse & Neglect*, 38(8), 1369-1381.

doi:10.1016/j.chiabu.2014.03.008

Zelkowitz, R. L., & Cole, D. A. (2016). Measures of emotion reactivity and emotion regulation: Convergent and discriminant validity. *Personality and Individual Differences*, 102(1),

123-132. doi:10.1016/j.paid.2016.06.045