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Children in Foster Care and the Development of Favorable Outcomes

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Abstract

Young foster children have invariably faced a variety of risks that are strongly linked to long-term deficits in functioning across multiple developmental domains. Despite these risks, however, some children demonstrate more favorable outcomes and exhibit adaptation and the development of assets. In the present study, the relationship of early childhood factors (e.g., maltreatment history, placement history, parenting practices, environmental stress, developmental status, and attachment behavior) to the development of favorable outcomes in middle childhood were examined in a sample of foster children who had been in foster care in preschool ($N = 35$). Favorable outcomes were defined as demonstrations of emotion regulation and school adjustment in during middle childhood. Developmental status (particularly attention and executive functioning) and a lack of environmental stress during early childhood foster care experiences had a significant positive relationship with the development of emotion regulation and school adjustment in middle childhood.

Keywords

foster care; resilience; early childhood; executive function; stress; development

As of 2008, there were nearly half a million children in foster care as a result of abuse and neglect (U.S. Department of Health and Human Services, 2009). According to the U.S. Department of Health and Human Services (2009), nearly half of the children entering foster care are under age 6 years, and this age group makes up over one third of the children in care. Because children under age 6 are often not yet in school, abuse can go unseen by the community. Frequently, it takes multiple reports from community members before the child welfare system becomes involved or intervenes. By this point, the child has often experienced a host of adversities that profoundly impact long-term health and well-being.

The prevalence of negative outcomes for young foster children presents a somewhat bleak picture. Landsverk and Garland (1999) estimated that between one half and two thirds of the children entering the foster care system demonstrate emotional or behavioral problem significant enough to warrant mental health treatment. Similarly, Clausen, Landsverk, Ganger, Chadwick, and Litrownik (1998) reported that 61% of their sample of foster

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children demonstrated clinically significant mental health problems as per the Child Behavior Checklist (Achenbach, 1991). Neurophysiological dysregulation has also been observed among foster children; specifically, hormonal imbalances associated with the hypothalamic pituitary adrenal (HPA) axis (Bruce, Fisher, Pears, & Levine, 2009). These imbalances result in a heightened vulnerability to stressors that can exacerbate negative outcomes (Fisher, Stoolmiller, Gunnar, & Burraston, 2007). Given these factors, it is not surprising that foster children also struggle in the classroom. Deficits in school functioning are extensive among foster children, and severe academic skill delays are disproportionately higher among foster children than among their same-age peers (Brooks & Barth, 1998; Fantuzzo & Perlman, 2007; Zima et al., 2000).

Despite the odds against them, however, not all foster children experience the negative outcomes discussed above. This has led researchers to question which factors influence such positive outcomes. Given the rapid developmental trajectories among young children, early childhood is a potent period in which these trajectories can shift. Protective factors, both individual and contextual, can foster resilience in the face of risk and adversity. Efforts to understand protective factors and developmental assets associated with resilience serve to decrease dysfunction, interact with risk to buffer its effect, disrupt the causal chain that leads to pathology, and prevent initial occurrences of problem behavior and mental health needs (Greenburg, Domitrovich, & Bumbarger, 2001). Should there be malleable resilience domains upon which service providers could intervene to buffer the magnitude of risk, the child welfare system would be better equipped to provide targeted and effective interventions to engender more favorable outcomes for foster children.

Indicators of Favorable Outcomes

For the purpose of this study two dimensions of “favorable outcomes” were selected: emotion regulation and school adjustment.

Emotion regulation—Over the last two decades, research in self-regulation (behavioral and emotional) has peaked. As constructs have emerged and their definitions have been refined, their contributions to overall adaptation and healthy functioning have been increasingly examined. Thompson (1994) described emotion regulation as process of initiating, maintaining, and modulating dimensions of internal feeling states and related physiological processes. Emotion regulation is comprised of the ability to manage attention and exert effortful control. More specifically, as a stressful event occurs, there might be a strong impulse to respond in a way that would not necessarily aid the situation (e.g., fight, yell, or cry). The ability to focus attention on the external context and the internal responses and to control how emotions are expressed about the event (i.e., effortful control) is the result of emotion regulation skills.

In their review on the development of emotion regulation, Morris, Silk, Steinberg, Myers, and Robinson (2007) argued that emotion regulation is central to overall adjustment. Further, Racusin, Maerlender, Sengupta, Isquith, and Straus (2005) identified overarching themes indicating that self-regulation is a core construct underlying the dysfunctional behaviors commonly seen among foster children. In fact, emotion dysregulation is evident in more than half of the Axis I disorders and in all of the Axis II disorders in the Diagnostic and Statistical Manual of Mental Disorders (Gross & Levenson, 1997). Emotion regulation is a fundamental component of emotional competence (Barrett & Campos, 1987) that prepares children to respond to emotionally arousing situations in a manner that facilitates adaptation to the social environment (Shipman, Edwards, Brown, Swisher, & Jennings, 2005). In fact, being able to modulate emotions in response to typical and novel stressors to respond in socially appropriate ways is integral not only to psychological adaptation but also

to the development of healthy relationships (Cicchetti, Ackerman, & Izard, 1995; Denham et al., 2003). Experiences of maltreatment impact emotion regulation, which then influences outcomes. In a sample of maltreated children, higher rates of emotion regulation were shown to predict peer acceptance and lower rates of internalizing disorders. Conversely, poor emotion regulation was associated with higher rates of externalizing symptomology, which was also linked to higher rates of peer rejection (Kim & Cicchetti, 2010). Many researchers have argued that effortful control, a component of emotion regulation, is an essential function of healthy emotional expression for minimizing lability and negativity (Eisenberg & Spinrad, 2004; Spinrad et al., 2006; Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008). Because novel stressors and demands are consistently emerging throughout childhood and adolescence, a child's ability to modulate emotional responses and behavior and to control impulses appropriately is vital in the development of relationships and school adjustment (Birch & Ladd, 1998; Garon, Bryson, & Smith, 2008; Ladd, Birch, & Buhs, 1999; McClelland, Morrison, & Holmes, 2000). Dysregulation, therefore, places a child at increased risk of exaggerated reactions to stressful events (Bruce, Davis, & Gunnar, 2002). Over time, the chronic inability to shift attention from stressful cues or to inhibit aggressive responses can lead to clinically significant anxiety and aggression problems (Bradley, 2000; Rothbart, Ahadi, & Hershey, 1994).

School adjustment—School adjustment is integral to long-term functioning, and a child performing well in school is likely to continue doing well. For example, success in school has been linked to higher educational attainment (Ou & Reynolds, 2008), employment (Ou, Mersky, Reynolds, & Kohler, 2007), and overall psychosocial adjustment well into adulthood (Ensminger & Slusarcick, 1992; Fothergill et al., 2008; Kellam et al., 2008). School adjustment includes academic achievement and social and behavioral functioning. In fact, several researchers have linked social and behavioral functioning to academic outcomes (Izard et al., 2001; McIntosh, Horner, Chard, Boland, & Good, 2006; Wentzel, 1991, 1993). Successful school adjustment in the early grades has been shown to predict success in subsequent years. In one longitudinal study, Teo, Carlson, Mathieu, Egeland, and Sroufe (1996) determined that critical psychosocial competencies obtained during the first 3 years of life predicted academic achievement across childhood and adolescence even after IQ and prior achievement were controlled for. Similarly, Hamre and Pianta (2001) showed that the quality of the teacher–child relationship during kindergarten was related to academic and behavioral outcomes through eighth grade. In another study, Elias, Zins, Graczyk, and Weissburg (2003) found that eighth-grade school achievement could be predicted by social competence 5 years earlier.

Current Study

As indicated in the literature, multiple factors have been known to contribute to emotion regulation and school adjustment. The following independent variables were chosen for their documented impact on outcomes: maltreatment, placement history, parenting practices, environmental stress, developmental status, and attachment behavior.

Maltreatment—Children with histories of maltreatment demonstrate higher rates of academic underachievement, grade retention, poor social competence, dropout, and utilization of special education services than among their same-age peers (Rowe & Eckenrode, 1999; Trickett & McBride-Chang, 1995; Wodarski, Kurtz, Gaudin, & Howing, 1990). Several researchers have reported that children abused earlier in life are more likely to develop insecure attachments with their primary caregivers, which can ultimately result in deficits in emotion regulation and problem-solving (Belsky, Rovine, & Taylor, 1984; Cicchetti & Barnett, 1991; Egeland & Sroufe, 1981). Neglect, the most common form of childhood maltreatment (U.S. Department of Health and Human Services, 2006), has been

reported as having a particularly enduring and pervasive impact on outcomes. Specifically, neglect has been associated with social-emotional difficulties, insecure attachments, and dysregulated neuroendocrine functioning (Allen & Oliver, 1982; Gaudin, Polansky, & Kilpatrick, 1996; Lee & Hoaken, 2007; Shipman et al., 2005; Wismer Fries, Shirtcliff, & Pollak, 2008; Wodarski et al., 1990). This can lead to neural networks that become differently patterned due to early stimulation and teaching, or lack thereof, and inhibit effective emotion regulation at a neurobiological level (Lee & Hoaken, 2007).

Placement history—Placement instability compounds the negative consequences of abuse and neglect and has been shown to predict negative outcomes in psychosocial functioning, school performance, substance abuse, and self-regulation as well as the prevalence of internalizing and externalizing behavior problems (Ackerman, Brown, & Izard, 2003; Ackerman, Brown, D'Eramo, & Izard, 2002; Herrenkohl, Herrenkohl, & Egolf, 2003; Newton, Litrownik, & Landsverk, 2000). Similarly, poor early environments are frequently exacerbated by frequent transitions, disrupted relationships, and a lack of continuity in activities, learning environments, and school-based relationships that ultimately bear a negative impact on overall well-being (Fong, Schwab, & Armour, 2006).

Parenting practices—Hostile and rejecting parenting has been shown to result in insecure attachment, externalizing problems in preschool, and antisocial behavior in adolescence (Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997; Fiese, Wilder, & Bickham, 2000). Hoffman (2000) argued that overly negative or punitive parenting practices are likely to result in affective hyperarousal in children; over time, this can compromise the overall development of emotional regulation and learning. By contrast, supportive and positively affective parenting contributes to emotional competence and regulation through effective modeling in response to stressful events or relationships and serves to buffer the negative effects of stress (Morris et al., 2007; Power, 2004). Furthermore, positive parenting has been shown to affect the development of effortful control (a key component of emotion regulation), which ultimately serves as a mediator to externalizing behavior problems (Eisenberg et al., 2005).

Environmental stress—Factors such as social isolation, socioeconomic disadvantage, conflict and family violence, stress, lack of social support, and parental psychopathology have consistently been linked with subsequent behavior problems in children (Maughan, 2001; Stoff, Breiling, & Maser, 1997). Given the outstanding demands of parenting a foster child, additional family stressors can result in detrimental outcomes when not moderated by effective coping and other parental resources. The impact of stress on parenting and subsequent reactivity toward children's affective displays has also been observed to affect the development of key components of emotion regulation in children (Valiente et al., 2008). Environmental stressors during preschool have proved significant predictors of later conduct problems and school failure across subsequent years (Ackerman, Brown, & Izard, 2003; Dodge, Pettit, & Bates, 1994; Duncan & Brooks-Gunn, 1997).

Developmental status—Given the rate of development across multiple domains in early childhood (e.g., physical, psychological, emotional, and self-regulatory), the impact of maltreatment, inconsistent or harsh parenting, exposure to toxic substances, stress, and placement disruption has potentially far-reaching effects. Abusive family contexts and disrupted caregiving during early childhood can have detrimental effects on the development of crucial neurobiological processes (e.g., biochemical, cellular, and neurophysiological; De Bellis, 2001; Dozier, Albus, Fisher, & Sepulveda, 2002; Glaser, 2000; Gunnar, Fisher, & The Early Experience, Stress, and Prevention Network, 2006; Noble, Tottenham, & Casey, 2005; Sánchez et al., 2001). From a developmental and neuroscientific perspective, several

key domains have emerged as being of particular importance during childhood: executive attention and effortful control, language, and memory.

Effortful control defined as “the efficiency of executive attention, including the ability to inhibit a dominant response and/or to activate a subdominant response, to plan, and to detect errors,” has been noted as playing an integral role in the development of emotion regulation (Rothbart & Bates, 2006); it allows an individual to voluntarily shift attention, inhibit emotional responses, and modulate emotional expression (Eisenberg et al., 2005). Children found to have diminished effortful control have been noted as being more oppositional and less prepared for the classroom (Lewis, Dozier, Ackerman, & Sepulveda-Kozakowski, 2005). Language is considered a central process to cognitive, academic, and socialemotional development (Catts, Fey, Zhang, & Tomblin, 1999; Gallagher, 1999; Stock & Fisher, 2006). Memory performs a critical function in academic and socialemotional learning. Involving the hippocampus deep in the temporal lobe, memory develops as this area of the brain reaches maturity during early childhood, particularly before age 2 years (Squire, 1991).

Attachment behavior—The emotional climate of the family context and the attachment relationship affect the development of emotion regulation (Morris et al., 2007). Smith, Calkins, and Keane (2006) found that lower rates of controlling caregiver behaviors and higher rates of secure attachment behaviors were positively related to emotion regulation in toddlers. Separation from caregivers has been shown to adversely affect psychosocial, cognitive, and self-regulatory functioning in later childhood (Cicchetti & Tucker, 1994; Egeland, Pianta, & O'Brien, 1993).

The goal of our study was to explore how early childhood factors contribute to later outcomes indicative of resilience. Specifically, the following research question was addressed: For a sample of preschool-aged foster children, what is the degree of association between early childhood factors (i.e., maltreatment, placement history, parenting practices, environmental stress, developmental status, and attachment behavior) and emotion regulation and school adjustment during middle childhood? Based on reviews of the literature, we hypothesized that all of the independent variables (i.e., early childhood factors) would have significant associations with the dependent variables (i.e., middle childhood outcomes). We hypothesized that maltreatment, an increased number of placement transitions, negative parenting practices, and environmental stress would be negatively associated with emotion regulation and school adjustment and that higher levels of developmental functioning and secure attachment behavior would be positively associated with emotion regulation and school adjustment. Moreover, we hypothesized that developmental functioning would contribute (above and beyond other independent variables) to the overall prediction of emotion regulation and school adjustment.

Methods

Procedures

The data for this study were gathered at the Oregon Social Learning Center as part of the Multidimensional Treatment Foster Care for Preschoolers (MTFC-P) project, a randomized efficacy trial designed to examine the effectiveness of a preschool-aged extension of the MTFC intervention. MTFC has been demonstrated to be an effective alternative to more restrictive settings for foster children, with the caretakers being trained to provide therapeutic support within the family setting (Chamberlain & Moore, 1998; Chamberlain & Reid, 1991; Fisher & Chamberlain, 2000; Fisher, Ellis, & Chamberlain, 1999). The data were collected starting in 1999 from three groups of children: treatment foster care (TFC; $n = 57$), regular foster care (RFC; $n = 60$), and age- and SES-matched community control ($n = 60$).

The children were first assessed at school entry. (For the foster children, this was within 3–5 weeks of entering a new placement.) They were subsequently assessed every 3 months for 24 months and every 6 months following that. Placement records and maltreatment histories were obtained from the Oregon Department of Human Services (DHS), Child Welfare Division of Lane County, and were coded accordingly. The study is entering its 11th year of funding, with the participants being 11–13 years old.

Participants

With the help of the Oregon DHS, all 3- to 5-year-old children who were entering a new foster placement and were expected to remain in care for more than 3 months were identified. Prior to recruitment, the foster children were randomly assigned to the TFC or the RFC group. The RFC children received services as usual (e.g., placed in regular state foster homes according to standard policies and procedures; accessed mental health, medical, and dental care as needed; screened for developmental delays and served by EC Cares, a local early intervention service provider; and social service support to birth families). Consent was obtained from the caseworker, the legal guardian, and the foster family; when possible, assent was obtained from the birth parent. We only examined data from the 35 RFC children (20 male) who remained in the study through middle childhood. Demographics for our sample are presented in Table 1.

Measures

We examined six independent variables (maltreatment history, placement history, environmental stress, parenting practices, developmental status, and attachment behavior) assessed in early childhood (child age 3–5) and two dependent variables (emotion regulation and school adjustment) assessed in middle childhood (child age 7–11).

Maltreatment history—We used information from the Oregon DHS case files to code maltreatment history. Accurate lifetime prevalence of maltreatment, however, is beyond the scope of typical case files; many incidents of maltreatment go undocumented prior to the onset of such records. Case files primarily include incidents that precipitated a child's placement into state custody. The following maltreatment categories were coded using the Maltreatment Classification System (Barnett, Manly, & Cicchetti, 1993): sexual abuse (including threat), physical abuse (including threat), emotional abuse (including abandonment), neglect (including parent substance abuse, incarceration, and failure to utilize social services), parent death, parent incarceration, parent substance abuse, parent nonutilization of social services, disrupted foster or adoptive placement, and other. Approximately, 66% of the cases were double-coded, with high interrater reliability across coders ($\kappa = .89$).

Due to small n values in several of the maltreatment codes specific to subtype (e.g., total frequency of a particular type of maltreatment or proportion of abuse incidents by a female relative), several variables were excluded in this study. Global mean severity of maltreatment and proportion of neglect experienced within the larger maltreatment profile were the selected variables examined in our analyses; these were hypothesized to have the most significant impact on outcomes.

Placement history—The number of placement transitions was calculated via Oregon DHS records and via monthly contact with families: first entry into out-of-home care to age 5.

Environmental stress—Environmental stress was measured via caregiver responses on the Family Events Checklist (Oregon Social Learning Center, 1984), a 46-item, self-report

measure of stressful life events (Fisher, Fagot, & Leve, 1998). This measure provides a picture of the daily level of chaos in the home based on a 5-point scale. Norms for this measure were collected using low- and high-risk samples, including families receiving family therapy due to child antisocial behavior. The number of stressors reported by caregivers on this measure was averaged across the first three waves of data collection (i.e., baseline, 3 months, and 6 months) to form a composite measure of environmental stress over time.

Parenting practices—We used the Parenting Scale (Arnold, O'Leary, Wolff, & Acker, 1993) to measure parenting practices. This measure of dysfunctional parenting practices among families with young children was designed to identify three factors of discipline styles: Laxness ($\alpha = .83$), Overreactivity ($\alpha = .82$), and Verbosity ($\alpha = .63$). Internal consistency and test-retest reliability are both adequate ($\alpha = .84$), and the factor structure is consistent with theory and research on parenting practices. The sample on which the test was normed included a group of children referred for mental health treatment due to severe behavior problems. Parenting Scale scores were also related to observed parenting during the measures validation. The total score for this measure was averaged across the first three waves of data collection to form a composite measure of parenting practices over time.

Developmental status—Although developmental status encompasses many domains of functioning, we limited it in this study to neuropsychological functioning as measured by the NEPSY: A Developmental Neuropsychological Assessment (Korkman, Kirk, & Kemp, 1998). This tool is a norm-referenced, standardized test for children aged 3–12 years and includes 11 subscales resulting in five domains: Attention/Executive Functioning, Visuospatial Processing, Memory and Learning, Sensorimotor Function, and Language. The norms are balanced and representative of age, gender, and ethnicity. For children aged 3–4 years, the average reliability coefficients for core domain scores are .70 for Attention/Executive Function, .90 for Language, .88 for Sensorimotor, .88 for Visuospatial, and .91 for Memory and Learning. This measure was only administered at baseline.

Attachment behavior—Attachment behavior was measured using the Parent Attachment Diary (Stovall & Dozier, 2000), which correlates strongly and significantly with Ainsworth's Strange Situation task (SST; Ainsworth, Blehar, Waters, & Wall, 1978), a widely used lab task measure of caregiver–child attachment quality, demonstrating concurrent criterion-related validity (Dozier, Stovall, & Albus, 1999; Stovall-McClough & Dozier, 2004). In the Parent Attachment Diary, the caregivers rate how their children responded when physically hurt, frightened, or separated within the last 2 weeks. Each item is coded to by attachment style: secure (proximity seeking or contact maintenance; $r = .48, p < .01$, with security scores on the SST), avoidant (ignoring or moving away from caregiver; $r = .44, p < .01$, with security scores on the SST), or resistant (displaying angry behavior toward caregiver). This measure was validated using biological and foster families (Dozier, Stovall, Prettyman, & Spears, 1999) to examine correlations between the Parent Attachment Diary and the SST. We used the data from the 6-month assessment in our analyses due to Stovall-McClough and Dozier's (2004) finding that foster children exhibit highly variable attachment behavior in the first 2 months following placement, after which time attachment behavior becomes more stable and predictable.

Emotion regulation—We measured emotion regulation via the Emotion Regulation Checklist (Shields & Cicchetti, 1997), a 24-item, norm-referenced scale (completed by parents, teachers, or observers) that includes positively and negatively weighted items rated on a 4-point scale. This measure has two subscales: Emotion Regulation and Lability/Negativity. Shields and Cicchetti (1998) reported strong internal consistency for both

subscales. The Lability/Negativity subscale ($\alpha = .77$) is used to measure inflexibility, mood lability, and dysregulated negative affect. The Emotion Regulation subscale ($\alpha = .66$) is used to measure processes central to adaptive regulation, including the demonstration of situationally appropriate affective displays, empathy, and emotion understanding. The two subscales were also found to be significantly correlated ($r = -.68, p < .0001$). Strong convergent validity has been demonstrated with other established behavioral measures and through direct observation over multiple sessions (Emotion Regulation $r = .44, p < .001$; Lability/Negativity $r = -.79, p < .001$; Shields & Cicchetti, 1997). Both subscales were used in this study to measure negative or dysregulated reactivity to environmental stimuli. Further support for using this measure is warranted by the scale's sensitivity in distinguishing maltreated children from nonmaltreated children and in distinguishing children demonstrating healthy regulation versus dysregulation (Shields & Cicchetti, 1997, 2001). This measure was completed by assessment staff and caregivers when children were 7–11 years old. A composite of ratings across three waves of data collection (54, 60, and 66 months postbaseline) was made to create a more in-depth picture of emotion regulation ability and to minimize source bias.

School adjustment—We administered the Walker-McConnell Scale of Social Competence and School Adjustment (Walker & McConnell, 1988, 1995) to assess school adjustment. This measure was normed and standardized with a geographically representative sample of 1,800 cases. In the 43-item elementary-age version of this measure, teachers and school professionals rate children on three subscales: Teacher-Preferred Social Behavior, Peer-Preferred Social Behavior, and School Adjustment Behavior ($M = 10, SD = 3$). Scaled scores ($M = 100, SD = 15$) and percentile rankings are provided. The 53-item adolescent version of this measure (for students in grades 7–12) yields scores on four subscales: Self Control, Peer Relations, School Adjustment, and Empathy. Both versions of the measure exhibit strong internal consistency ($\alpha = .95-.97$) and test-retest reliability (.88–.92 correlations over a 3-week period with 323 subjects) and have been shown to discriminate between clinical and nonclinical samples across multiple validation studies. In the present study, teachers completed this measure when the children were aged 7–11 using the appropriate version of the measure. The averages of the Total Score percentile ranking across three waves of data collection (54, 60, and 66 months postbaseline) were used in our analyses.

Results

Our preanalysis examination of skew and kurtosis of the variables revealed that the distributions were essentially normal with no major outliers for any dependent or independent variable. Due to the small sample size, we used conservative p value of .10 to counterbalance the low statistical power. In small, exploratory studies such as this, rigorous rejection standards are not always preferable (Cohen, 1992) owing to the increased chance of failing to detect meaningful results (i.e., Type II errors). However, it will be important to conduct replication studies to confirm these results.

Multiple Pearson bivariate correlations were conducted to examine the relationship between the independent and dependent variables in this study. Despite the small sample size, there were a number of significant moderate to strong correlations. These correlation coefficients are presented in Table 2.

Among the dependent variables, the two subscales of emotion regulation demonstrated a significant negative correlation ($r = -.54, p < .05$) similar to that presented in the measures' original validation studies (Shields & Cicchetti, 1997, 1998). Emotional lability and

negativity was also found to have a significant negative correlation to school adjustment ($r = -.34, p < .10$).

Of the dependent variables, emotional lability and negativity had the highest number of significant correlations with the independent variables. Specifically, all five domains of developmental status had significant negative correlations with emotional lability and negativity: attention and executive function ($r = -.71, p < .05$), language ($r = -.41, p < .05$), sensorimotor ($r = -.55, p < .05$), visuospatial ($r = -.39, p < .10$), memory ($r = -.54, p < .05$). A significant correlation was also found between environmental stress and emotional lability and negativity ($r = .33, p < .10$). Emotion regulation was positively correlated with developmental status (attention and executive function; $r = .36, p < .01$). Environmental stress was negatively associated with emotion regulation ($r = -.36, p < .05$). Lastly, a significant negative correlation was found between attachment behavior and emotion regulation ($r = -.33, p < .10$). School adjustment was positively correlated with developmental status: attention and executive function ($r = .37, p < .10$) and sensorimotor ($r = .46, p < .05$).

A number of intercorrelations were also found between the independent variables, particularly within developmental status (see Table 2). Two paradoxical findings were also revealed in the correlational analyses. First, the proportion of neglect within maltreatment history was also found to be significantly negatively correlated with environmental stress ($r = -.41, p < .10$). Second, a positive correlation was found between environmental stress and attachment behavior ($r = .31, p < .10$). Speculations regarding these findings are explored below.

Discussion

In this study, we aimed to examine the relationship of several early childhood variables on the development of favorable outcomes during middle childhood for children who had been placed in foster care during preschool. Similar to prior findings of the enduring effects of risk on later development, the presence of protective factors in early childhood has a comparable impact on the development of assets in later life. Despite our small sample size, the data set is extremely unique because of the depth and breadth of information on this extremely high-risk and transient population. Our results lay the foundation for designing future studies to further examine how risk and protective factors promote or inhibit resilience.

Two variables exhibited the most significant relationship to the development of favorable outcomes: environmental stress and developmental status. Independent variables yielding statistically significant relationships to the dependent variables are presented first followed by a discussion of variables that did not demonstrate statistically significant results.

The Impact of Environmental Stress

A lack of environmental stress during early childhood was positively associated with emotion regulation in middle childhood and was negatively associated with emotional lability and negativity in middle childhood. The role of environmental stress in early childhood is multifaceted. Children entering a foster home have already experienced varying degrees of trauma and stress, may struggle in adapting to a new caregiver–child interaction style, and may take months before showing signs of stabilization and recovery.

It is often essential that foster caregivers provide intensive support through the implementation of therapeutic interventions to remediate skill deficits and to address mental health concerns and attachment disorder–related behavior (Howe & Fearnley, 2003). The

tasks at hand (i.e., for foster children to recover and adapt and for foster caregivers to guide, protect, and nurture) are clearly immense. With the introduction of additional stressors into the home environment, there is a manifold impact on the foster caregivers, the foster child, and the caregiver–child relationship that potentially interferes with a foster caregivers' ability to manage stress in response to child negative behavior. These heightened levels of caregiver stress have been shown to interfere with a child's behavioral and physiological stabilization (Fisher & Stoolmiller, 2008). Furthermore, inasmuch as stress interferes with effective parenting, foster caregivers may be unable to amend regulatory deficits by responding therapeutically to children who demonstrate exaggerated reactivity to stressors.

Developmental Status and its Enduring Effect

Our results point to a powerful relationship between early childhood developmental status and later outcomes. Poorer developmental status in early childhood was related to increased lability and negativity in middle childhood, with attention and executive functioning playing particularly instrumental roles. There was a similar positive correlation between attention and executive function in early childhood and emotion regulation in middle childhood. This was consistent with our hypotheses and reflective of the relationship observed in literature between effortful control and executive attention and its influence on the development of emotional regulation.

Regarding school adjustment in middle childhood, sensorimotor functioning was shown to have a significant positive correlation. This was a surprising result compared to previous findings referencing low positive correlations between these variables (Ahmad & Warriner, 2001). Sensorimotor function, the ability to integrate sensory stimulation and interact motorically with the environment, has long been understood as a key developmental stage of infancy and early toddlerhood (Piaget, 1952) that develops with age (Korkman et al., 1998). A key component of sensorimotor function is the formation of procedural memory such as in conditioning or skill learning but not conceptualization, which emerges in later development (Mandler, 2007). Whether sensorimotor function has a causal link to later school adjustment is unclear. Based on our findings and findings from research with other at-risk children (Ramirez, Behrends, Blackney, & Herndon, 1998; Singer, Angelopolous, Bass-Busdiecker, & Mascia, 1998), we hypothesize that poorer levels of sensorimotor function in early childhood indicates a larger developmental delay.

Paradoxical Findings

Maltreatment history—Interestingly, maltreatment history did not emerge as a statistically significant correlate of later outcomes despite the large body of research findings that speak otherwise. This finding could have been due to Type II errors as a result of sampling restrictions and low statistical power.

Attachment behavior and its role in emotion regulation—The negative correlation between attachment behavior and emotion regulation might indicate the “loyalty bind” that many foster children experience in out-of-home care. When a child has a strong bond with a caregiver and that placement is disrupted, it is expected that the child will develop a similar attachment in foster care (Simms, Dubowitz, & Szilagy, 2000). However, many children struggle with this switch in loyalty and attachment (Leathers, 2003). A strong attachment to a birth parent and a lack thereof with the foster caregiver could point to the presence of healthy emotional priming on the part of the birth parent, thereby lending itself to the later development of emotion regulation. Alternatively, a child who is less securely attached to a foster caregiver might be more guarded in emotional expression, thereby inhibiting emotional responses more systematically over time.

The development of secure attachment with the foster caregiver is undoubtedly beneficial to overall stabilization and positive outcomes. Supportive intervention, such as that provided by MTFC-P, has been shown to facilitate the development of such attachment. Using the MTFC-P sample, Fisher and Kim (2007) found that the TFC children, but not the RFC children, evidenced improvements in attachment over time.

Parenting practices—Our results did not reveal parenting practices as having any significant correlation regarding emotion regulation or school adjustment. One possible reason for this lies in the difficulty with using self-reports; by and large, foster caregivers are hypothesized to be unlikely to report negative or ineffective parenting because of internal and certification-based values of quality parenting. Alternatively, the caregiver–child relationship might have been measured too early for these effects to be detected.

Placement history—In the initial correlational analyses, number of placement transitions prior to age 5 was selected as the placement history variable. Contrary to the literature, we found no statistically significant correlations between this variable and the outcomes. Owing to the small sample size and the relatively limited range of placement frequencies, there might not have been great enough variance within this measure to detect a differential impact on outcomes.

Limitations

A few limitations of the current study should be acknowledged. First, the sample size was small. Although the original sample consisted of 60 RFC children, only 35 of the children met the criteria for this study. A larger sample would have permitted greater sensitivity to statistical significance and decreased risk for Type II errors. Owing to the small sample size, no attrition pattern could be discerned. Should participants with greater instability or those lacking permanency have been more likely to leave the study, the outcomes might have looked different. Second, when the middle childhood data were gathered, other contextual factors were not considered (e.g., placement stability and acute stressors). Third, our sample was mostly homogeneous in ethnicity (e.g. disproportionately Caucasian) and geography (Lane County, Oregon), thus limiting the external validity and generalizability of our findings.

Conclusions

Ruff, Blank, and Barnett (1990) posited that conceptualizations of foster care such as ours should emphasize care as intervening rather than maintaining the typical trajectory of development. For young foster children, without proactive and effective intervention, a firm and problematic trajectory of development is put in place: many social-emotional and behavioral problems tend to remain relatively stable if left unremediated (Bilancia & Rescorla, 2010). As children mature, they become increasingly resistant to interventions targeting emotion regulation and its correlates; thus, there may be a critical developmental window after which these patterns become more entrenched (Lewis, Granic, & Lamm, 2006). The importance of buffering these outcomes is paramount, and efforts toward this end can have similar long-term effects.

A depth of understanding about the how to procure more favorable outcomes for a population at extreme risk is of public health importance. Foster children frequently enter adulthood demonstrating a level of psychological, occupational, and relational dysfunction that can translate into an immense burden on society (Barth, 1990; Courtney, Piliavin, Grogan-Kaylor, & Nesmith, 2001; Schneider et al., 2009). It is therefore essential that we explore the mechanisms by which to buffer the impact of abuse and neglect and insulate this tremendously vulnerable population. The experiences of foster children that defy the odds

can help researchers determine a model for resilience that can inform policy and intervention development.

Certain alterable variables in our study have particular implications for intervention efforts. First, efforts focused on buffering and reducing stress for foster families have undeniable value given previous findings and those from the current study. Under heightened stress, a foster family's ability to support the healing and recuperation of the children in their care can become tragically compromised. Second, although developmental ability is often considered to be a stable construct, recent research points to developmental capacities as being alterable and amenable to intervention, particularly regarding attention and executive function. The findings from research on young children's brain plasticity point to the importance of early intervention as a means of interrupting negative trajectories and fostering adaptation (Eslinger & Biddle, 2008; Nelson, 2000; Perry, Pollard, Blakely, Baker, & Vigilante, 1995). Attention and executive function, self-regulation (behavioral and emotional), language, and memory function are most responsive during the early years, when skills and neurodevelopmental structures are still in development. In light of the findings discussed herein, programs and interventions that target the reduction of environmental stressors during out-of-home care, address developmental delays, and improve executive functioning and attention capacities are likely to meaningfully and positively impact outcomes for foster children.

Future Directions

The exploratory results from the present study indicate a number of further directions for research. The logical next step is taking these findings and integrating them into a more comprehensive model. This would facilitate the examination of the mechanisms of adaptation with mediating and moderating factors. To do this effectively, however, the sample size would need to increase so as not to inhibit statistical power and violate the basic assumptions of various methods. If replication is not possible, the imputation of missing data should be considered with the current data set. As researchers attempt to define resilience and favorable outcomes, we must explore the breadth and depth of a continuum of skills and assets. Additional indicators of resilience could play an important role in more comprehensive models. To this end, it will be important to explore other life course factors such as relationship status, employment, and health in longitudinal studies. Furthermore, developing a more focused model of how developmental status and environmental stress interact with the development of favorable outcomes is warranted. Examining the ways in which children's developmental status interact with factors such as placement and caregiving practices in foster care is necessary to determine whether there are unique mechanisms influencing trajectories and whether these factors are amenable to intervention. This examination may be accomplished via more sophisticated statistical methodologies (e.g., hierarchical linear modeling) looking at repeated measures over time. This may also reveal hypothesized relationships regarding the influence of placement history and parenting practices that did not emerge as significant in this study.

A number of other variables that possibly bear influence on the development of favorable outcomes also warrant further examination. For example, certain foster caregiver characteristics (e.g., level of experience and training, number of other children in the home, and amount of social support) might mediate the impact of family stress and effective parenting. Additionally, given the longitudinal nature of this data set, a number of factors guiding development during the transition from early to middle childhood should be examined. Further examination of longitudinal placement outcomes and service utilization is warranted given their potential influence on adaptation and functioning over time.

Because environmental stress and developmental status emerged as key constructs in this study, the development and testing of interventions to target these factors are likely to make a significant contribution to promoting positive outcomes for this population. Interventions designed to support foster parents in stress-reduction techniques (e.g., mindfulness-based parent management training) that enhance their therapeutic potential and mediate the effect of stress might prove to be instrumental in young children's overall adaptation and emotional development.

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Abbreviations

HPA	hypothalamic pituitary adrenal
MTFC-P	Multidimensional Treatment Foster Care for Preschoolers
TFC	treatment foster care
RFC	regular foster care
DHS	Department of Human Services
SST	Strange Situation task

Table 1
Demographic Information of Participants (N = 35)

Sample	<i>N</i>	<i>%</i>
Gender		
Male	20	57.1
Female	15	42.9
Age at entry into study (years)		
3	11	31.4
4	16	45.7
5	9	22.9
Ethnicity		
African American	0	0.0
Asian American	0	0.0
European American	33	94.3
Hispanic	0	0.0
Native American	2	5.7
Other	0	0.0

Note. We intentionally used a decreased font size for this table to aid the reviewers

Table 2
Pearson Product-Moment Correlations Middle Childhood Variables (Items 1–3) and Early Childhood Variables (Items 4–14)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Lability/negativity													
2. Emotion regulation	-.57**												
3. School adjustment	-.34*	.15											
4. Placement history	.22	-.17	.02										
5. Maltreatment severity	-.19	.19	.14	-.04									
6. Proportion of neglect	-.01	.11	-.25	-.01	-.04								
7. Attention/executive functioning	-.71**	.36**	.37*	-.19	.19	-.03							
8. Language	-.41**	.27	.25	.05	.15	-.12	.68*						
9. Sensorimotor	-.55**	.30	.46**	-.29	-.24	.22	.72*	.62*					
10. Visuospatial processing	-.39*	.29	.30	-.08	-.23	.26	.55**	.76**	.74**				
11. Memory and learning	-.54**	.34	.29	-.21	.32	-.20	.67*	.67*	.52*	.41**			
12. Parenting practices	-.19	-.04	-.09	-.07	-.12	.06	.01	.17	.20	.16	.23		
13. Environmental stress	.33*	-.36**	-.13	.08	.16	-.41*	-.27	-.00	-.29	-.14	-.07	-.04	
14. Attachment behavior	.11	-.33*	-.13	.10	-.14	.00	-.17	-.08	-.20	.03	.07	-.01	.31*

Note. Items 1 and 2 = emotion regulation; Items 5 and 6 = maltreatment history; Items 7–11 = developmental status.

* $p < .10$.

** $p < .05$.