Published in final edited form as:
Child Abuse Negl. 2012 April ; 36(4): 296–307. doi:10.1016/j.chiabu.2011.11.008.

Parent emotional expressiveness and children's self-regulation: Associations with abused children's school functioning

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Abstract

Objective—Identifying factors associated with school functioning of abused children is important in prevention of long-term negative outcomes associated with school failure. The purpose of this study was to examine the degree to which parent emotional expressiveness and children's self-regulation predicted early school behavior of abused children.

Methods—The sample included 92 physically abused children ages 4-7 and one of their parents (95.7% mothers). Parents completed a measure of their own emotional expressiveness, and parents and teachers provided reports of children's self-regulatory skills. Children's school functioning was measured by observations of playground aggression and teacher reports of aggression and classroom behavior.

Results—Parents' expression of positive and negative emotions was associated with various aspects of children's self-regulation and functioning in the school setting. Links between self-regulation and children's school adjustment were robust; poor self-regulation was associated with higher aggression and lower cooperation and self-directed behavior in the classroom. There was minimal support for a mediating role of children's self-regulation in links between parent expressiveness and children's behavior.

Practice implications—Findings point to the relevance of parent emotional expressivity and children's self-regulatory processes in understanding physically abused children's functioning at the transition to school. Although further research is needed, findings indicate that increasing parental expression of positive emotion should be a focus in treatment along with reduction in negativity of abusive parents. Further, addressing children's self-regulation could be important in efforts to reduce aggression and enhance children's classroom competence.

Introduction

Self-regulation refers to children's ability to modulate their emotional arousal and reactivity to events. According to several theoretical frameworks (Campos, Campos, & Barrett, 1989; Rothbart & Bates, 1998), parenting plays a critical role in development of these skills, and children's self-regulation is closely tied to success in many domains of functioning. Although the past several decades of research supports these theories, it has been proposed that significant progress in understanding this dynamic process is most likely to come from examinations of meditational processes involved in associations among parenting, children's

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self-regulation, and children's social, emotional, and academic functioning. Such was the purpose of this study. In addition, we examined these processes within a sample of physically abused children. A developmental psychopathology perspective encourages the investigation of typical and atypical development as the most fruitful approach to understanding developmental processes and outcomes (Burack, 1997). Child abuse, as an extreme form of harsh and unresponsive parenting, represents a serious disturbance of the parent-child relationship. As such, child maltreatment has been said to offer an “experiment of nature” (a term borrowed from Bronfenbrenner, 1979) by which to articulate socialization theories of development (Cicchetti, 1989).

Emotion socialization practices of physically abusive parents have garnered attention for several decades (e.g., Susman, Trickett, Iannotti, Hollenbeck, & Zahn-Waxler, 1985; Rodriguez & Green, 1997) and research highlights the potential relevance of these practices in understanding emotional and social behavior of maltreated children. Abusive parents tend to experience elevated levels of negative affect such as irritability, anger, depressive symptoms, and parenting stress (Acton & During, 1992; Chaffin, Kelleher, & Hollenberg, 1996; McPherson, Lewis, Lynn, Haskett, & Behrend, 2009; Whipple & Webster-Stratton, 1991). Furthermore, these emotions are openly displayed by parents while interacting with their children. Maltreating mothers demonstrate higher levels of negative affect during interactions with their children (Wilson, Rack, Shi, & Norris, 2008), discuss emotional states with their children less often (Shipman & Zeman, 1999), validate children's emotions less than non-abusive mothers (Shipman, Schneider, Fitzgerald, Sims, Swisher, & Edwards, 2007), and are less supportive of children's expression of emotion (Shipman & Zeman, 2001). The significance of parental emotion socialization practices for self-regulation of maltreated children is evidenced in the finding that mothers’ validation of children's emotion mediated the association between abuse status and children's emotion regulation abilities (Shipman et al., 2007).

Eisenberg, Cumberland, and Spinrad (1998) described a developmental theory to explain the role of emotion socialization in children's regulation of emotion and behavioral competence. The emotion socialization behaviors parents engage in include (a) reacting to children's emotions, (b) discussing emotions, and (c) emotional expressiveness. Eisenberg and colleagues summarize research showing that each of these behaviors contributes to development of children's emotional and behavioral competence. According to this theory, parents’ behaviors have an indirect impact on their children's adjustment via the impact of parents’ socialization behaviors on children's own regulatory processes; in other words, children's regulation mediates the link between parental socialization behaviors and children's adjustment.

In the current study, the specific emotion socialization practice of interest was parents’ emotional expressiveness. We were particularly interested in understanding the role of parents’ emotional expressiveness and children's regulatory processes on the adjustment of abused children in the school setting. Understanding predictors of early school adjustment of physically abused children is important because adaptation in the school environment is closely linked to functioning in other domains; success in the transition to school can provide a foundation for long-term positive functioning (Entwisle & Hayduk, 1988). Research indicates that, compared to nonmaltreated children, abused children tend to obtain lower test scores and course grades, experience higher retention and dropout rates, and are rated by teachers as working below grade level and displaying more behavior problems in school (e.g., Anthonysamy & Zimmer-Gembeck, 2007; Eckenrode, Laird, & Dois, 1993; Veltman & Bowne, 2001). Thus, research on factors associated with success or failure in school certainly is relevant for abused children.

Parent expressiveness and child behavior

As noted above, emotional expressiveness is one of the primary emotion-related social behaviors of parents that contribute to the emotional context in which children are socialized (Eisenberg et al., 1998). Expressiveness refers to open displays of positive and negative emotions in situations that directly involve the child and in interactions the child might simply observe. Historically, researchers and clinicians have been most interested in expression of negative emotion, but Fredrickson (1998a) points to the importance of socialization of positive emotion by parents because positive feelings can be used to modulate negative emotions. Successful regulation of negative emotion, in turn, contributes to children's social competence. Examples of parents' expression of positive emotion include displays of happiness, pride, excitement, or thankfulness. Negative emotional expressiveness has been divided into negative dominant emotions (e.g., anger, contempt) and negative submissive emotions (e.g., embarrassment, sadness). There is some evidence that these two types of negative emotion predict different aspects of competence in childhood (e.g., Eisenberg et al., 1991; Halberstadt, Crisp, & Eaton, 1999) and adulthood (e.g., Bell, 1998). For example, parents' frequent expression of negative dominant emotions, but not negative submissive emotions, was associated with teacher reports of children's poor regulation and externalizing behaviors (Eisenberg, Liew, & Pidada, 2001). Our study includes examination of parents' positive emotion as well as both types of negative emotion, considered separately. Although there are some discrepant findings in the literature, the degree to which parents express emotions tends to be related to children's emotional and social competence (e.g. Burk et al., 2008; Parke, Cassidy, Burks, Carson, & Boyum, 1992). Of particular relevance to this investigation, research shows a link between parent expressiveness and young children's aggressive behavior in the school setting. Specifically, children of parents who more frequently express negative emotions and less frequently express positive emotions are rated as more aggressive by teachers (Foster, Reese-Weber, & Kahn 2007) and are less well liked by their peers (Boyum & Parke, 1995; Halberstadt, Crisp, & Eaton, 1999). Fewer investigators have examined the impact of expressiveness on competence specifically in the classroom setting, although expressiveness predicts teachers' views of children's general social and behavioral competence, which is closely linked to children's classroom participation and other achievement-related behaviors (Graziano, Reavis, Keane, & Calkins, 2007). A contribution of this study is the examination of abused children's achievement-related behaviors in the classroom.

Child self-regulation: Associations with parent expressiveness and children's school competence

In the model put forth by Eisenberg, Cumberland, and Spinrad (1998), a potential mechanism linking family expressiveness and children's behavior at school is children's ability to regulate their emotions and behavior. Investigators have divided regulatory processes into physiological regulation, emotion regulation, and behavior regulation. These domains are, however, highly interrelated (Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003), thus we did not distinguish between forms of regulation. We refer to the construct as self-regulation. The process of acquiring self-regulation is critical in children's successful transition into school. Based on a national survey of 3,959 kindergarten teachers (Rimm-Kaufman, Pianta, & Cox, 2000), nearly one-half of children entering kindergarten experience problems that limit their ability to achieve in school; the most common reasons for these problems are related to an inability to regulate behavior (e.g., difficulty following directions, difficulty working independently, difficulty working as part of a group).

An association between children's regulation and parent expressiveness has been demonstrated in numerous studies. To illustrate, higher self-report of maternal expression of negative emotion was associated with lower regulation in children, as reported by parents

(Ramsden & Hubbard, 2002). In another study, mothers who self-reported more frequent expression of positive emotions had children whose observed behavior was more well-regulated (Cumberland-Li et al., 2001). Finally, mothers' self-reports of both positive and negative expressiveness were related to children's self-regulation (defined by attention focusing, attention shifting, inhibition control) such that positive expressiveness was associated with strong regulatory skills; however, only expression of positive emotions was related to observed high regulation on a persistence task (Eisenberg et al., 2001). In summary, there is evidence that family emotional expressiveness and children's self-regulation are linked in ways that would be expected based on Eisenberg et al.'s theoretical framework. However, there are some divergent findings across raters, measures of regulation, and the valence (positive, negative) of emotion.

The association between children's self-regulation and competence in school has been well-documented in concurrent and longitudinal studies of normative populations (Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996; Hill, Degnan, Calkins, & Keane, 2006). Specific to the current study, poor regulation in young children is associated with high rates of aggressive behavior in preschool and early school years. This link is evident in developmental research (Degnan, Calkins, Keane, & Hill-Sonderlund, 2008) and intervention studies that demonstrate reduced aggression following improved regulatory skills (Izard et al., 2008). Self-regulation also plays an important role in academic achievement and school readiness. Kindergarten children with poor modulation of their emotions and behaviors tend to have difficulty learning and are considered less productive in the classroom (Graziano et al., 2007).

Associations between self-regulation and behavior also have been explored in at-risk populations, including maltreated children. For preschool children at risk of maltreatment, observed and maternally-reported poor regulation of children predicted maternal reports of child behavior problems (Schatz, Smith, Borkowski, Whitman, & Keogh, 2008). Maughan and Cicchetti (2002) found that poor emotion regulation in response to inter-adult anger was associated with high rates of parent-reported internalizing and externalizing problems of maltreated children. Several studies by Cicchetti and colleagues point to the relevance of self-regulation in the behavior of maltreated children such that associations between maltreatment and aggression and other disruptive behaviors were partially accounted for by children's poor emotion regulation skills (Shields & Cicchetti, 1998, 2001; Teisl & Cicchetti, 2008).

Self-regulation as a mediator

In Eisenberg, Cumberland, and Spinrad's (1998) heuristic model, parents' emotional expressiveness impacts children's competence indirectly through children's skills such as self-regulation. In other words, parents who are able to regulate their own emotions, such that they often express positive emotions and refrain from frequent expressions of negative emotion, are expected to have children with strong self-regulation skills. Those regulatory skills, in turn, are expected to support children's social and emotional competence. There is some empirical evidence that self-regulation can indeed serve as a mediator. Eisenberg, Gershoff, et al., (2001) found that children's regulation (as measured by parent and teacher report as well as observations) mediated the association between mothers' expressed positive and negative emotion (as measured by self-report and observation) and their children's externalizing behaviors and social competence. Based on path analysis, Ramsden and Hubbard (2002) found modest support for a model in which children's emotion regulation skills (as measured by parent and teacher ratings) mediated the positive association between mothers' self-reported expression of negative emotions and teachers' reports of children's aggressiveness. Finally, in a study of Indonesian families, parents' self-reported negative emotion expression was indirectly negatively related to children's

popularity and positively related to externalizing behaviors through children's self-regulation (i.e., observed attention, inhibitory control, and temperament) (Eisenberg, Liew, & Pidada, 2001).

Current study

Mounting evidence underscores the relevance of parents' emotional expressiveness and children's self-regulation in behavioral competence of young children, and a few studies support the role of self-regulation as a mediator. However, extant literature is based largely on non-clinical samples of middle-income European American mothers and their children. Emotion socialization processes within European American families might differ from those of ethnically and socioeconomically diverse samples (Shipman et al., 2007). Further, links among these constructs might differ for families of abused children—characterized by high negative affect and emotion dysregulation among the parents and children (Ford, Fraleigh, & Connor, 2010; Mammen, Kolko, & Groff, 2007; Wilson et al., 2008). The current study addresses that gap in the literature by examining emotion socialization in a diverse clinical sample. In addition, most research in the field of child maltreatment has focused on negative emotionality in families of abused children. Drawing on the work of Frederickson (1998a) regarding the importance of parents cultivating positive emotions in families, we investigated abusive parents' expression of positive emotions as well as negative emotions.

We were particularly interested in children between the ages of 4-7 because they are transitioning into formal school settings; that transition is associated with increased expectations for children's regulation of emotion and behavior (Perry & Weinstein, 1998). Studies of the influence of parental emotional expressiveness and self-regulation on children's social-emotional functioning in school have addressed primarily psychopathology and maladaptive behavior rather than behaviors associated with competence. We followed suit, in part, by including aggressive behavior as an indicator of child adjustment because there exists a particularly strong link between the experience of physical abuse and aggressive behavior (Anthonysamy & Zimmer-Gembeck, 2007). However, we also were interested in expanding the focus to indicators of competent behavior; thus, children's cooperation and self-directedness in the classroom were examined. We hypothesized that parents' emotional expressiveness and children's self-regulation would predict abused children's aggressive behavior at school and their competence in the classroom. We also expected that children's self-regulation abilities would mediate the link between expressiveness and child behavior.

Method

Participants

Parent-child dyads who participated in a short-term longitudinal investigation of abused children's transition to kindergarten were included in the current study. Participants in this particular investigation were extracted from a single time point (as described below). Three dyads for whom there was no data for parent emotional expressiveness were dropped from the sample; thus, the sample for this study included 92 children (n = 35; 38% girls) between 4 and 7 years of age (M = 5.8 years; SD = .68 years) and 1 of their parents or parent figures (n =88; 95.7% mothers). All children had a history of substantiated physical abuse or neglect involving inappropriate discipline (defined on the basis of North Carolina Statutes) within the year prior to enrollment in the study. In NC, cases of neglect involving inappropriate discipline include physical abuse resulting in injuries not considered "serious" (but still involving injury); we included those cases in this sample because they would be designated as physical abuse in other states. With only 3 exceptions, the parent who maltreated the child participated in this study (the pattern of findings remains the same when those exceptions

are excluded). Severity of abuse was unknown but was likely in the mild to moderate range because children were living with their parent or primary caretaker at the time of enrollment in the study (i.e., they had not been removed from the abusive parent's home). The majority (72.8%) of child participants and their parents were African American; 20.7% were European American, and 6.5% were Latino or biracial. There is some evidence that African American children tend to be overrepresented in child welfare caseloads (e.g., Fluke, Yuan, Hedderson, & Curtis, 2003) so the racial composition of this sample was not unexpected and was consistent with the child protective services population in the county in which the data were collected. The full range of SES based on Hollingshead's (1975) 5 categories was represented, with 36% at the highest 3 levels and 64% at the lowest 2 levels. Mean parent age was 32.8 years (SD =8.2), and 44% of parents were unemployed.

Procedure

A description of the study was mailed to all parents whose children were deemed eligible according to a review of the county child protection registry conducted by CPS employees. Inclusionary criteria were a history of substantiated abuse, child age between 4-7 years, child resided with the abusive parent, and the parent and child spoke English. Parents were told they had been invited to participate because their child “is receiving child welfare services and is in preschool (or age 4), kindergarten, or first grade.” They were told the purpose of the study was to learn about “how children's experiences with their families, teachers, and friends effect how well children get along in school” and to “find out what will help children make a successful transition from preschool into elementary school.” Interested parents called the project office to complete a psychosocial interview and, if families met criteria, data collection was scheduled. Preschool, kindergarten, and first grade children and their parents were recruited for participation. Yearly follow-up assessments were conducted for the preschool and kindergarten children through their first grade year. For the purposes of this investigation we selected the earliest time point for which the most study measures were available, which resulted in a sample of 16 (17.4%) preschoolers, 62 (67.4%) kindergarteners and 14 (15.2%) first graders. The number of preschoolers is relatively small for this study because many 4 year old children were not enrolled in a preschool setting and therefore no teacher-report data were available at that time point. There are some missing data due to time constraints (e.g., some families were not able to complete all measures due to late arrival for data collection or the need to leave early) or refusal or inability to complete certain measures. There were no differences on demographic factors or study variables between families with and without complete data. The measure of emotional expressiveness was available for all participants; the extent of missing data for other variables is reported following the description of each measure, below. Parents gave informed consent and children gave assent for participation. Parents received a financial incentive to participate ($70, $80, $90 for time 1, 2, and, 3 respectively) and teachers received $15. Teacher-report data and playground observations were collected within 1 month of parent and child data collection.

Measures

Parent emotional expressiveness

Self-Expressiveness in the Family Questionnaire (SEFQ)—The SEFQ (Halberstadt et al., 1995) is a self-report measure of emotional expressiveness. It consists of 40 items that describe situations in which family members might express various emotions. Nineteen items involve Positive emotions (e.g., exclaiming over a beautiful day), 10 items are Negative-Submissive emotions (e.g., showing upset after a bad day) and 11 items reflect Negative-Dominant emotions (e.g., showing dislike for someone). For each of the 40 items, parents were asked to indicate the frequency with which they expressed themselves in that

way using a 9-point scale (1=*not at all frequently*; 9=*very frequently*). Factor analysis across several studies supports the 3-scale structure. Scores are stable over time and there is evidence of construct validity across many studies (e.g., Ramsden & Hubbard, 2002; Wong, McElwain, & Halberstadt, 2009). Internal consistency of scales for this sample was .84 for Positive expressiveness and .77 for both Negative-Submissive and Negative-Dominant subscales. SEFQ data were available for all 92 participants.

Child regulation

Behavior Rating Inventory of Executive Functioning (BRIEF)—The BRIEF (for ages 5-18) and BRIEF-Preschool (for ages 3-5) are parent- and teacher-report measures of children's executive functioning and emotional/behavioral regulation (Gioia, Isquith, Guy, & Kenworthy, 2000). Respondents were presented with statements that described problematic child behavior and indicated, on a 3-point scale (*Never, Sometimes, Often*), how frequently the target child had problems with each of the behaviors in the past 6 months. Parent and teacher versions yield T-scores (based on age and gender; $M = 100$, $SD = 10$ for normative sample) for several scales measuring aspects of regulation and executive functioning. Although the scales and items vary somewhat across the parent and teacher versions and across the school-age and preschool forms, scales of interest in this study were common to all versions and included Emotional Control (“has explosive outbursts”), Inhibit (“becomes too silly”), and Shift (“has trouble moving from one activity to another”). These 3 scales comprise the Behavioral Regulation Index (BRI) of the BRIEF and a comparable summary score was derived based on the mean T-score for those 3 scales of the BRIEF-P. We refer to this variable as “regulation,” but readers should note that higher scores indicate poorer regulation. For the current sample, internal consistency ranged from . 77 to .96 across the relevant scales. Test developers reported test-retest coefficients for the scales used in the current study ranging from .79 -.94 across forms and raters. Validity has been demonstrated against various measures of child emotional and behavioral functioning (see Gioia, Isquith, Guy, & Kenworthy, 2000; Toplak, Bucciareli, Jain, & Tannock, 2009). Teacher-report and parent-report BRIEF scores were available for 85 (92%) and 91 (99%) children, respectively.

Aggression

Two measures, described below, were combined to form a single indicator of child aggression.

Child Behavior Checklist -Teacher Report Form—(TRF; Achenbach & Rescorla, 2001a) and Caregiver-Teacher Report Form (C-TRF; Achenbach & Rescorla, 2001b). The TRF, a 118-item teacher-report of children's adjustment, was administered to teachers of children ages 6-7. The C-TRF, a parallel form for younger children, includes 99 items and was administered to teachers of children aged 4 and 5. Teachers rated how true each item was for the child over the past 6 months on a scale of 0 = *not true* to 2 = *very or often true*. Childhood aggression was a primary variable of interest in the current study; therefore the Aggressive Behavior scale T-Scores ($M = 100$; $SD = 10$) based on age and gender norms were used. Internal consistency of the Aggressive Behavior scale for this sample was .96 on the C-TRF and .95 on the TRF. Reliability and validity of the CBCL has been supported by over 40 years of research (see Achenbach & Rescorla, 2001a).

Playground observations—Live observations on the child's playground were conducted using an interval coding system. For 30 minutes, coders recorded whether the child engaged in any of 4 target behaviors within 15-second intervals (i.e., 10 seconds for observing and 5 seconds for recording). Observers coded the occurrence of engaged social behavior, negative behavior, rough play, and aggression. Data for aggressive behavior were used in this study.

Aggression was defined as “physical contact with a peer that constitutes an attack with clear potential to harm or taking something belonging to another child”. The coders were research assistants trained to 90% agreement with the primary coder. Inter-rater agreement was assessed for approximately 25% of the observations using a second coder and was .94 for Aggressive behavior. Validity of this coding system has been established with samples of young maltreated children (Sabourin Ward & Haskett, 2006).

Correlations between the two aggression variables (i.e., observed aggression on the playground and teacher-reported aggression on the TRF) indicated a significant and moderately high relation, $r = .48$, $p < .001$. Thus, after standardizing these 2 variables, mean summary scores were created for aggression. Higher scores indicated more frequent aggression. Aggression scores were available for 87 (95%) children.

Competent classroom behavior

Teacher Rating Scale of School Adjustment (TRSSA)—The TRSSA (Birch & Ladd, 1997) is a 52-item teacher report measure of young children's behavioral and relational adjustment in classroom settings. It is 1 of the most frequently-used teacher measures of children's school adjustment (Betts & Rotenberg, 2007). Teachers rated, on a 3-point scale (0 = *Doesn't apply*, 1 = *Applies sometimes*, 2 = *Certainly applies*), the extent to which each item applied to the student. Raw scores were derived for Cooperative Participation, Self-Directedness, School Liking, School Avoidance, and Comfort with Teacher. Cooperative Participation and Self-Directedness were deemed most relevant to self-regulation and have been employed in similar investigations of competence in the classroom (e.g., Ladd, Birch, & Buhs, 1999; Valeski & Stipek, 2001). The 8-item Cooperative Participation subscale taps the extent to which students comply with authority and follow classroom rules (alpha for this sample = .93). The 4-item Self-Directedness scale measures children's independent behaviors (e.g., accepts challenges) within the classroom (alpha = .88). Mean raw scores are generated for each scale; higher scores indicate more positive adjustment. The test developers found TRSSA scales were significantly related to quality of teacher-student relationships and to social adjustment in the school setting (e.g., Ladd, Birch, & Buhs, 1999; Ladd & Burgess, 1999). Because correlations between the 2 classroom behavior variables—self-directedness and cooperation—indicated a strong relation, $r = .75$, $p < .001$, we standardized these variables and created mean summary scores for competent classroom behavior. There were competent classroom behavior scores for 85 (92%) of the children.

Results

First, descriptive statistics were conducted for all variables, followed by analyses to identify potential covariates. Next, to test hypothesized links among variables, intercorrelations were examined. Finally, tests of mediation models were completed.

Descriptive analyses

Descriptive statistics for all study variables are presented in Table 1. The TRF and BRIEF yield standardized T scores (which have a mean of 50 and a SD of 10), so we can compare our sample with norms for those measures. The mean T-scores for parent and teacher reports of children's regulation were 54.45 and 57.56, respectively. The mean T-score for Aggression on the TRF was 57.86. Thus, our sample was somewhat less well regulated and more aggressive than “typical” children. Unfortunately, the other measures are not standardized so it is difficult to compare scores for our sample to community or nonabuse samples.

Covariates

To identify potential covariates, relevant demographic variables (child age and IQ, parent education) were correlated with the dependent variables (aggression, classroom behavior); none of these correlations were significant. In addition, child ethnicity and gender differences on dependent variables were examined with independent sample *t*-tests. There were child ethnicity differences in aggression, $t(82.77) = 2.90$, $p = .005$, such that African American children had higher aggression scores, $M = .11$, $SD = .97$, than children of other ethnicities, $M = -.33$, $SD = .42$. African American children also had lower competent classroom behavior scores, $t(82) = -2.28$, $p = .026$, $M = -.14$, $SD = .94$, than children of other ethnicities $M = .36$, $SD = .86$. Regarding gender, boys, had higher aggression compared to girls, $M_{boys} = .15$, $SD_{boys} = 1.03$; $M_{girls} = -.28$, $SD_{girls} = .42$; $t(76.39) = 2.72$, $p = .008$, whereas girls had marginally significantly higher competent classroom behavior scores compared to boys, $M_{girls} = .24$, $SD_{girls} = .80$; $M_{boys} = -.14$, $SD_{boys} = .99$; $t(73.80) = -1.91$, $p = .06$. Therefore, child ethnicity and gender were controlled in subsequent analyses.

Relations among variables

Intercorrelations among study variables are presented in Table 1. Controlling for child ethnicity and gender, parents' positive emotion expressiveness was significantly correlated with better child regulation (high scores on the BRIEF indicate low regulation), based on teacher reports, and with higher competent classroom behavior. Parents' negative-dominant and negative-submissive expressiveness were both associated with low levels of child regulation, based on parent report. Parents' negative-submissive expressiveness was associated with higher levels of observed child aggression. Low regulation based on both teacher and parent reports was associated with more aggression. Finally, low children's regulation based on teacher reports was associated with lower competent classroom behavior scores.

Tests of mediation

A second purpose of this study was to examine the mediating role of children's self-regulation. Traditionally, mediation has been examined using the causal steps approach put forth by Baron and Kenny (1986). According to that approach, the independent variable (IV) and mediator must be significantly related and both of those variables must be related to the dependent variable (DV). Based on the pattern of partial correlations controlling for child gender and ethnicity, only two models met those initial criteria to examine mediation. In the first model, the IV was negative-submissive emotion, the DV was child aggression, and the mediator was parent-reported child regulation. In the second model, the IV was positive emotion, the DV was child classroom behavior, and the mediator was teacher-reported child regulation. Mediation was tested using hierarchical regression with child gender and ethnicity entered in Step 1 of each of the two models, the hypothesized independent variable was added in Step 2, then the hypothesized mediator (parent or teacher report of children's regulation) was added in Step 3. If the relation between the DV and the IV was no longer significant when the mediator was introduced in Step 3, a one-tailed Sobel test (Sobel, 1982) was used to determine whether the indirect effect was statistically significant.

In the first mediation model (Table 2), parental expression of negative-submissive emotions (IV) predicted children's aggression (DV), with parent report of children's regulation serving as the mediator. The overall model was significant, $F(4, 84) = 4.37$, $p = .003$, and explained 18% of the variance in children's aggression. When controlling for child gender and ethnicity, parental negative-submissive expressiveness was associated with children's aggression. Once the hypothesized mediating variable, parent report of children's regulation, was entered into the regression model, parental negative-submissive expressiveness was no longer significant and regulation was marginally significant. Even though regulation was

only a marginally statistically significant predictor of aggression in this step of the model, we proceeded to a Sobel test because its inclusion in the model did reduce the influence of expressiveness to a nonsignificant level. Experts have argued that the causal steps approach can underestimate the effects of mediators so that tests of mediation should be guided by theory and proceed even when the association between the IV and DV is not significant (Rucker, Preacher, Tormala, & Petty, 2011). The one-tailed Sobel test examined whether parent-reported child regulation carried the influence of parental expression of negative-submissive emotion to children's aggression and results supported mediation, $z = 2.13$ $p = .017$.

In the second mediation model (Table 3), parental positive expressiveness (IV) predicted children's competent classroom behaviors (DV) with teacher report of child regulation serving as the mediator. The overall model was significant, $F(4, 83) = 22.14$ $p < .001$, and explained 53% of the variance in children's competent classroom behavior. When controlling for child gender and ethnicity, the relation between parental positive expressiveness and children's competent classroom behavior was approaching significance ($p = .059$). Once teacher report of child regulation was added to the regression model, parental positive expressiveness was no longer significantly related to competent classroom behaviors. When controlling for all other predictors, child regulation was negatively associated with competent classroom behaviors. Child gender and ethnicity were also uniquely associated with classroom behaviors. The lack of a significant relation between parental positive expressiveness and children's competent classroom behavior once regulation was added to the model suggested the potential for complete mediation of this association. Indeed, a subsequent one-tailed Sobel test was significant, $z = 1.90$ $p = .029$, indicating that the relation between parental expression of positive emotion and children's competent classroom behaviors was mediated by teacher-reported child self-regulation skills.

Discussion

It has been established that children who experience physical abuse are at risk for aggressive behavior toward peers and behavioral maladjustment in the classroom, but the specific child- and family-level predictors of these outcomes are less well understood. Several authors have attributed emotional and behavioral dysregulation of maltreated children to the emotionally insecure environment and high levels of negative emotional arousal present in their homes (e.g., Alink et al., 2009). This study demonstrates the relevance of the emotional climate of maltreated children's homes in understanding their self-regulation as well as their behavioral and social competence in the school setting. These findings have important implications for researchers and clinicians interested in understanding the factors that might contribute to the adjustment of maltreated children. We examined these linkages during the children's entry into formal school settings, a salient transition in early childhood.

Parent expressiveness and child behavior

In terms of links between parents' emotional expressiveness and child behavior in the school setting, parents' frequent expression of positive emotions was associated with high ratings of achievement-related behaviors but was not associated with children's aggression in school. Although parents' negative-dominant expressiveness (e.g., anger and contempt) was *not* related to children's behavior at school, parents' negative-submissive expressiveness (e.g., sadness) was associated with children's aggression. That negative-submissive emotion predicted aggression but negative-dominant emotion did not was somewhat unexpected. Perhaps, among abusive parents, negative-submissive feelings such as sadness and embarrassment occasionally lead them to be hostile toward others (including their children); those displays could then contribute to children's aggression, as suggested by our finding.

Eisenberg, Cumberland, and Spinrad (1998) suggested that perhaps the chronicity and intensity of negative-submissive emotions would moderate the link between expression of these particular emotions and children's functioning. It is possible abusive parents express these negative-submissive emotions both intensely and chronically while expression of negative-dominant emotion is less intense and/or chronic; in fact, the mean score for negative-submissive expressiveness was 4.4 and the mean for negative-dominant was 3.0 (on a 9-point scale). Additional research will be needed to explore these explanations for findings.

In terms of the failure to find a relation between expression of negative-dominant emotions and aggression, it is possible our sample of abusive parents underreported their expression of these harsh and hostile emotions (in contrast to the “soft” negative-submissive emotions) due to the parents’ history of involvement with child protective services. Although we can't directly compare our sample to nonabusive parents, it is noteworthy that the mean negative-dominant score for our sample was consistently several points lower than the mean reported in other studies based on community samples. Even though the 2 types of negative emotion were significantly correlated in our study ($r = .59$) only negative-submissive expressiveness was related to child aggression, which suggests that the distinction might be an important one to continue to explore.

Parent expressiveness and child regulation

Maughan and Cicchetti (2002) suggested that research efforts should focus on how some maltreated children are able to develop healthy regulation in spite of their history of maltreatment. This would be consistent with a developmental psychopathology perspective. Indeed, there was variability in self-regulation among children in our sample. Although group mean scores on parent and teacher measures of children's self-regulation were somewhat elevated compared to the standardization sample for the BRIEF, scores for the majority of the children (i.e., 76% and 90%) were below the clinically significant range (i.e., T scores were below 65) according to teacher and parent reports, respectively. One pathway to adaptive regulation in the school setting might be parents’ willingness and ability to openly express positive emotions. Specifically, expression of positive emotions (but not negative emotions) predicted teacher reports of children's self-regulation such that children of parents who more frequently expressed positive emotions were better regulated in the school setting. Similarly, in a study that included behavioral measures of self-regulation (Cumberland-Li et al., 2003), low positive expressiveness was associated with poor child regulation but negative expressiveness was unrelated to any indicators of regulation. These findings concur with Eisenberg, Cumberland, and Spinrad (1998), who concluded based on their review of the literature that parents’ positive expressivity was more consistently associated with children's adjustment than was negative expressivity.

Although teachers’ views of children's regulation in the school setting were linked to parents’ expression of *positive* emotions, it was expression of *negative* emotions that were associated with parents’ views of their children's regulation. Given that parents reported on both their self-expressiveness and children's regulation, parents who report expressing more negative emotion may also perceive their child as being less regulated; that is, some abusive parents might have a negative cognitive set or bias that influences their reports of their own and their child's behavior. There is also a question of the direction of effects in that parents’ expression of negative emotion in the family might follow children's dysregulated behaviors. Future longitudinal studies will be necessary to test these hypotheses.

Child regulation and school behavior

Consistent with research showing associations between regulation and behavioral adjustment, some of the strongest links among the constructs examined in this study were between children's self-regulatory skills and their behavior in school. Associations between self-regulation and aggression were robust across reporters, and links were evident for negative as well as positive indicators of children's functioning. That is, poor self-regulation was related to more frequent children's aggression toward peers *and* to low levels of initiative and cooperation in the classroom.

Mediation by child regulation

Eisenberg and colleagues' model suggested that some of the influence of parent expressiveness on children's behavior was likely indirect and due to its effect on children's self-regulation (Eisenberg et al., 1998). In our study, the pattern of relations among variables only supported examination of 2—of a possible 12—mediaton models. We used a conservative standard (Baron & Kenny. 1986) to select the mediation models to be examined (and hence, only tested 2), but we used a less conservative standard (Rucker et al., 2011) to move toward testing the actual significance of mediation for the 2 individual models tested. Although results of the Sobel test indicated mediation, there was overall limited support for the mediating role of children's self-regulation. It is possible that self-regulation serves as a mediator only under specific conditions or for children with particular characteristics or circumstances. In other words, mediation might be moderated by a third variable. Such moderators were proposed in Eisenberg et al's. (1998) framework. Alink, Cicchetti, Kim, and Rogosch (2009) found emotion regulation mediated the link between maltreatment and psychopathology, but only for children with an insecure pattern of relatedness to their mothers. Quality of relationship with the parent is, therefore, one potential moderator to be examined in future studies. There also appears to be differential relations among constructs based on child gender (Isley, O'Neil, Clatfelter, & Parke, 1999; Noguchi & Ollendick, 2010); unfortunately, we did not have a sufficient sample size to examine the moderating influence of child or parent gender.

Implications of findings

With respect to clinical implications of these findings, it seems failure to express positive emotions in the family might be critical in terms of understanding abused children's regulation in the school setting. This finding supports clinical recommendations (Herschell & McNeil, 2005) to direct treatment efforts to increase warmth and positive regard of abusive parents and increase shared positive affect (Peterson, Gable, Doyle, & Ewigman, 1997) along with the more common goal of decreasing their negativity and harsh parenting practices. Further, enhancing abusive parents' positive emotionality is in accord with Fredrickson's (1998b; 2001) "broaden and build" theory in which day-to-day positive emotions promote enhanced well-being by facilitating coping and, ultimately, resilience. There exist some promising programs to enhance emotional socialization practices of parents of preschool children (e.g., Havighurst, Wilson, Harley, Prior, & Kehoe, 2010); those programs could be applied, perhaps with modifications, to abusive parents and their children. Future research also could be directed to understanding teacher practices that might contribute to positive parent expressiveness. The fact that children's poor regulation was related to aggression and low competence in the classroom points to the potential value of interventions related to enhanced self-regulation for addressing, in part, the academic failures of some maltreated children as well as their aggressive behavior toward peers (e.g., Wyman et al., 2010).

Future directions and conclusions

A review of the shortcomings of this investigation highlights directions for future studies. Our sample included primarily mothers. Research suggests low correspondence between mothers' and fathers' expressiveness (Boyum & Parke, 1995) as well as differential prediction of child behavior by mother and father expressiveness, so the addition of fathers in subsequent research is strongly recommended. Although we had multiple measures of both children's self-regulation and classroom behaviors, we had only one measure of parent expressiveness. However, the SEFQ has been used in many studies that have moved the field forward, and Eisenberg et al., (2001) found that parent reports were more closely associated with measures of children's regulation than were observations of parent expressiveness. In addition, Boyum and Parke (1995) found only modest correlations between self-reported and observed parental emotional expressiveness. Parent reports might be a better representation of day-to-day expressiveness than observations of emotion displayed in a relatively brief data collection session. It should be noted that the strongest links among variables were those based on a single reporter; this could be a function of shared method variance, which points to the importance of using multiple informants. We would be remiss if we did not remind readers that our data are concurrent and, as such, conclusions regarding direction of effects and mediation of the link between parent expressiveness and child behavior over time would be inappropriate. In addition, bidirectional influences of parent and child emotional competence are highly likely but could not be examined in this study. Although at least one study based on concurrent data (Eisenberg et al., 2001) did not find support for a model in which children's social competence predicted parental expressiveness, longitudinal studies are needed to address directionality of effects. This study focused on environmental experiences in children's development of regulation, but it is important to note that there is likely to be a genetic vulnerability that interacts with environmental influences to contribute to poor regulatory abilities in young maltreated children (McCrory, De Brito, & Essi, 2010).

In conclusion, results indicate that young abused children's social and behavioral adjustment in the school setting is closely associated with self-regulation, defined as their ability to shift attention when necessary, inhibit inappropriate responses, and manage their emotions. These self-regulatory processes are linked to taking initiative in the classroom and working independently, which are important attributes for early academic success. Further, results suggest that abused children living in homes characterized by relatively frequent expressions of positive emotions might be more likely to meet those developmental expectations. Additional research will be necessary to identify the mechanisms by which family emotional expressiveness and behavior of maltreated children are linked, as evidence for the role of self-regulation as a mediator was minimal. Other mediators to explore are suggested by Eisenberg et al.'s model and include children's level of arousal in social situations, their social intelligence and understanding of emotion, and their schemas about themselves and social relationships (1998).

Acknowledgments

We thank the parents and children who participated in this study and the teachers who gave their time generously to participate. We also thank undergraduate research assistants in the Kindergarten Transition Study for their diligence in data collection and coding, and Kathy Osborne, Alouette Rhymer, and Audrey Williamson for heroic recruitment efforts. We appreciate Amy Halberstadt's valuable feedback on a draft of this manuscript.

This research was supported by a grant from the National Institute of Child Health and Human Development awarded to the first author.

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Table 1

Intercorrelations (Partial Correlations) Controlling for Child Gender and Ethnicity

Variable	Mean	*SD*	1	2	3	4	5	6	7
1. Positive Expressiveness	131.07	19.55							
2. Negative Submissive Expressiveness	44.89	14.90	.27**						
3. Negative Dominant Expressiveness	34.14	11.43	.12	.59***					
4. Self-Regulation[a] – Parent report	54.55	9.24	-.07	.38***	.30**				
5. Self-Regulation[a] – Teacher report	57.56	13.48	-.24*	.02	.001	.15			
6. Aggression	-.012	.87	-.18	.24*	.13	.27*	.61***		
7. Competent Classroom Behavior	0	.94	.22*	-.13	-.06	-.19	-.70***	-.55***	--

[a]Lower scores indicate *better* regulation.

*$p < .05$.

**$p < .01$.

***$p < .001$.

Table 2

Hierarchical Regressions with Parents' Negative-Submissive Expressiveness and Children's Self-Regulation (Parent-Report) Predicting Children's Aggression, n = 84

	Aggression		
Variables	**β (*SE*)**	**R^2 (ΔR^2)**	**Δ *F***
Step 1		.09 *	
Child gender	-.37 (.19) †		
Child ethnicity	-.36 (.21) †		
Step 2		.14 ** (.06)	5.45 **
Child gender	-.33 (.19) †		
Child ethnicity	.41 (.20)		
Negative-submissive emotion	.02 (.01) *		
Step 3		.18 ** (.04)	3.40 †
Child gender	-.24 (.19)		
Child ethnicity	-.37 (.23)		
Negative-submissive emotion	.01 (.01)		
Self-regulation (parent)	.02 (.01) †		

† $p < .10$

* $p < .05$

** $p < .01$

Table 3

Hierarchical Regressions with Parents' Positive Expressiveness and Children's Self-Regulation (Teacher-Report) Predicting Children's Classroom Behaviors, n = 83

	Classroom Behaviors		
Variables	**β (*SE*)**	**R^2 (Δ R^2)**	**Δ *F***
Step 1		.08	
Child gender	.31 (.21)		
Child ethnicity	.45 (.22)*		
Step 2		.12 (.04)	3.67†
Child gender	.27 (.21)		
Child ethnicity	.38 (.22)†		
Positive emotion expression	.01 (.005)†		
Step 3		.53 (.41)	68.28***
Child gender	.42 (.15)**		
Child ethnicity	.34 (.16)*		
Positive emotion expression	.002 (.004)		
Self-regulation (teacher)	-.05 (.006)***		

† $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$