Published in final edited form as:

Child Abuse Negl. 2010 February ; 34(2): 105–113. doi:10.1016/j.chiabu.2009.05.006.

Depression and anger as risk factors underlying the relationship between maternal substance involvement and child abuse potential★

Denise Hien^{a,*}, Lisa R. Cohen^b, Nathilee A. Caldeira^b, Peter Flom^a, and Gail Wasserman^c

^aClinical Psychology Doctoral Subprogram, City University of New York, New York, NY, USA

^bNew York State Psychiatric Institute/Columbia University, Department of Psychiatry, New York, NY, USA

^cColumbia University Medical Center, Department of Child and Adolescent Psychiatry, New York, NY, USA

Abstract

Objective—This study examines how emotion regulation deficits in the area of anger arousal and reactivity are associated with child abuse potential in mothers with substance use and depressive disorders in order to identify targeted areas for prevention and treatment.

Methods—A sample of 152 urban mothers was interviewed on measures of substance use, diagnosis of depression, anger arousal and reactivity, and child abuse potential.

Results—Linear hierarchical regressions revealed that anger arousal and reactivity exceeded diagnostic and demographic variables in predicting maternal child abuse potential. Additionally, anger arousal and reactivity was found to be a partial mediator of the relationship between diagnostic category and child abuse potential.

Conclusions—Findings are discussed in relation to a multifaceted model of child abuse potential which broadens the existing literature to include an examination of depression and emotion regulation in order to more fully understand how substance use and child abuse potential are linked.

Practice implications—Models and approaches which help clients to manage and regulate difficult feeling states, specifically anger, could be helpful, and may be most readily applied in such populations.

Keywords

Emotional regulation; Maternal substance involvement; Child abuse; Child abuse potential; Substance abuse; Depression

Introduction

In 2007, state and local child protective service (CPS) agencies in the United States received approximately 3.2 million referrals alleging child maltreatment. Importantly, parents

★The authors acknowledge the support of the National Institute on Drug Abuse through Grant # RO1 DA 012752.

© 2010 Published by Elsevier Ltd.

*Corresponding author address: Clinical Psychology Doctoral Subprogram, City College, City University of New York. North Academic Building, Room 8-131, 160 Convent Avenue, New York, NY 10031, USA.

accounted for approximately 80% of the perpetrators of this maltreatment. CPS investigated approximately two-thirds of these referrals and determined that an estimated 794,000 children were the victims of substantiated child abuse or neglect in that year (US Department of Health and Human Services, Administration on Children, Youth and Families, 2009).

Research studies have established a robust relationship between parents' substance abuse and their maltreatment of children (Chaffin, Kelleher, & Hollenberg, 1996; Magura, Laudet, Kang, & Whitney, 1999). Children whose parents abuse substances may be twice as likely to experience physical or sexual abuse (Walsh, MacMillan, & Jamieson, 2003). Neglect is also faced by many children of drug using mothers who, in the course of active substance use, fail to adequately care for their children's most basic needs. Studies of court samples (Dore, Doris, & Wright, 1995; Gabel & Shindledecker, 1990), as well as samples of known substance abusers (Jaudes, Ekwo, & Van Voorhis, 1995; Magura & Laudet, 1996), implicate drug or alcohol use by a parent as a potential risk factor for child abuse or neglect.

To date, it is known that substance-using mothers are more likely to be punitive toward their children than those without substance use disorders (Miller, Smyth, & Mudar, 1999). Similarly, substance-using mothers have been found to rely on more severe disciplinary practices (Hien & Honeyman, 2000). Mothers addicted to substances have also been found to be high on "authoritarian involvement" indicating that they are more likely to exclude outside influences in their mothering roles in an attempt to control the child and his/her development (Wellisch & Steinberg, 1980).

Despite these consistent findings the existing literature has not yet been able to advance a further elaboration of *how* and *why* a substance-using mother might become an abusive one. The main explanatory hypotheses focus on "disinhibition" caused by the direct use of a substance of abuse and the ways this may impact a mother's impulsivity, anger level, judgment or availability (e.g., Miller et al., 1999). The field is limited by the lack of a multifaceted conceptual model that can provide alternative explanations (e.g., Ammerman, Kolko, Kirisci, Blackson, & Dawes, 1999) challenging the most commonly held belief that substance use *itself* explains the occurrence of maternal aggression. Given the scope and severity of child maltreatment, closer empirical examinations of parenting behavior and psychological factors associated with child abuse among substance-using mothers is warranted.

It has been established that there are high rates of depression comorbidity among substance-abusing women, and that the risk for abusive parenting is associated with other psychiatric disorders as well (Cohen, Hien, & Batchelder, 2008; Mapp, 2006). Thus, clinical depression is one important factor that should be taken into consideration when studying substance-using mothers at risk for child abuse. Studies exploring the impact of psychiatric diagnoses on parenting have focused primarily on maternal depression (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Findings indicate that depressed mothers also manifest higher levels of hostility toward their children and have more negative parent-child interactions. They are also more likely to use coercion rather than negotiation in trying to control their child's behavior (Cohn, Campbell, Matias, & Hopkins, 1990). Findings that mothers who struggle with depression are also at higher-risk for using harsher, more coercive and punitive parental strategies highlight that substance use is not the only predictor of child abuse potential. Rather than being an explanation for child abuse potential, substance use may serve as a marker for comorbid psychopathology which, in turn, can put mothers at risk for more negative interactions with their children, including child maltreatment (Hans, Bernstein, & Henson, 1999).

Though understudied, emotion regulation is another important factor that has been implicated as a predictor for child abuse potential among mothers with a substance use history (e.g., Ammerman et al., 1999). There is a growing literature suggesting that an emotion regulation model can be fruitfully applied to further understand how a mother with a substance use history (or other psychopathology) may be at more risk for being abusive or aggressive than a mother without such a history. Emotion regulation has been broadly described as the “extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to achieve one’s goals” (Thompson, 1994). Cloitre, Koenen, Cohen, and Han (2002) further describe “emotion dysregulation” as a tendency to have low threshold, high intensity emotional reactions followed by slow return to baseline. Difficulties such as getting easily upset, inability to calm down and self-soothe, and allowing emotions such as anger to control behavior are examples of dysregulated emotional states. Studies suggest that deficits in emotion regulation can be linked to both addictive and aggressive behaviors. For example, substance users have been shown to have poorer regulation of emotional states (Simons & Carey, 2002) such as anger and rage (Khantzian, 1985), be less able to self-soothe, and have poorer behavioral control (Horowitz, Overton, Rosenstein, & Steidl, 1992; Krystal, 1997) than non-substance users. Substance users may also have impaired ability to perceive emotional signals (Fishbein et al., 2005; Kornreich et al., 2001) so that they may either under-respond to them physiologically (Grusser et al., 2002) or respond with decreased behavioral inhibition (Bolla, Funderburk, & Cadet, 2000). Further, Hien and Miele (2003) demonstrated that dysregulated emotional coping is a partial mediator between substance use history and antisocial behavior.

Studies have shown that emotion regulation deficits are associated with many variables common to unhealthy parenting and child abuse potential including: decreased positive emotional responding and increased emotional responses to evocative stimuli (Amdur, Larsen, & Liberzon, 2000), heightened levels of distressed emotion, and greater expression of negative emotion under conditions of emotional priming (Orsillo, Batten, Plumb, Luterek, & Roessner, 2004), and suppression of expressive motor responses to positive cues (Litz, Orsillo, Kaloupek, & Weathers, 2000).

The goal of the current study was to advance the understanding of child abuse potential in a sample of mothers with substance use histories by examining the contribution of depression and emotion regulation deficits in a multifaceted model. We propose a model of emotion regulation as an underlying mechanism in the relationships among substance use, depression and child abuse potential. Following from the literature, which shows that the emotional and physiological reactions associated with anger are particularly difficult for women with histories of substance use to manage, we have operationalized the construct of emotion regulation as anger arousal and reactivity (Calkins, 1994; Cicchetti et al., 1991; Cloitre et al., 2002).

We first compare a group of substance-using women to a group of mothers with depressive disorders and a community comparison group on measures of diagnosis, anger arousal and reactivity, and child abuse potential. Based on studies we have reviewed above, we hypothesize that substance-using mothers will have more deficits in managing states of anger as compared to the depressed and comparison mothers. Second, we predict that anger arousal and reactivity will significantly contribute to a model of child abuse potential that includes other salient factors, such as demographic variables, diagnostic histories of substance use and depressive disorders. Finally we will test a model of mediation with the hypothesis that anger arousal and reactivity is a mediator between substance use and depression and the potential for child abuse potential.

Method

Participants

The sample consists of 152 mothers who were taking part in a larger cross-sectional, cross-generational study designed to examine associations between maternal substance abuse, psychopathology, neuropsychological functioning, child-rearing deficits and corresponding adverse child outcomes including aggressive behavior and substance use in an at-risk community sample. Participants were recruited through an OB/GYN clinic at a large, urban, public hospital in New York City serving a primarily poor, minority population. This site was chosen based on previous research in which the clinic was found to serve a population at high risk for negative life events, violence, substance abuse, and depression with adequate variability and generalizability (Hien & Honeyman, 2000).

Mothers' demographic and background

An overview of the study participants' characteristics revealed that participants were primarily African American (71%), and born in the United States (87%). Most (85%) of the women reported English as their primary language, and 15% reported Spanish or another language as their primary language. In terms of marital status, 53% of the sample reported being single, 20% reported being divorced or separated, and 64% reported that they were living without a partner. The sample was diverse in education, ranging from incomplete high school education to college graduate. A significant minority of the sample had a past (34%) or current (9%) open case with child welfare agencies. Socio-economic status (SES) was calculated as a factor score of the standardized *Z* scores for ordinal levels of education (1–6), occupation (1–8), and income (1–7). A higher score refers to a higher level. A significant proportion of mothers had previous outpatient psychiatric (39%) or substance use (30%) treatment with 6% having been psychiatrically hospitalized. Seventeen participants (11%) had at least one suicide attempt and 21% had been hospitalized for drug treatment. Thirty one participants (20%) met the diagnosis of current depressive disorder, and over half (52%) had a history of depression. Eighty-two women (54%) had a history of substance use disorders, and virtually all of these (48%, $n = 74$) met the criteria for dependence on at least one substance (range: 1–5 substances, $M = 2.1$, $SD = 0.9$). Eighteen women (22%) met the criteria for current dependence on at least one substance (range: 1–4, $M = 1.2$, $SD = 1.0$).

Procedures

A brief screening was conducted at the OB/GYN clinic on recruitment days to determine participant eligibility. Inclusion criteria were: (1) age of participant between 18–55 years, (2) at least one child age 9–15 years, and (3) willingness to participate in approximately 5 hours of interview for the mother and 3 hours for the child. The selection of the 9–15 age range for children was based on the goal of the larger study to examine the consequences of maternal impairment and parenting on adverse child outcomes, including initiation of substance use, which tends to occur during pre/early adolescent years and is a risk factor for subsequent development of substance use disorders. Exclusion criteria were (1) a clear history of severe organic symptomatology, (2) diagnosis of AIDS, (3) history of head trauma to mother or child, (4) any serious physical ailment or chronic disease which would prevent participation in interviewing, and (5) diagnosis of a psychotic or bipolar disorder.

Over the 5-year study period a total of 506 women presenting for treatment at the OB/GYN clinic were screened for study inclusion. Three hundred and fourteen (62%) met eligibility criteria and were invited to participate. Of these, 254 (81%) scheduled an interview, and 190 (75%) attended the interview, giving informed consent prior to beginning assessments. Of the 190 women enrolled in the study, three did not return for a second interview visit needed to complete assessments. Three participants were removed from analyses because they met

criteria for bipolar disorder based on clinical interview, a rule-out of the study. One participant was removed from analyses because urine tests indicated inconsistency with self-report. Thirty cases (17%) were removed from the study due to having unreliable CAP Abuse Scale scores, as determined by the validity scale and response distortion indices (random responses (2%), faking-good (15%) and faking-bad (0%) following conventions described in the scoring manual (Milner, 1986).

After the completion of the initial 3-hour interview, the mother then returned on a second occasion with her child, though in many cases the entire interview procedure was done in one visit. Participant reimbursement was \$100 and round-trip travel expenses. Mothers were administered measures of emotion regulation, executive cognitive function, crystallized intelligence, psychiatric functioning, substance abuse, demographic and treatment history during their first interview. They also completed parenting measures, answered questions about their child's functioning, and provided a urine sample.

Interviewers were doctoral candidates who had achieved at least a master's degree and had participated in a rigorous training program on all measures. The institutional review board at St. Luke's/Roosevelt Hospital approved all study procedures. Informed written consent was obtained from all participants.

Diagnostic study group assignment

Women with a history of drug abuse or dependence were placed in the Substance Use group (SUD, $n = 82$). Women with no drug history but a history of Axis I Depressive Disorder were placed in the Depressed group (Depressed, $n = 40$), and women with no history of substance use disorders or any depressive disorders were placed in the Community comparison group (Comparison, $n = 30$). Participants in this group could report current or past substance use as long as it was not regular or problematic use. The rationale for using lifetime diagnoses to determine study group assignment was based on a chronic disease model of psychiatric and substance use disorders (i.e., Ammerman et al., 1999). Participants in our current and previous studies typically describe recurrent episodes of these disorders and often experience them as chronic and relapsing conditions even if they do not meet current diagnostic criteria. Thus focusing on current diagnosis did not fully capture the clinical picture of our population.

All participants were also assessed for *current* depressive disorders. Given that substance-abusing women have high rates of depressive symptoms and comorbidity we felt it was important to control for current depression in the final analysis.

Assessment measurements

Substance use and psychiatric diagnoses

Structured Clinical Interview for DSM-III-R/DSM-IV-SAC Version (SCID-SAC; Spitzer, Williams, Gibbon, & First, 1994). The SCID is a semi-structured clinical interview designed to detect lifetime and current major Axis I DSM-IV diagnoses using a decision-tree approach. The SCID is comprised of diagnostic modules that may be excluded to tailor the instrument to the diagnoses of interest. The SCID-SAC is a modified version of the SCID developed for use with substance-abusing populations that focuses on assessing the primary/secondary relationships between substance abuse disorder and psychiatric disorders by obtaining systematic onset and offset time lines and abstinence periods. The "Mood and Anxiety Disorders" and "Alcohol and Psychoactive Substance Use Disorders" modules were used in the present study. Inter-rater reliability has been reported as adequate ($Kappa = 0.68$ for clinical and $Kappa = 0.51$ for non-clinical lifetime diagnoses; Nunes et al., 1996). Test-retest reliability for the SAC version has been shown in a sample of depressed methadone

maintenance patients (Nunes et al., 1996). On the SCID interview, assessors were required to have at least a 0.70 level of agreement with expert trainer diagnostic ratings. Reliability of the SCID diagnostic interview was determined by having an expert trainer review 20% of randomly chosen taped interviews to insure no rater drift. Agreement among the 5 raters ranged from 93% to 100%. Kappas were between 0.81 and 1.00. In addition, assessors received ongoing weekly supervision from a clinical psychologist to ensure standardized administration of the SCID interview.

Urine toxicology

As is standard in studies with substance users, a biological test confirming self-reported abstinence was obtained via urine sample from each subject. The sample was analyzed in laboratory for the presence of cocaine, opiates, methadone, tetrahydrocannabinol (THC), phencyclidine (PCP), amphetamines, and alcohol. Urine results were used to confirm self-report. As mentioned above, only one participant had discrepant urine and self-report; this participant was removed from data analysis.

Intelligence quotient (IQ) estimate

IQ estimate was calculated using the vocabulary and information subtests of the *Wechsler Adult Intelligence Scales* (WAIS-III, Wechsler, 1997).

Emotion regulation: Anger arousal and reactivity

Novaco Anger Inventory (NAI, Novaco, 1994, 2003). The NAI was used to assess anger arousal and reactivity. Part A of the NAI requires that subjects rate on a 3-point Likert-scale how true each of 48 descriptions are to their typical emotional states and reactions to provocation. Part B of the NAI requires that subjects rate the frequency of behavioral responses to each of the 48 emotional states. Only Part A items on this inventory were utilized in this study. The NAI has been normed on male and female psychiatric patients. Internal reliability was reported for Part A as 0.95. Concurrent validity has been demonstrated (Novaco, 2003) by correlations with the Buss-Durkee Multidimensional Anger Inventory (0.82), Spielberger's State-Trait Anger Inventory (0.84), Cook-Medley Hostility Scale (0.68), Caprara Irritability (0.78), and the Caprara Rumination (0.82). Item examples include, "When someone yells at me, I yell back at them" and "If someone bothers me, I react first and think later."

Child abuse potential

Child Abuse Potential Inventory (CAP, Form VI; Milner, 1994). The CAP Inventory is a 160-item, self-report questionnaire that assesses risk for child physical abuse. It has a third grade readability level and is answered in a forced choice format. The 77-item physical child abuse scale assesses distress, rigidity, unhappiness, problems with child and self, problems with family, and problems from others. There are three validity scales which detect faking-good, faking-bad, and random response profiles. Two additional scales assess ego-strength and loneliness. Reliability estimates range from 0.92 to 0.95 for a variety of similar and dissimilar populations. Test-retest reliability is 0.75 for a 3-month interval, 0.83 for a 1-month interval, 0.90 for a 1-week interval, and 0.91 for a 1-day interval. In the present study, we utilized the CAP Abuse Scale scores in all analyses.

Analytic plan

Prior to testing the main hypotheses, bivariate analyses were conducted to examine demographics and covariates. First, in order to examine the relationships between maternal substance use history, depressive disorders, anger arousal and reactivity, and child abuse potential, two analyses of covariance were conducted comparing diagnostic groups on anger

arousal and reactivity and on child abuse potential, respectively. A priori tests were used to determine whether the mothers with substance use and depression histories differed statistically from each other on anger arousal and reactivity and child abuse potential and if they differed from the comparison group. The second goal of the study involved examining whether problems managing anger arousal and reactivity contributed to differences in child abuse potential after controlling for the variance accounted for by diagnostic group. Given that demographic and other related variables might also contribute to the relationship between diagnostic group and child abuse potential, a data analytic strategy was employed to statistically remove these effects prior to calculating the impact of anger arousal and reactivity. Thus, stepwise hierarchical linear regression was used (Tabachnick & Fidell, 2007). These results are presented in Table 2.

Results

Demographic differences across diagnostic study groups

As displayed in Table 1, the only demographic variable that was significantly different across the three study groups was age with those in the Substance Use group being significantly older than those in the Depressed group. We also included comparisons of SES and an IQ estimate as these were, a priori, considered potentially important confounds to include in our multivariate model, even though no statistically significant differences were found across study groups. On current depressive disorders, those in the Substance Use and Depressed groups both had proportionally more current depression than those in the Comparison group, but there were no significant differences between Substance Use and Depressed groups on rates of current depression.

Anger arousal reactivity and child abuse potential across diagnostic study groups

As displayed in Table 1, analyses of covariance procedures were used to test differences across diagnostic study groups on the main study variables of anger arousal and reactivity and child abuse potential. Statistically significant differences across study groups were found on both variables. A priori paired comparisons between groups were conducted using Tukey's HSD test with p set at 0.05. On anger arousal and reactivity those in the Substance Use group had significantly higher scores than those in the Comparison group, although they did not significantly differ from those in the Depressed group. On the measure of child abuse potential, those in the Substance Use group had significantly higher scores than those in the Comparison group. Again, there were no statistically significant differences on child abuse potential between the Substance Use and Depressed groups.

Multivariate model of child abuse potential

A hierarchical linear regression on the CAP Abuse Scale scores was conducted in which demographic variables were entered in the first step including mother's age, SES, divorced marital status, and an IQ estimate. In the second step, two orthogonal variables comprising diagnostic study group (Substance Use compared to Depressed and Comparison, Depressed compared to Comparison) were entered using two dummy variables (one dummy variable was for Substance Use vs. not Substance Use and one dummy variable was for depressed vs. not depressed), and a categorical variable indicating whether or not the participant met criteria for a current depressive disorder was also included in this step. The NAS-A was then added in the final step as a third block.

A summary of the overall multivariate model revealed significance at each level of variables entered such that the total variance accounted for by all variables in the model was 34% ($R^2 = 0.34$, $p < 0.001$). The NAS-A accounted for 2.5% of the variability in CAP Abuse Scale scores *over and above* diagnosis (20.6%) and demographics (11.0%). Significant predictors

in the final step (see Table 2) were, divorced marital status, IQ, current depression level, and anger arousal and reactivity. All were positively associated with CAP Abuse Scale scores except IQ, which was negatively associated.

Moderation and mediation among arousal and anger reactivity, diagnostic study group, and child abuse potential

The relationship between the child abuse potential and diagnostic group may be mediated or moderated (Baron & Kenny, 1986) by anger arousal and reactivity scores (NAS-A). We examined both of these possibilities. Moderation would exist if the effect of diagnostic group on CAP Abuse Scale scores were different at different levels of anger arousal and reactivity. This can be examined by looking at a model with an interaction term. The NAS-A did not have a significant interaction with diagnostic group.

For mediation to take place, three things must occur: First, anger arousal and reactivity must be related to diagnostic group. Second, child abuse potential must be related to diagnostic group, and third, the relationship between diagnostic group and child abuse potential must weaken when the NAS-A is added to the model. Analyses showed that NAS-A was a partial mediator: It was related to the diagnostic group ($R^2 = 0.07$, $p < 0.001$), and it weakened the relationship between child abuse potential and diagnostic group. When child abuse potential was modeled solely as a function of diagnostic group, semipartial $\eta^2 = 0.16$ when NAS-A was added to the model, this dropped to 0.08.

Discussion

In order to address a substantial gap in our understanding of the link between maternal substance use and child abuse potential, one of the main objectives of the present study was to examine how deficits in emotion regulation, namely anger arousal and reactivity, might be involved in adverse parenting outcomes relevant to both addictive and aggressive behavior. Findings in this study demonstrate clear links between problems with anger arousal and reactivity, history of substance use disorders and child abuse potential, but the nature of these relationships is far from straightforward. As we have reviewed, substance-using women have been shown to be significantly more likely than others to use aggressive tactics, reflected in conflict resolution strategies with partners, as well as in harsher disciplinary styles with their children (Magura & Laudet, 1996; Miller et al., 1999; Wellisch & Steinberg, 1980). Although the observed association between substance use and maternal aggression reported herein was consistent with previous studies (e.g., Hien & Honeyman, 2000; Hien & Miele, 2003), when comparing a group of substance-using mothers to a group of mothers with depression and no history of a substance use disorder, these differences were not sustained. Not only did mothers in the Depressed group have statistically higher child abuse potential than those in the Comparison group, but they also did not differ from those in the Substance Use group in this regard. Our findings do not support diagnostic specificity in the relationship between addictive histories and child abuse potential, as the mothers in our study with depression also had abusive parenting patterns.

This is an important finding, as we have noted earlier that most research on substance-abusing mothers does not include comparisons with mothers who have other psychiatric impairments that may also be significantly contributing to child abuse potential and must be more fully understood in order to target interventions more appropriately to maternal needs. For example, if it is not the substance use *per se* which increases the likelihood of child maltreatment, then offering substance abuse treatment as a proxy for helping women to become better parents (i.e., recovery from substances without additional parenting approaches) is not likely to be effective.

One explanation for this lack of difference between the two diagnostic groups in child abuse potential is further illuminated by our findings on the role of anger arousal and reactivity in abusive parenting. There are two important interpretations of our findings with respect to a multifaceted model of child abuse potential that we can offer. The first involves our further understanding of mothers with a significant history of substance use; the second involves our thinking about mothers in general with difficulties in managing negative emotional states.

In the present study, mothers in the Substance Use group *did* have deficits in the area of managing anger arousal and reactivity that distinguished them from the Comparison mothers. These findings fall in line with the empirically supported self-medication model of addiction (i.e., Khantzian, 1985), which suggests that addictive behavior represents an attempt to regulate distressing emotional states through self-medicating with a substance of abuse. Indeed, one of the hallmark features of cognitive therapy with substance users involves therapeutic activities which emphasize identifying emotional and cognitive triggers for relapse and high risk situations that are typically emotionally laden and lead to substance lapses or relapses (e.g., Carroll, Rounsaville, & Keller, 1991). It is important to note, however, that anger arousal and reactivity for the mothers with a substance use history was not significantly different from mothers with a history of depression.

The multivariate and mediation findings suggest that deficits in ability to manage anger arousal and reactivity play a major role in predicting child abuse potential. Our analyses reveal that anger arousal and reactivity was a significant predictor of child abuse potential above and beyond important demographic and diagnostic variables. Our findings also support anger arousal and reactivity as a partial mediator between diagnostic group and child abuse potential. We can understand these findings further if we consider the emotional requirements for healthy parenting. A mother feeling frustrated, challenged, disappointed, undermined, or defied by her child, must have the ability to manage her anger. This is critical to regulating and controlling the impact of emotions and aggressive impulses on behavior, thus leading to positive and effective parenting. Emotion dysregulation has been described as a “non functional use of emotions” and an inability to engage in adaptive, healthy behaviors under conditions of emotional distress (e.g., Gratz & Roemer, 2004).

Given that high rates of depression comorbidity have been identified among substance users in general and women in particular (Regier et al., 1990), assessments of depression were included in our study of all participating mothers. Notably, the majority of mothers with a substance abuse history also met criteria for at least one lifetime depressive disorder, and a fair proportion (22%) met criteria for a current depressive disorder. Accordingly, we accounted for current depression level in all study groups and found that it did predict higher child abuse potential independent of the lifetime substance use and history of depression. This is an important study strength, as it provided an ability to parse out the effects of depression from other emotional processes in abusive parenting.

Practice implications

Our findings have some implications for prevention and treatment of child maltreatment, particularly among mothers who are in treatment for substance use problems. Models and approaches, which help clients to manage and regulate difficult feeling states, specifically anger, such as Skills Training in Affect and Interpersonal Regulation (STAIR; Cloitre et al., 2002) or Dialectical Behavior Therapy (DBT; Linehan, 1993) could be helpful, and may be most readily applied in such populations. Cognitive behavioral therapies for addictive disorders also have a strong emphasis on identifying feeling states and linking them to addictive behavioral consequences.

Limitations

Although the study addressed some significant gaps in the literature and provides new avenues for future research, some discussion of study limitations is also warranted. There were a number of external validity threats that must be considered in understanding to who the findings may best apply. For example, sample selection and inclusion criteria limit generalizability of findings to lower-income, ethnic minority populations with histories and not active substance use and psychiatric disorders. Also, since the sampling strategy was conducted in a single OB/GYN clinic, the sample may not be truly representative of the population of individuals receiving OB/GYN services. Moreover, 17% of the original sample had to be dropped due to unreliability on the CAP Inventory validity scales. Of these, 15% were dropped due to “faking good,” that is there was a high score on the lie scale and their CAP scores were very high in relation to the mean. Although there was no evidence to suggest that the removed cases differed on demographics from those retained in the analysis, the remaining sample may still represent a biased group. Another potential source of bias is the use of a self-report measure to assess anger arousal and reactivity. Finally, it should also be noted that these mothers were selected with children in the age ranges of 9–15 due to the aims of a larger study. Thus the findings may not generalize to those with children under these ages.

Regarding our measure of child abuse potential using the CAP Inventory, because the occurrence of aggressive behavior is at a low base rate and because indirect assessment of child abuse potential was necessary due to the ethical predicament of compromising participants' confidentiality and relative risk of participating in research, extrapolations were made some distance from real abuse behavior. Also, because all measures were collected in a cross-sectional design, we underscore the correlational nature of this study and caution against making any causal interpretations of the findings (i.e., “emotion regulation deficits in managing anger lead to child abuse”).

Conclusions

The findings provide strong support for multivariate and meditational models of maternal aggression which considers emotion regulation deficits, specifically anger arousal and reactivity, as an important predictor of child abuse potential, in addition to the role of both substance use histories, and current and lifetime depression. These findings have important implications for prevention and treatment efforts with substance-using populations and also provide direction for future research in this area.

Acknowledgments

The authors thank Inga Platais for research assistance.

References

- Amdur RL, Larsen RL, Liberzon I. Emotional processing in combat-related Posttraumatic Stress disorder: A comparison with traumatized and normal controls. *Journal of Anxiety Disorders*. 2000; 14(3):219–238. [PubMed: 10868981]
- Ammerman RT, Kolko DJ, Kirisci L, Blackson TC, Dawes MA. Child abuse potential in parents with histories of substance use disorder. *Child Abuse & Neglect*. 1999; 23(12):1225–1238. [PubMed: 10626607]
- Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*. 1986; 51:1173–1182. [PubMed: 3806354]

- Bolla KI, Funderburk FR, Cadet JL. Differential effects of cocaine and cocaine alcohol on neurocognitive performance. *Neurology*. 2000; 54:2285–2292. [PubMed: 10881254]
- Calkins, SD. Origins and outcomes of individual differences in emotion regulation. In: Fox, NA.; Campos, JJ., editors. *The development of emotion regulation: Biological and behavioral considerations*. Chicago: University of Chicago Press; 1994. p. 53-72.
- Carroll KM, Rounsaville BJ, Keller DS. Relapse prevention strategies for the treatment of cocaine abuse. *American Journal of Drug and Alcohol Abuse*. 1991; 17:249–265. [PubMed: 1928020]
- Chaffin M, Kelleher K, Hollenberg J. Onset of physical abuse and neglect: Psychiatric, substance abuse, and social risk factors from prospective community data. *Child Abuse & Neglect*. 1996; 20:191–203. [PubMed: 8734549]
- Cicchetti, D.; Ganiban, J.; Barnett, D. Contributions from the study of high-risk populations to understanding the development of emotion regulation. In: Garber, J.; Dodge, K., editors. *The Development of emotion regulation*. New York: Cambridge University Press; 1991. p. 15-48.
- Cloitre M, Koenen KC, Cohen LR, Han H. Skills training in affective and interpersonal regulation followed by exposure: A phase based treatment for PTSD related to childhood abuse. *Journal of Consulting and Clinical Psychology*. 2002; 70:1067–1074. [PubMed: 12362957]
- Cohen LR, Hien DA, Batchelder S. The impact of cumulative maternal trauma and diagnoses on parenting behavior. *Child Maltreatment*. 2008; 13:27–38. [PubMed: 18174346]
- Cohn JF, Campbell SB, Matias R, Hopkins J. Face-to-face interactions of postpartum depressed and non-depressed mother-infant pairs at two months. *Developmental Psychology*. 1990; 26:15–23.
- Dore MM, Doris JM, Wright P. Identifying substance abuse in maltreating families: A child welfare challenge. *Child Abuse & Neglect*. 1995; 19:531–543. [PubMed: 7664134]
- Fishbein DH, Eldreth DL, Hyde C, Matochik JA, London ED, Contoreggi C, Kurian V, Kimes AS, Breeden A, Grant S. Risky decision making and the anterior cingulate cortex in abstinent drug abusers and nonusers. *Cognitive Brain Research*. 2005; 12(1):119–136. [PubMed: 15795139]
- Gabel S, Shindeldecker R. Parental substance abuse and suspected child abuse/maltreatment predict outcome in children's inpatient treatment. *Journal of the American Academy of Child & Adolescent Psychiatry*. 1990; 29:919–924. [PubMed: 2273021]
- Gratz KL, Roemer L. 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*. 2004; 26(1):41–54.
- Grusser SM, Heinz A, Raabe A, Wessa M, Podschus J, Flor H. Stimulus-induced craving and startle potentiation in abstinent alcoholics and controls. *European Psychiatry*. 2002; 17:188–193. [PubMed: 12231263]
- Hans SL, Bernstein VJ, Henson LG. The role of psychopathology in parenting of drug-dependent women. *Development and Psychopathology*. 1999; 11:957–977. [PubMed: 10624734]
- Hien D, Honeyman T. A closer look at the maternal substance abuse-violence link. *Journal of Interpersonal Violence*. 2000; 15:503–522.
- Hien DA, Miele GM. Emotion-focused coping as a mediator of maternal cocaine abuse and antisocial behavior. *Psychology of Addictive Behaviors*. 2003; 17:49–55. [PubMed: 12665081]
- Horowitz HA, Overton WF, Rosenstein D, Steidl JH. Comorbid adolescent substance abuse: A maladaptive pattern of self-regulation. *Adolescent Psychiatry: Development and Clinical Studies*. 1992; 18:465–483.
- Jaudes PK, Ekwo E, Van Voorhis J. Association of drug abuse and child abuse. *Child Abuse & Neglect*. 1995; 19:1065–1075. [PubMed: 8528813]
- Khantzian EJ. The self-medication hypothesis of addictive disorders: Focus on heroin and cocaine dependence. *American Journal of Psychiatry*. 1985; 142:1259–1264. [PubMed: 3904487]
- Kornreich C, Blairy S, Philippot P, Hess U, Noel X, Streel E, Le Bon O, Dan B, Pelc I, Verbanck P. Deficits in recognition of emotional facial expression are still present in alcoholics after mid- to long-term abstinence. *Journal of Studies on Alcohol*. 2001; 62:533–542. [PubMed: 11513232]
- Krystal, HD. Self representation and the capacity for self-care. Chapter 7. In: Yasilove, DL., editor. *Essential papers on addiction (Essential papers in psychoanalysis series)*. New York: New York University Press; 1997.

- Linehan, MM. Cognitive-behavioral treatment of borderline personality disorder. New York: Guilford Press; 1993.
- Litz BT, Orsillo SM, Kaloupek D, Weathers F. Emotional processing in posttraumatic stress disorder. *Journal of Abnormal Psychology*. 2000; 109(1):26–39. [PubMed: 10740933]
- Lovejoy MC, Graczyk PA, O'Hare, Neuman G. Maternal depression and parenting behavior: A meta-analytic review. *Clinical Psychology Review*. 2000; 25:561–592. [PubMed: 10860167]
- Magura S, Laudet AB. Parental substance abuse and child maltreatment: Review and implications for intervention. *Children & Youth Services Review*. 1996; 18:193–220.
- Magura S, Laudet A, Kang S, Whitney SA. Effectiveness of comprehensive services for crack-dependent mothers with newborns and young children. *Journal of Psychoactive Drugs*. 1999; 31:321–338. [PubMed: 10681100]
- Mapp SC. The effects of sexual abuse as a child on the risk of mothers physically abusing their children: A path analysis using systems theory. *Child Abuse and Neglect*. 2006; 30:1293–1310. [PubMed: 17112586]
- Miller BA, Smyth NJ, Mudar PJ. Mothers' alcohol and other drug problems and their punitiveness toward their children. *Journal of Studies on Alcohol*. 1999; 60:342–632.
- Milner, JS. The Child Abuse Potential Inventory: Manual. Webster, N.C. (P.O. Box 300, Webster 28788): Psytec; 1986.
- Milner JS. Assessing physical child abuse risk: The Child Abuse Potential Inventory. *Clinical Psychology Review*. 1994; 14(6):547–583.
- Novaco, RW. Anger as a risk factor for violence among the mentally disordered. In: Monahan, J.; Steadman, HJ., editors. *Violence and mental disorder: Development in risk assessment*. Chicago, IL: University of Chicago Press; 1994. p. 21–59.
- Novaco, RW. The Novaco Anger Scale and Provocation Inventory: NAS-PI. Los Angeles, CA: Western Psychological Services; 2003.
- Nunes EV, Goehl L, Seracini A, Deliyannides D, Donovan S, Post-Koenig T, Quitkin FM, Williams J. A modification of the Structured Clinical Interview for DSM-III-R to evaluate methadone patients: Test-retest reliability. *American Journal on Addictions*. 1996; 5(3):241–248.
- Orsillo SM, Batten SV, Plumb JJ, Luterek JA, Roessner BM. An experimental study of emotional responding in women with posttraumatic stress disorder related to interpersonal violence. *Journal of Traumatic Stress*. 2004; 17:241–248. [PubMed: 15253096]
- Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL, Goodwin FK. Comorbidity of mental disorders with alcohol and other drug abuse. Results for the Epidemiologic Catchment Area (ECA) Study. *Journal of the American Medical Association*. 1990; 264:2511–2518. [PubMed: 2232018]
- Simons JS, Carey KB. Risk and vulnerability for marijuana use problems: The role of affect dysregulation. *Psychology of Addictive Behaviors*. 2002; 16:72–75. [PubMed: 11934090]
- Spitzer, RL.; Williams, JBW.; Gibbon, M.; First, MB. Structured Clinical Interview for DSM-IV – SAC Version (SCID-SAC). Biometrics Research Department, New York State Psychiatric Institute; 1994.
- Tabachnick, BG.; Fidell, LS. *Using Multivariate Statistics*. 5th ed. Allyn and Bacon Publishers; 2007.
- Thompson, RA. Emotion regulation: A theme in search of definition. In: Fox, NA., editor. *The development of emotion regulation: Biological and behavioral considerations*. New York: Penguin; 1994. p. 25–52.
- US Department of Health and Human Services. *Child maltreatment 2007*. Washington, DC: US Government Printing Office; 2007. Administration on Children, Youth and Families.
- Walsh C, MacMillan HL, Jamieson E. The relationship between parental substance abuse and child maltreatment: Findings from the Ontario Health Supplement. *Child Abuse & Neglect*. 2003; 27:1409–1425. [PubMed: 14644058]
- Wechsler, D. *WAIS-III administration and scoring manual*. San Antonio, TX: Psychological Corporation; 1997.
- Wellisch DK, Steinberg MR. Parenting attitudes of addict mothers. *The International Journal of the Addictions*. 1980; 15(6):809–819. [PubMed: 7461878]

Table 1

Means, standard deviations and proportional differences between demographics, anger arousal and reactivity and Child Abuse Potential Scale scores across diagnostic study group.

	Diagnostic study group									
	Entire sample		SUD (n = 82)		Depressed (n = 40)		Comparison (n = 30)		ANOVA or chi-square statistic	
	M	SD (%)	M	SD (%)	M	SD (%)	M	SD (%)	F (Chi-Sq)	df p
Demographics										
Age	37.83	6.62	39.23	6.49	35.45	5.13	37.17	7.82	4.82 ^a	2, 150 <0.01
Divorced marital status	n = 31	(20.6%)	n = 16	(19.3%)	n = 12	(30.0%)	n = 3	(9.7%)	(4.36)	2 ns
SES	-0.04	1.01	-0.19	0.99	0.09	0.98	0.17	1.08	1.75	2, 146 ns
IQ	89.65	13.43	89.90	12.98	92.15	11.16	85.77	15.12	2.13	2, 148 ns
Diagnosis										
Current depressive disorder	n = 32	(21.1%)	n = 23	(28.4%)	n = 9	(22.5%)	n = 0	(0%)	(10.6) ^c	2 <0.01
Emotion regulation										
Anger arousal and reactivity	87.08	14.58	89.87	14.96	87.49	13.77	81.17	12.87	3.33 ^d	2, 147 <0.05
Child abuse potential										
CAP	177.51	90.73	192.07	96.92	188.42	78.98	123.10	63.76	7.30 ^e	2, 149 <0.001

SUD: substance use disorder.

Significant contrasts –

^aSUD> Depressed;

^bSUD, Comparison > Depressed;

^cSUD, Depressed > Comparison;

^dSUD> Comparison;

^eSUD> Depressed, Comparison;

^fSUD, Depressed > Comparison.

Table 2

Summary of stepwise hierarchical regression for variables predicting child abuse potential.

Variables	<i>B</i>	<i>SE B</i>	β	Incremental R^2
Block 1: Demographic variables				0.11 **
Age	- 1.58	1.09	- 0.12	
SES	- 9.55	7.19	- 0.11	
Divorced marital status	39.34	16.64	0.18 *	
IQ	- 1.20	0.55	- 0.17 *	
Block 2: CAP and diagnostic group				0.20 **
History of substance use disorder	0.91	5.18	0.02	
History of depressive disorder	24.99	14.51	0.13	
Current depressive disorder	64.95	18.00	0.29 ***	
Block 3: Anger arousal				0.03 *
Anger arousal and reactivity	1.37	0.49	0.22 **	

Final $R^2 = 0.34$, $p < 0.01$, adjusted $R^2 = 0.30$, $F_{8,132} = 8.53$, $p < 0.0001$.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.