

Emotion Dysregulation and Academic Resilience in Maltreated Children

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Abstract Maltreated children frequently experience academic difficulties. In the past, this has been attributed to placement instability, length of involvement with the child welfare system, and numerous other factors that disproportionately affect maltreated children. Maltreated children are also prone to emotion regulation (ER) difficulties and patterns of emotion dysregulation. Resilience (i.e., normative functioning despite having experienced maltreatment) among maltreated children is rare, particularly across multiple domains. ER has been found to predict academic performance in non-maltreated samples. In this study, the relationship between emotion dysregulation and academic performance was analyzed in a sample already at risk for academic difficulties (maltreated children). Measures of emotion dysregulation and academic performance were analyzed in a sample of maltreated children ($n = 158$). Linear regression analysis indicated that the absence of emotion dysregulation was significantly related to academic resilience. Late adolescence, race, and placement stability were also significantly related to academic resilience. Implications for child welfare professionals and educators of maltreated children are discussed.

Keywords Resilience · Maltreated children · Child abuse · Emotion regulation · Emotion dysregulation · Foster care · Academic performance · CAFAS

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Introduction

The US Department of Health and Human Services (2007) defines child maltreatment as, “any act or series of acts of commission or omission by a parent or other caregiver that results in harm, potential for harm, or threat of harm to a child.” This includes physical, sexual, and psychological abuse, as well as neglect and failure to supervise. In 2007, ~794,000 children in the US and Puerto Rico were abused or neglected (US Department of Health and Human Services 2009). In the US, 92% of children in foster care were removed from their homes due to abuse or neglect (US Department of Health and Human Services [HHS], 2001). Neglect, physical abuse, and sexual abuse were the most common removal reasons; however, 41% of children in foster care experienced more than one type of maltreatment in their home of origin (HHS 2001). The maltreatment these children suffer in childhood can cause far-reaching damage throughout their lives, including higher rates of unemployment, teenage pregnancy, homelessness, alcohol and drug use, and mental health problems, compared to their non-maltreated peers (Jackson and Martin 1998; Thornberry et al. 2001). Therefore, our efforts on behalf of these children must reach beyond the immediate goal of ensuring their safety to helping them live more functional, healthy lives.

When considering a long-term approach to assessment and help for maltreated children, the construct of resilience is useful. Resilience, defined as children’s ability to function normatively, despite having experienced maltreatment (Jaffee and Gallop 2007), is not an automatic result of removing children from unhealthy or abusive environments—in fact, many children with histories of maltreatment and consequent removal from their homes do not demonstrate resilience. Similarly, children who demonstrate resilience in one area of functioning may not do so in other areas (Jaffee and Gallop 2007). Our study focused on academic resilience, because academic success is tied to critical aspects of healthy adult functioning, such as employment and higher education opportunities, and because poor educational achievement is common among children who have experienced out-of-home care (Jackson 1994). In her review of 20 years of data on the educational status of foster children from Britain, the US, and Israel, Jackson (1994) observed similar findings in most studies: foster children’s academic performance was usually significantly worse than that of their non-fostered peers. Numerous reasons for this phenomenon were cited, from frequent placement disruptions resulting in school changes and prolonged absences from school, to a lack of concern for educational needs by social workers, to discrimination against foster children by teachers. In a study of American foster children compared to matched comparisons, Blome (1997) found that foster children graduated from high school and attended college at significantly lower rates than matched comparisons. Foster parents were less likely to pay attention to children’s homework and attend parent-teacher conferences than matched comparisons’ parents, and foster children reported more discipline problems in school (Blome 1997). Both Jackson (1994) and Blome demonstrated that numerous external factors can impact the academic performance of foster children. However, Jackson and Martin (1998) also followed a group of academically resilient foster children in order to determine which factors enabled them to succeed in spite of adverse circumstances. Parental involvement in education-related decisions was significantly higher and mental health was significantly better among resilient foster children than among matched comparisons (non-resilient foster children).

In light of these findings, we sought to examine a component of mental health with the potential to impact school performance: emotion regulation. Emotion regulation is defined as

the process of initiating, avoiding, inhibiting, maintaining or modulating the occurrence, form, duration, or intensity of internal feeling states, emotion-related physiological, attentional processes, motivational states, and/or the behavioral concomitants of emotion in the service of accomplishing affect-related biological or social adaptation or achieving individual goals. (Eisenberg and Spinrad 2004, p. 338)

By examining the relationship between emotion regulation and academic achievement, we hoped to determine whether emotion regulation is related to the development of academic resilience among maltreated children. Successful emotion regulation is necessary for satisfactory mental health (Gross 1998). Even among children whose emotion regulation problems do not rise to the level of a clinical diagnosis, difficulties with social competence and peer acceptance have been found (Eisenberg and Fabes 1992). Impaired emotional functioning is a risk associated with childhood maltreatment (Bagley and Mallick 2000), but even harsh parenting not severe enough to be considered maltreatment is associated with deficits in emotion regulation (Chang et al. 2003). In a longitudinal study of children with disabilities, cognitive and adaptive developmental growth in children with disabilities was affected by both parent- and child-related stress (Hauser-Cram et al. 2001). Additionally, children's self-regulatory behavior was a significant predictor of well-being. Mother-child interaction was particularly important to cognitive development (Hauser-Cram et al. 2001). Evidence of the influence of early experiences on both cognitive and emotional functioning is particularly important when considering the well-being of maltreated children.

Emotion dysregulation refers to dysfunctional operation of the emotion regulation process, i.e., impaired functioning of an otherwise adaptive system (Cole et al. 2004). Typically developing children learn to effectively regulate their emotions through interactions with parents and peers. However, some children develop patterns of emotion dysregulation, which can include inappropriate emotional reactions, poor control over emotions, and failure to express emotion (Cole et al. 2004). Maltreated children are at risk for dysregulated emotion patterns for several reasons: Trauma may cause children to react to normal emotion-provoking situations in atypical ways, and exposure to unhealthy interactions between adults may tax children's developing emotion regulation processes (Cole et al. 2004).

In academic settings, children who exhibit negative emotionality are more likely to have behavior problems and less likely to have sufficient attentional control during classroom tasks (Eisenberg et al. 1997). Emotion regulation difficulties have been shown to contribute uniquely to students' academic performance, in addition to their indirect influence through teacher relationships and distraction of students from their academic work (Gumora and Arsenio 2002). In middle school students, emotion regulation contributes significantly to GPA, and the relationship between emotion regulation and students' affect in academic settings influences academic performance even when controlling for cognitive variables (Gumora and Arsenio 2002). Students who can manage their emotions adequately are more likely to demonstrate normative abilities to pay attention to schoolwork, and teacher ratings of students' attention correlate positively with academic achievement (Trentacosta and Izard 2007). The increased risks of both dysregulated emotion patterns and impaired academic performance experienced by maltreated children together argue for an explicit exploration of the relationship between these variables.

Measuring Resilience to Maltreatment

Studies of resilience to maltreatment have been inconsistent with regard to both definitions and measures of resilience (Heller et al. 1999; Stone 2007). Some researchers have defined resilience as simply the absence of a clinical diagnosis, resulting in an overestimate of the number of resilient maltreated children (Jaffee and Gallop 2007). Jaffee and Gallop improved upon previous definitions of resilience by including multiple domains (mental health, academic achievement, and social competence) and defining resilience in these domains as functioning “at least as well as the average child” (Jaffee and Gallop 2007, p. 757). In a longitudinal study of a nationally representative sample of maltreated children followed over 3 years, they found a majority of children to be resilient in at least one domain. However, only 2% of children were consistently resilient across domains and time periods, and only 11–14% were resilient across all three domains at any point in time. Children who were resilient across all three domains exhibited no mental health problems, performed at average or above levels in school, and appeared to be socially competent. Jaffee and Gallop’s (2007) findings illustrate the complexity of examining resilience among maltreated children, as well as the importance of ensuring that maltreated children are thoroughly screened for mental health problems, emotional instability, educational difficulties, and social competence, regardless of their success in any one area. Variables associated specifically with academic resilience range from locus of control to caregiver characteristics. In a study of children in foster care in England that compared participants to matched comparisons, children’s perception that their biological parents were interested in their education correlated positively with their motivation to do well in school, even among children who had been separated from their parents for more than 10 years (Jackson and Martin 1998). Learning to read early, having an internal locus of control, and having caregivers who demonstrated interest in the child’s academic achievement were also significantly correlated with academic resilience.

Children spend a large portion of their time in school settings. We used academic achievement as a measure of resilience in this study because of its history as an indicator of resilience among maltreated children (Jackson and Martin 1998; Stone 2007). Additionally, the cognitive, behavioral, and social demands of educational settings, the frequent necessity of using problem-solving skills in various school situations, and the importance of academic achievement for success in adulthood contributed to our decision to measure resilience in terms of academic achievement.

Strong evidence exists for the relationship between placement in foster care (a system that exists almost exclusively for the care of maltreated children) and poor academic achievement (Jackson and Martin 1998). The instability of foster care placement contributes to the academic difficulties maltreated children experience (Stone 2007); however, a study by Fernandez (2008) suggests that placement instability is related to fostered children’s externalizing behaviors, and that they are aware of this relationship. Fernandez assessed a small ($N = 59$) sample of Australian children in out-of-home care using the Achenbach Child Behavior Checklist (Achenbach 1991a) and the Achenbach Teacher Report Form (Achenbach 1991b). The study was longitudinal and included a comparison sample. Both internalizing behaviors (e. g., anxiety, sadness, fearfulness, unresponsiveness to affection) and externalizing behaviors (e. g., defiance, destructiveness, violence, tantrum-like outbursts) were measured. Children in out-of-home care were rated lower by teachers on measures of academic performance, working hard, behaving appropriately, learning, and being happy than were their comparison group peers. These children reported that repeated placement changes were detrimental to their

education, but also said they understood that externalizing behaviors were likely to result in their removal from placements. The children in Fernandez's (2008) sample viewed internalizing behaviors as less detrimental to the stability of their placements than externalizing behaviors.

Emotion Regulation and Dysregulation in Maltreated Children

Emotion regulation is a multi-faceted concept that interacts with a number of other variables. Teisl and Cicchetti (2008) examined the emotion regulation abilities of maltreated children in relation to aggressive and disruptive behavior. Children with a history of physical abuse were rated as more aggressive and disruptive by their peers than were nonmaltreated children. However, this relationship was mediated by poor emotion regulation and the tendency to perceive ambivalent and prosocial situations as hostile, suggesting that emotion regulation is necessary for successful social interaction. Even among non-maltreated children, failure to regulate emotions appropriately can result in school dropout and teacher-reported social problems, in addition to both externalizing and internalizing psychological problems (Zeman et al. 2006). Emotion regulation is also heavily influenced by early parent-child interactions, a finding that is of particular concern for maltreated children, whose parent-child interactions are frequently negative and inconsistent (Cole et al. 2004; Teisl and Cicchetti 2008).

In a study of 139 children aged four to six, 80% of maltreated children (compared with 37.2% of comparisons) exhibited dysregulated emotion regulation patterns (EMRPs) while observing a simulated argument between their mothers and a researcher (Maughan and Cicchetti 2002). EMRPs are calculated based on "children's organization of overt emotional behavioral responses and subjective reports in response to angry adult affect" (Maughan and Cicchetti, p. 1527). Of the maltreated children who exhibited dysregulated EMRPs, the most common type was undercontrol, defined as "...elevated and prolonged rates of both positive and negative emotionality...often described as indecisive, disorganized, and not goal oriented" (p. 1527). All these characteristics are potentially harmful to successful performance in an educational setting. Although children do not normally experience adults arguing in their classrooms, maltreated children may experience such situations in their families. Bringing the associated emotion regulation patterns with them into their classroom interactions can have detrimental effects on academic performance (Gumora and Arsenio 2002). Gumora and Arsenio found that children who scored lower on researcher-administered measures of emotion regulation were also rated lower by teachers on measures of positive mood. Both teacher measures of mood and emotion regulation scores were related to academic performance.

Emotion regulation and dysregulation may also affect academic performance by impacting children's ability to focus their attention. Using parents' ratings of their kindergarteners' emotion regulation, Graziano et al. (2007) found that emotion regulation was positively related to reading and math scores and to teachers' reports of students' academic success and classroom productivity. Graziano et al. (2007) also found that emotion regulation predicted academic performance even after IQ was taken into account. Emotion regulation has been proposed to have an independent influence on academic achievement due to its effects on goal orientation and focus of attention (Maughan and Cicchetti 2002; Gumora and Arsenio 2002).

Despite what is known about the impact of maltreatment on emotion regulation, the importance of emotion regulation to social competence, and the importance of social competence to academic achievement, the strength of the direct relationship between emotion regulation and academic achievement in maltreated children remains unclear. If emotion dysregulation interferes with academic progress, then maltreated children who have dysregulated emotion patterns may experience increased difficulty in overcoming the effects of maltreatment. Compounding the struggle are several related variables that disproportionately affect maltreated children. Membership in a racial minority group, residential placement instability, poor mental health, and low socioeconomic status have independent detrimental effects on academic achievement (Gutman et al. 2002; Stone 2007). With the exception of socioeconomic status, we explored these variables, predicting that they, as well as emotion dysregulation, would relate to academic resilience in our sample. Although the measurement tool we used in this study contains an educational component, child protection agencies often do not list educational progress as a critical indicator of well-being (Stone 2007). If emotion dysregulation correlates with academic resilience in maltreated children, changes in assessment and intervention may be appropriate.

Method

A data set provided by a Florida community based care organization was used in the analysis. The data set included demographic, academic, disability, and residential placement information. Due to the lack of variability in socioeconomic status among children in the sample, this variable was not included in the analysis. The socioeconomic status of Florida's foster children is evaluated separately from that of their families of origin because, as an automatic result of being adjudicated dependent to the State of Florida, all foster children in the sample qualify for Medicaid and Food Stamps. This is not unique to Florida, however; an overwhelming majority of foster children were living in poverty prior to their entry into the child welfare system (Jackson 1994). Upon entering the foster care system, all children in Florida receive an Early Periodic Screening, Diagnosis, and Treatment (EPSDT) examination. EPSDT screenings are part of Medicaid services, and are designed to identify physical, emotional, and developmental disabilities. Children who were identified with disabilities likely to impact their academic achievement (i.e., learning disabilities and mental retardation) were excluded from the sample because they do not represent typical students, and thus present the possibility of skewing the academic resilience results. The data set also included Child and Adolescent Functional Assessment Scale (CAFAS) scores, which were obtained by child welfare professionals for every child in this sample. CAFAS scores are calculated based on interviews with maltreated children, their caregivers, and their teachers, as well as through review of child welfare files (Hodges 1990, 1994). Scores on the School/Work performance subscale of the CAFAS were used as measures of academic performance. Scores on the CAFAS Mood/Emotions subscale were used as measures of emotion dysregulation. Participants included 158 children ages 6–18 who had open child welfare services cases during the 12 months prior to data collection. The following variables were examined: age, race, gender, number of residential placement changes in the past 12 months, number of months each child welfare case had been open, score on the Moods/Emotions subscale of the CAFAS, and score on the School/Work subscale of the CAFAS.

Measures

Emotion Dysregulation

The Moods/Emotions subscale of the CAFAS (Hodges 1990, 1994) was used as the measure of emotion dysregulation. The CAFAS consists of 160 items on eight subscales (School/Work, Home, Community, Behavior Towards Others, Moods/Emotions, Self-Harmful Behavior, Substance Use, and Thinking). Previous analysis of children's scores on the Moods/Emotions subscale of the CAFAS has yielded inter-rater reliability of .74–.88 for inexperienced raters (undergraduate and graduate students), and inter-rater reliability of .94 for experienced raters (Hodges and Wong 1996). The CAFAS scores used in this study were collected by experienced raters (agency staff). Hodges and Wong's analysis of children's total CAFAS scores produced a test–retest reliability coefficient of .78 and internal consistency ratings ranging from .73 to .78. However, published test–retest reliability and internal consistency ratings are not available for individual subscales. Moderate positive convergent evidence of construct validity, in the form of correlations between the CAFAS and four other global functioning measures, were found (Hodges and Wong 1996). Over four waves of administration, correlations between the CAFAS and the Child Assessment Schedule, Parent Version (Hodges 1990a) ranged from .58 to .63. Correlations between the CAFAS and the Child Behavior Checklist (Achenbach 1991a) ranged from .42 to .47. Correlations between the Child Assessment Schedule (Hodges 1990b) and the CAFAS ranged from .52 to .56, and correlations between the CAFAS and the Burden of Care Questionnaire (Brannan et al. 1995) ranged from .36 to .43. Using regression analysis to assess criterion-related validity, Hodges and Wong found that total CAFAS scores were significantly predictive of problem behaviors, including involvement with juvenile justice, school-related problem behaviors, problems in social behaviors, and risk behaviors (i.e., threatening to harm oneself or others). Published criterion-related validity scores for individual subscales are not available. Because our data set included only subscale scores, as opposed to individual item data, internal consistency analysis was not possible.

Items on the CAFAS Moods/Emotions subscale reflect the severity of the effect of emotions on the child's life. A higher score indicates greater emotion dysregulation (i.e., a low score is desirable). Sample items from the Moods/Emotions subscale include “Can express strong emotions appropriately” and “Feels normal distress, but daily life is not disrupted” (Hodges, p. 7, 1990, 1994). Raters review a list of behaviors and indicate which behaviors the child they are rating has exhibited in the past 6 months. The score of each item is dependent upon the severity of the behavior it describes: 0 = No Impairment, 10 = Mild Impairment, 20 = Moderate Impairment, and 30 = Severe Impairment. For example, the item, “Marked changes in moods that are generally intense and abrupt” corresponds to a score of 20, and the item, “Feels normal distress, but daily life is not disrupted” corresponds to a score of zero (Hodges 1990, 1994). The item, “Easily distressed if makes mistakes” corresponds to a score of 10, as does “Notable emotional restriction (has difficulty expressing strong emotions such as fear, hate, love).” Items in the Severe Impairment (score of 30) category include “Viewed as odd or strange because emotional responses are incongruous (unreasonable, excessive) most of the time” and “Depression is accompanied by suicidal intent (i.e., really wants to die).” Subscale scores are determined by the most severe behavior the child has exhibited during the time period being scored. For example, a child who exhibits two behaviors in the Moderate Impairment category and one behavior in the Severe Impairment category would be classified as Severely Impaired for the corresponding subscale. The CAFAS is considered a scale,

however, individual subscales are scored categorically (i.e., whether or not a child has exhibited a behavior determines the severity of impairment, regardless of the number of behaviors in any category). Although many of the subscale items reference undesirable behaviors, the items in the “Minimal to No Impairment” category, which corresponds to a subscale score of zero, reflect adequate functioning in the subscale area.

Academic Performance

Grades were not available for most of the children in our sample. Scores on the School/Work Performance subscale of the CAFAS were used to determine academic resilience. A higher score indicates less academic resilience (i.e., a low score is desirable). Sample items from the School/Work subscale include “School grades are average or above” and “Minor problems are satisfactorily resolved”; these items correspond to a score of zero (Hodges, p. 3, 1990, 1994). The item, “School/work productivity is less than expected for abilities due to failure to execute assignments correctly, complete work, hand in work on time, etc.” corresponds to a score of 10. “Grade average is lower than ‘C’ and is not due to lack of ability or any physical disabilities” corresponds to a score of 20, and “Failing all or most classes” corresponds to a score of 30. The School/Work subscale is scored the same way the Moods/Emotions subscale is scored: 0 = No Impairment, 10 = Mild Impairment, 20 = Moderate Impairment, and 30 = Severe Impairment.

Placement Stability

Child welfare case files were reviewed to determine the number of residential placement changes over the past 18 months.

Months Involved with the Child Welfare System

The Florida Department of Children and Families attempts to reunify children with their families of origin within 12 months of removal (Florida Department of Children and Families 2006). However, nearly all the children in this sample had been in out-of-home care for more than 12 months. All the children in this sample were in out of home care at the time of data collection (foster care or residential group settings).

Results

Demographic Variables

The initial sample included 177 children; nine were excluded due to disabilities with the potential to impact school achievement (mental retardation and learning disabilities). Ten additional children were excluded because the number of placements they had lived in during the review period was greater than two standard deviations from the mean (i.e., more than 23 placements in an 18 month period). There were no missing data. The remaining 158 children ranged from ages 6 to 18. White children comprised 57% of the sample ($n = 90$), and Black children comprised 43% of the sample ($n = 68$). The database containing race information for this sample treats “Hispanic” as an ethnicity, rather than a race, resulting in Hispanic children being classified as White. However, less than 1% of

children in the sample were Hispanic, so further analysis was not completed to reclassify Hispanic children. The sample was 60.8% male ($n = 96$). The number of months each child had been involved with the child welfare system ranged from 1 to 214 ($M = 28.68$). The number of placements for the 18 month data collection period ranged from 1 to 23. Table 1 summarizes the demographic variables for all participants who were included in the analysis.

Academic Resilience and Emotion Dysregulation

Academic resilience was indicated by lower scores on the School/Work subscale of the CAFAS. Sufficient emotion regulation ability (i.e., the absence of dysregulated emotion patterns) was indicated by lower scores on the Moods/Emotions subscale of the CAFAS. Means and standard deviations of participants' scores on these measures are shown in Table 1.

Linear Regression

Linear regression was used to examine the relationship between the School/Work subscale, the Moods/Emotions subscale, and demographic variables. Linear regression was appropriate for this data set because a linear relationship was expected and the data set did not violate normality, independence, or homoscedasticity assumptions. All variables from Table 1 were included in the regression analysis. An alpha level of .05 was used for all statistical analyses. The overall model was significant ($F = 9.70, p < .001$). The absence of dysregulated emotion patterns ($B = .272, p < .001$) was significantly related to academic resilience, as were race ($B = .298, p < .001$), age ($B = .184, p = .012$), and placement stability ($B = .153, p = .044$). Time in the care system did not correlate significantly with academic resilience in this sample ($B = -.057, p = .438$). Three interactions were also analyzed: number of placements and emotion dysregulation, number of placements and age, and number of months in the child welfare system and age. None of the interactions were significant ($B = -.124, p = .486$; $B = -.674, p = .099$; and $B = -.027, p = .945$, respectively) and these interactions were consequently removed

Table 1 Variables included in linear regression

Variable	<i>N</i>	%
Gender		
Male	96	60.8
Female	62	39.2
Race		
Black	68	43.0
White	90	57.0
	Mean	SD
Age	13.44	3.27
Months in system	28.68	28.78
Placements in past 18 months	6.95	4.69
Emotion dysregulation	9.87	9.51
Academic resilience	16.65	12.45

Table 2 Linear regression of variables related to academic resilience

Variable	<i>B</i>	SE	<i>P</i>
Gender (0 = M, 1 = F)	-.082	1.79	.247
Race (0 = W, 1 = B)	.298	1.78	.000
Age	.184	.276	.012
Months in the child welfare system	-.057	.032	.438
Placement stability	.153	.200	.044
Emotion dysregulation	.272	.096	.000

from the final linear regression model. Table 2 summarizes the linear regression results for all independent variables included in the final analysis.

Discussion

The prevalence of academic difficulties among maltreated children is an urgent problem because academic success contributes so strongly to resilience. Any variable that significantly relates to academic functioning should be of interest to those working to improve the life outcomes of maltreated children; this analysis shows emotion dysregulation to be one such variable. It is also worth noting that several variables shown to impact academic achievement in earlier research (Stone 2007) did not correlate as strongly with academic resilience in this study as did emotion dysregulation. The correlation between placement stability and academic resilience is an especially interesting finding in this regard. In earlier versions of our regression model (i.e., before nonsignificant interactions were removed), placement stability failed to predict academic resilience. In the final model, placement stability was the weakest significant predictor. One possible explanation for this finding is that emotion regulation serves as a partial mediator for the relationship between placement stability and academic resilience. However, because of the correlational nature of the study, an alternative explanation is also possible: Academic resilience could encourage emotion regulation capability, which could in turn relate to more stable placements.

Another important observation about this sample is that 28.5% of the children exhibited minimal to no impairment on the School/Work subscale, indicating academic resilience. An additional 13.9% exhibited only mild impairment. Minimal to no emotion dysregulation was demonstrated by 40.5% of the children, indicating sufficient emotion regulation abilities. An additional 25.3% exhibited only mild impairment. These findings remind us that maltreatment does not always lead to impaired functioning, even in a sample of children who were maltreated severely enough to be removed from their families of origin. As predicted, however, the absence of dysregulated emotion patterns was related to academic resilience. This finding may prove valuable to educators and child welfare professionals working with maltreated children. Preventing academic difficulties is much more effective than attempting to manage them once they begin to hinder students (Slavin 1994). If the absence of dysregulated emotion patterns is related to academic resilience, interventions aimed at teaching appropriate ways of regulating emotions in early childhood may prevent later academic problems.

We also observed that 57.6% of the children in this sample exhibited moderate to severe impairment on the School/Work subscale (i.e., scores of 20 or 30). Maughan and Cicchetti (2002) suggested that maltreated children's emotion regulation may be related to their ability to focus their attention. Future research should explore the hypothesis that the ability to focus attention predicts both emotion regulation and academic resilience, because if this is true, interventions for maltreated children could focus on the broader goal of focusing attention and potentially impact numerous areas of functioning. However, caution is in order here, because as noted by Jaffee and Gallop (2007), resilience to maltreatment across categories of resilience is very rare. This study's results require the same caution; despite the significant relationship between the absence of dysregulated emotion patterns and academic resilience in this sample, additional analysis will be necessary to determine whether normative functioning in other areas is also significantly related to emotion regulation ability.

Studies of effortful control and inhibitory control provide further insight into the relationship between emotion regulation, academic achievement, and children's ability to control their attention. In a study of 3, 4, and 5 year olds from low-income homes, Blair and Razza (2007) found that effortful control, inhibitory control, attention-shifting, and false belief understanding in preschool were related to kindergarten mathematics ability and literacy. Effortful control is distinguishable from inhibitory control in that effortful control is more focused on emotion, and inhibitory control relates to cognitive self-regulation (Blair and Razza 2007). Even when inhibitory control was removed from the regression equation used to predict academic outcome measures, effortful control was significantly related to mathematics, phonemic awareness, and letter knowledge. Blair and Razza's results demonstrated combined, as well as unique, effects of inhibitory control and effortful control in preschool on academic outcome measures in kindergarten. Developmental changes in effortful control may influence children's control over negative emotions and their ability to achieve appropriate outcomes in situations where they experience negative emotions (Posner and Rothbart 2000). Effortful control plays a role in both emotional and cognitive development (Posner and Rothbart 2000). In fact, some researchers have conceptualized emotion regulation as effortful control (Morris et al. 2002) although others caution against ignoring the distinction between these two concepts (Lewis et al. 2010). The attentional components of the concepts of emotion regulation and effortful control may be especially relevant to their relationship to academic achievement. The detrimental effect of maltreatment on emotion regulation (Maughan and Cicchetti 2002) and the relationship between emotion regulation and academic achievement (Graziano et al. 2007) are cause for special attention to be paid to the academic outcomes of maltreated children.

One disturbing finding of the current research was the strength of the relationship between race and academic resilience. Black children were significantly less likely than White children to exhibit academic resilience. This finding may be consistent with other studies of nonmaltreated children, reflecting a more general observation of an academic achievement gap between Black and White children in the US (Lee 2002). Since we have not overcome this academic disparity in the nonmaltreated population, it is perhaps unsurprising to find a similar disparity in a sample of maltreated children as well.

Older children were significantly less likely to exhibit academic resilience than younger children. We considered the possibility that older children were more likely to have been involved with the child welfare system for a longer period of time; however, a test of the interaction of age and months involved with the child welfare system was found to be

nonsignificant. Additional research is necessary to determine specific factors associated with a lack of academic resilience among older children.

Limitations

Several methodological limitations should be taken into account when considering the results of this study. First, the significance of the correlation of race and age with academic resilience argues for further analysis of these relationships in maltreated children because the study's correlational design could not establish causal links.

Second, several limitations were associated with use of the CAFAS. The CAFAS has been adopted by many child welfare agencies due to its usefulness when making placement and treatment decisions. The CAFAS provides child welfare professionals with an overview of children's functioning for a specific time period. We are not aware of any studies that have examined CAFAS subscales individually. The CAFAS has moderate positive correlations with other measures of global functioning; however, its convergent evidence is limited. Criterion related validity scores for individual subscales are not available; further research is needed to investigate the validity of individual subscales (Hodges and Wong 1996). Another limitation of our study concerns shared method variance and shared reporter variance: The CAFAS was used to obtain measures of both academic resilience and emotion regulation, and the same reporter completed the entire CAFAS for each child. Consequently, it is possible that variance related to the way individual reporters administer the CAFAS exists. It is also possible that the CAFAS itself represents a source of shared variance, as the ways scores are obtained for each subscale are similar. Regarding the nature of the subscales, the CAFAS Moods/Emotions scale is designed to measure emotional functioning. Using the Moods/Emotions subscale as a measure of emotion dysregulation by interpreting a low score as sufficient emotion regulation capability is less than ideal. Measuring emotion regulation and dysregulation is a complex and difficult task, complicated by method variance and the relationship between emotion regulation patterns and related constructs, such as externalizing behaviors (Weems and Pina 2010) and also by conceptual issues surrounding emotion regulation and emotion dysregulation (Lewis et al. 2010; Weems and Pina 2010). When using the CAFAS as a measure of emotion dysregulation, many sources of information are considered, including interviews with caregivers, interviews with the child, and case files. Although the CAFAS is not a diagnostic tool administered by a licensed psychologist, the items on the CAFAS address many areas of the child's life, allowing the rater to attain a picture of the child's behavior at home, at school, and in other situations documented in case files (e.g., by reviewing case notes documenting a discussion between a caseworker and the child's psychologist or probation officer). However, self-reports of emotion regulation and emotional responses can be problematic (Lewis et al. 2010; Suveg et al. 2010) and CAFAS ratings are partially based on children's self-reports.

Using the School/Work subscale as a measure of academic resilience was also less ideal than reporting children's grades. Unfortunately, grades were not available for the majority of the children in this sample. Additionally, only one measure of emotion dysregulation and one measure of academic resilience were utilized. A study design with multiple measures of these variables would enable more confident predictions about their relationships.

Due to the frequency of placement changes in this sample, it was not possible to measure the effect of different types of out-of-home care placement settings on CAFAS scores. CAFAS scores are based on a 6 month review period. Many of the children who

were in residential care (i.e., group home settings) at the time the data was collected were in foster care earlier in the review period; the reverse is also true. Future researchers of the relationship between academic resilience and emotion dysregulation in foster children should consider the potential impact of specific out-of-home care settings on these variables. Finally, many of the children in the sample received some type of therapeutic intervention services during the review period. Although data on the specific services received by each child in the sample were not available, it is possible that these services could have influenced the results. Future research should consider the impact of therapeutic services on emotion dysregulation and academic resilience.

Conclusion

The results reported here contribute to our understanding of the impact of childhood maltreatment by showing that, in this sample, emotion dysregulation was significantly related to academic resilience when other factors commonly thought to have a negative impact on foster children's academic performance, such as length of involvement in the child welfare system, were not. Although placement stability was significantly related to academic resilience, the relationship between emotion dysregulation and academic resilience (represented by lower CAFAS scores on the Moods/Emotions and School/Work subscales, respectively) was stronger than the relationship between placement stability and academic resilience. Future intervention studies should explore the possibility that helping maltreated children to regulate their emotions may have long-term benefits associated with academic performance. This is important because both emotion regulation and academic skills are aspects of children's behavior that they themselves may be able to learn to control. For children who have been removed from their families of origin and placed in foster care, without the power to control so many other aspects of their lives, this could be enormously beneficial. Developing interventions for children with dysregulated emotion patterns and finding ways to prevent such difficulties from interfering with their academic work may contribute to the occurrence of resilience in maltreated children.

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