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Journal

Research in Developmental Disabilities, 35(12)

ISSN

0270-4684

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Publication Date

2014-12-01

DOI

10.1016/j.ridd.2014.07.048

Peer reviewed



The transactional relationship between parenting and emotion regulation in children with or without developmental delays



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ARTICLE INFO

Article history:

Received 11 June 2014

Accepted 23 July 2014

Available online

Keywords:

Emotion regulation

Parenting

Scaffolding

Developmental delay

ABSTRACT

Researchers have identified numerous internal and external factors that contribute to individual differences in emotion regulation (ER) abilities. To extend these findings, we examined the longitudinal effects of a significant external predictor (parenting) on children's ER abilities in the context of an internal predictor (intellectual functioning). We used cross-lagged panel modeling to investigate the transactional relationship between parenting and ER in children with or without developmental delays (DD) across three time points in early and middle childhood (age 3, 5, and 8). Participants were 225 families in the Collaborative Family Study, a longitudinal study of young children with or without DD. Child ER ability and maternal scaffolding skills were coded from mother–child interactions at ages 3, 5, and 8. Compared to children with typical development (TD), children with DD were significantly more dysregulated at all time points, and their mothers exhibited fewer scaffolding behaviors in early childhood. In addition, cross-lagged panel models revealed a significant bidirectional relationship between maternal scaffolding and ER from ages 3 to 5 in the DD group but not the TD group. These findings suggest that scaffolding may be a crucial parenting skill to target in the early treatment of children with ER difficulties.

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1. Introduction

The ability to monitor, evaluate, and modify the intensity and duration of emotional reactions is crucial for competent social functioning and psychological well-being. People are exposed to a variety of emotionally arousing stimuli on a daily basis and therefore need regulatory mechanisms to curtail reactions that would be deemed as socially inappropriate or extreme. Competence in emotion regulation (ER) is associated with better health outcomes and interpersonal relationships, and improved academic and work performance (Aldao, Nolen-Hoeksema, & Schweizer, 2010).

1.1. Family factors and emotion regulation

The family is the primary environmental factor for variation in the development of ER. Children learn about ER through observational learning, social referencing, and parenting practices related to emotion and ER. The emotional climate of the household, parenting practices, and parents' modeling of ER all contribute to children's regulatory development (Morris, Silk,

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Steinberg, Myers, & Robinson, 2007). A main contributing factor to the emotional climate of the household is marital conflict/satisfaction, as exposure to “background anger” places children at risk for developing social and emotional problems (Lemerise & Dodge, 1993). A study of emotion regulation in 6-month-old infants found that infant withdrawal (an early correlate of emotion regulation) was predicted by mothers’ and fathers’ aggressive marital conflict and exposure to marital arguments (Crockenberg, Leerkes, & Lekka, 2007).

To look at a more direct causal relationship between parenting and ER, Hoffman, Crnic, & Baker (2006), examined the longitudinal effects of maternal depression on ER and behavior problems in preschoolers. They found that depressed mothers used scaffolding techniques in interactions with their children less frequently. Furthermore, these lower levels of scaffolding predicted more child emotion dysregulation and behavior problems a year later. This association between maternal depression and child ER is both an example of modeling and specific parenting behaviors, such that these depressed mothers both model maladaptive ER techniques and utilize poor parenting approaches. In a study of adolescents (11–13 years of age), Yap, Allen, and Ladouceur (2008) examined maternal invalidation of positive affect and its effects on depressive symptomatology. They found that maladaptive ER strategies mediated the relationship between invalidation and depression. That is, adolescents whose positive affect elicited dampening responses from their mothers were more likely to utilize maladaptive ER strategies (e.g., inappropriate venting, arguing, etc.) and report more depressive symptoms. Clearly, through various levels of engagement and types of interactions, children explicitly and implicitly learn about their emotional reactions and how to manage them. If children are raised in a hostile environment, do not receive emotional support, and are not surrounded by models of healthy ER, it will be difficult to learn to be an adept emotion regulator.

The transactional model of development asserts that child and environmental factors reciprocally influence each other throughout development. Thus, we should expect that child ER is predictive of parenting quality. We should also expect that resultant parenting then intensifies prior child behaviors and abilities. For example, a child with a more difficult-to-manage temperament might elicit more negative parenting behavior, which then feeds back to exacerbate the child’s emotional and behavioral difficulties. To our knowledge, very few studies have investigated such potential reciprocity in emotion regulation, and other investigators have examined the transactional model in other domains of child development. Yates and colleagues found a bidirectional relationship between parenting and child dysregulation across early and middle childhood among boys in low SES families (Yates, Obradovic, & Egeland, 2010). Additionally, they found a relationship between early intellectual functioning and emotion regulation, and that child IQ rendered the path from early parenting to later academic achievement non-significant. Thus, this study highlights the importance of studying this transactional relationship in the context of developmental and intellectual delays.

In further examination of transactional relationships, Neece, Green, and Baker (2012) examined a reciprocal relationship between parenting stress and child behavior problems across early and middle childhood, among children with or without developmental delays (DD). These authors found evidence that parenting stress and child behavior problems were mutually causal. That is, parenting stress was both an antecedent and consequence of child behavior problems and, simultaneously, child behavior problems were an antecedent and consequence of parenting stress. This transactional relationship was observed in families of children with typical development or developmental delays. Other authors have found emotion regulation to be related with, and even predictive of, behavior problems in early childhood (Cole, Zahn-Waxler, & Smith, 1994; Hill, Degnan, Calkins, & Keane, 2006). The present study investigated a potential transactional relationship with intellectual functioning and family processes.

1.2. Emotion regulation deficits in children with developmental delays

In addition, studies of young children with DD have found that, compared to typically developing (TD) children, children with DD utilize fewer adaptive regulation skills (Wilson, 1999) and are less able to self-regulate (Nader-Grosbois, 2014). In a study on ER and parenting predicting social skills in children with and without DD, Baker and colleagues found that children with DD were significantly more emotionally dysregulated than their TD peers (Baker, Fenning, Crnic, Baker, & Blacher, 2007). Furthermore, the DD group had poorer social skills and there was evidence that emotional dysregulation partially mediated the relationship between developmental status and social skills. These findings suggest that cognitive ability may be a constitutional factor for variation in ER development. Currently, however, there is sparse research on the functional pathways through which ER is impaired in individuals with DD. We know that children with DD have more difficulty with regulating emotions and employ fewer adaptive ER strategies, but the field lacks studies explaining this association. While there is evidence that having a child with DD can have a positive impact on families (Blacher & Baker, 2007), several studies have found that caregiver stress is a more common phenomenon among parents of children with severe disabilities than it is among other parents (Friedrich & Friedrich, 1981). Considering that parents who report higher levels of parenting stress are more likely to be authoritarian, harsh, and negative in their parenting (Belsky, Woodworth, & Crnic, 1996), family factors may be a key mediator in this relationship between developmental delay and emotion regulation problems. Research is needed to examine the possible causal relationships between these variables.

Despite the importance of the complex development ER, most studies are either cross-sectional, and therefore cannot investigate causal links or longitudinal within one developmental stage (e.g., early childhood, adolescence). What is most needed is longitudinal research across developmental stages that synthesizes constitutional (e.g., cognitive ability) and environmental (e.g., parenting style) sources of variation in ER. Efforts to identify the transactional process over time

between parenting, ER, and cognitive ability in early and middle childhood would contribute significantly to current conceptual frameworks.

1.3. Specific aims

This study examined children with a broad range of cognitive ability to explore the relationship between parenting processes and the development of ER across childhood. We assessed child ER ability as well as maternal scaffolding skills (i.e., mothers' actions that provide the support and assistance that a child needs to achieve beyond what he or she would not achieve alone, Baker et al., 2007) at child ages 3, 5, and 8. The sample was split into two IQ-based groups: (1) children with DD or borderline developmental status (IQ under 85) and (2) children with typical development (IQ 85 and up). Our first aim was to replicate previous findings of IQ group differences on our key variables, ER and maternal scaffolding. We then examined the transactional relationship between child ER and maternal scaffolding in the two groups, to examine whether IQ affects how these processes interact.

2. Materials and methods

2.1. Participants

Participants were 225 families in the (blinded for review), a longitudinal study of young children with and without developmental delays, with families recruited from southern California (78%) and central Pennsylvania (22%). This study was based at three universities: (blinded for review). Informed consent was obtained from participating parents and assent from the children. Families were assessed annually from child ages 3 through 9 years. The present sample was comprised of all families for whom data were available on the primary measures at two or more assessments completed at child ages 3, 5, and 8 years. We use the term developmental delay rather than intellectual disability for this sample because (a) the cognitive assessment was conducted on the children when they were young, likely resulting in a less stable classification over time than with older children and (b) the groupings were based on IQ alone.

Most families were initially recruited into the study at child age 3 years, though 20 entered at age 5. Families of children with DD came primarily from agencies that provide diagnostic and intervention services for individuals with developmental and intellectual disabilities. In California, practically all families with young children with DD register for services with one of a network of regional centers. Children with autism were excluded from the study. Families of children with TD were recruited primarily through local preschools and day care programs. Selection criteria were that the child scored in the range of normal cognitive development and had not been born prematurely or had any known developmental disability. In recruiting participants, school and agency personnel mailed brochures describing the study to families who met the selection criteria and interested parents contacted the research center. Children were assessed in their homes with the Bayley Scales of Infant Development at age 3 years to confirm their developmental status.

In the present study, based on the Stanford-Binet Intelligence Scales (Thorndike, Hagen, & Sattler, 1986) at age 5 years, children were classified as having developmental delays (IQ < 70, $n = 72$), borderline developmental status (IQ = 70–84, $n = 16$), or typical development (IQ > 84, $n = 137$). Children categorized as having developmental delays or borderline status were combined in the present analyses and referred to as DD. The present sample was drawn from an initial total sample of 258 families. To be included in these analyses, families must have had data on the two key measures (child dysregulation and maternal scaffolding) for at least two of the three total time points. Of the initial total sample, 225 families met these criteria. The sample size at each age was as follows: n , age 3 = 211; n , age 5 = 225; n , age 8 = 174.

Table 1 shows the demographic characteristics of the present sample at child age 5, by group status (developmental delays, typical development). Demographics for the combined sample revealed that 66% of mothers were Caucasian; 20%, Latino; 8%, African American; 5%, Asian, and 1% identified themselves as "other," usually mixed race. The socio-economic

Table 1
Demographics by status group at child age 5.

Demographic	TD	DD	χ^2 or t
Child gender (% male)	56.9	59.1	$\chi^2(1, N = 225) = 0.10$
Child race (% Caucasian)	62.0	62.5	$\chi^2(1, N = 225) = 0.01$
SB-IQ age 5 (SD)	103.4 (11.4)	61.0 (15.3)	$t(223) = 22.23^{***}$
Marital status (% married)	83.9	77.3	$\chi^2(1, N = 225) = 1.57$
Mother's race (% Caucasian)	68.6	60.2	$I^2(1, N = 225) = 1.66$
Mother's education level (M grade in school) (SD)	15.5 (2.4)	14.3 (2.1)	$t(223) = 3.78^{***}$
Mother's M age (years) (SD)	36.1 (5.8)	34.8 (6.2)	$t(222) = 1.54$
Father's education (M grade in school) (SD)	15.6 (2.9)	14.4 (2.7)	$t(189) = 3.00^{**}$
Father's M age (years) (SD)	38.5 (6.3)	38.7 (6.9)	$t(204) = -0.28$
Family annual income (>\$50 K)	61.8	50.0	$\chi^2(1, N = 225) = 3.02$

** $p < .01$.

*** $p < .001$.

status was generally high; 57.3% of families had an annual income above \$50,000 (in U.S. dollars), and the average years of schooling was three years of college for mothers. The two status groups did not differ significantly on child gender, child race/ethnicity, parental marital status, parental age, or family income. However, mothers and fathers in the TD group completed significantly more years of schooling.

2.2. Procedures

The Institutional Review Boards of the three universities involved approved all procedures. The data for this study were obtained through behavioral coding of a mother–child problem-solving interactions at each age. Each time point involved three different lab tasks with varying levels of difficulty. Mother scaffolding and child dysregulation were coded from videotapes by separate teams of trained coders blind to the hypotheses of the study. For each task, a parent–child dyad was assigned three scaffolding codes (motivational, emotional, and technical) and two child dysregulation codes (emotion and behavior). These codes were averaged over the three tasks in order to increase measurement reliability and to provide a single score for each form of scaffolding and dysregulation.

2.3. Measures

2.3.1. Cognitive ability

Children's cognitive ability was evaluated with the Stanford-Binet IV. (Thorndike et al., 1986), a widely used assessment instrument with sound psychometric properties. The SB-IV yields an IQ score with a normative mean of 100 and a standard deviation of 15. It is particularly well suited to the evaluation of children with delays because the examiner adapts starting points according to the child's developmental level. Child cognitive status grouping (DD vs. TD) was based on SB-IV scores at child age 5.

2.3.2. Maternal scaffolding codes

Maternal scaffolding was measured according to the Maternal Scaffolding Coding System (Maslin-Cole & Spieker, 1990). Highly effective scaffolding involves a mother providing the optimal level of support and assistance necessary to allow her child to succeed beyond what the child would have been able to achieve alone. Observers rate three dimensions of scaffolding for each task: technical, motivational, and emotional. *Technical scaffolding* reflects the mother's ability to structure the task in such a way that it is within the child's abilities to successfully complete it with her support. Effective technical scaffolding includes providing demonstrations that are well-timed and designed to be easily understood by the child, pointing out critical features of the task, and filling-in sub-steps that are too difficult for the child, without oversimplifying. *Motivational scaffolding* assesses the mother's ability to help the child initially become engaged with the task and her ability to maintain the child's focus on, and enthusiasm for, the task. Effective motivational scaffolding includes clearly stating the goal of the task for a child who needs it reiterated, frequently praising and encouraging effort, maintaining persistence toward the end goal, and successfully refocusing a child who becomes distracted. *Emotional scaffolding* captures the mother's ability to make the task a positive experience for the child adds to the child's sense of accomplishment and effectiveness. This reflects a high degree of acceptance of, and value for, the child's attempts at the task, maintenance of sensitivity toward the child's emotional state, shared positive emotions between parent and child, and statements that contribute toward the child's sense of pride and efficacy. Each form of scaffolding is rated on a 5-point scale ranging from 1 (*low quality scaffolding*) to 5 (*high quality scaffolding*). See Hoffman et al. (2006) for further description of this coding system.

Baker et al. (2007) examined the reliability of the Maternal Scaffolding Coding System, reporting intraclass correlations of .84 for motivational, .87 for emotional, and .90 for technical scaffolding. Construct validity for the scaffolding system has been generated within the current sample through its relations with parent expressiveness (Baker & Crnic, 2005), with parental depression and child regulation (Hoffman et al., 2006), child social skills (Baker et al., 2007), and child decreased behavior problems (Marquis & Baker, 2014).

2.3.3. Emotion dysregulation codes

Child emotion and behavior dysregulation were coded using the Dysregulation Coding System (Hoffman et al., 2006). The Emotion Dysregulation subscale was adapted from the parameters presented by Cole, Michel, and Teti (1994). This scale was designed to measure the appropriateness of the type, duration, and intensity of emotional expressions as well as the lability and soothability exhibited by the child. Emotion dysregulation ratings, therefore, involve emotional expressions exhibited by the children, but as Cole, Martin, and Dennis (2004) suggested, ratings also capture more process-level features of the expressions and their relationship to the context, rather than simply considering the valence of the emotional expression. The children were assigned scores ranging from 0 (no evidence of dysregulation) to 4 (significant dysregulation). A score of 1 reflects a low degree of emotion dysregulation and describes individuals who (a) displayed only one or two brief emotional expressions that were inappropriate to the situation and who were able to regroup on their own or (b) displayed one or two brief instances of emotional lability and/or variability in intensity of emotional expression and usually recovered quickly from inappropriate emotional experiences. In contrast, a child receiving a score of 4 shows significant dysregulation in that he or she displayed several intense emotional expressions or displayed less intense but frequent emotional expressions for the majority of the segment, was virtually unable to regroup without the help of the parent, and was very labile, showing

extreme variability in the intensity of emotion and/or very slow recovery from emotional experiences. Behavior dysregulation is coded separately from emotion dysregulation and includes instances of poor behavioral management by the child that impeded his or her ability to complete the task. This score includes expressions of overt noncompliance or defiant behavior and instances of disruptive behavior. Behavior dysregulation is coded on a scale similar to that of emotion dysregulation, ranging from 0 (no evidence of dysregulation) to 4 (significant dysregulation). A score of 1 describes a child who displayed only one or two brief inappropriate behaviors during the segment, with no instances of intense behavior disruption. A score of 4 indicates that a child displayed several intense disruptive behaviors or displayed less intense, but frequent, disruptive behaviors for the majority of the segment.

Hoffman et al. (2006) provided a more detailed presentation of the Dysregulation Coding System and reported reliability for the overall system at an intraclass correlation of .90. The Emotion subscale reliability was .79 and the Behavior subscale was .90. Construct validity for the Dysregulation System within the current sample has been supported through its relationship with maternal scaffolding and child behavior problems (Hoffman et al., 2006) and child social skills (Baker et al., 2007).

2.4. Data analytic plan

First, independent samples *t*-tests were used to compare children with TD and DD on measures of maternal scaffolding and child dysregulation at all three time points (ages 3, 5, and 8). Then, cross-lagged panel analyses were conducted to investigate the bidirectional relationship between child dysregulation and maternal scaffolding across three time points. Separate models were run for the two developmental groups, to examine whether the relationship between scaffolding and dysregulation progresses differently depending on developmental status. Mothers' education was covaried in analyses of age 3 maternal scaffolding, as this variable differed by group status and correlated significantly with maternal scaffolding. Cross-lagged analyses allow for the examination of the concurrent, predictive, and stability links among the variables. A key aspect of these models is that initial levels of the dependent variable are controlled, and thus the focus is on predicting change in the dependent construct over and above initial levels (Selig & Little, 2012). These models also allow for simultaneous examination of the two pathways of interest (early child dysregulation to later maternal scaffolding and early scaffolding to later child dysregulation). There were two sets of cross-effects tested in these models (i.e., dysregulation at age 3 predicting scaffolding at age 5 and scaffolding at age 3 predicting dysregulation at age 5; dysregulation at age 5 scaffolding at age 8 and scaffolding at age 5 predicting regulation at age 8). This approach differs from a regression analysis in that both dependent variables (child dysregulation and maternal scaffolding) are entered into the model and are allowed to correlate. This is a more conservative analysis that accounts for the multicollinearity between the two dependent variables, leaving less variance in the dependent variables to be explained by the independent variables.

3. Results

3.1. Data reduction and descriptive analyses

Interrelations among motivational, emotional, and technical scaffolding ratings were significant, with *r*s ranging from .36 to .76; subscales were combined into a composite score to minimize the number of variables in the cross-lagged analyses. The scaffolding composite demonstrated an internal consistency of .81 at age 3, .86 at age 5, and .75 at age 8 for the combined sample. A composite of overall dysregulation was similarly generated by averaging the emotional and behavioral dysregulation ratings, which were significantly correlated, with *r*s ranging from .47 to .56 within each task. The dysregulation composite demonstrated an internal consistency of .67 at age 3, .84 at age 5, and .79 at age 8.

Table 2 shows status group differences in the maternal scaffolding and child dysregulation codes. Mothers of children with TD exhibited significantly more scaffolding behavior at age 3 and age 5, but not at age 8. Children with DD were significantly more dysregulated than typically developing children at age 3, age 5, and age 8.

3.2. Cross-lagged panel analyses across ages 3, 5, and 8

Cross-lagged panel analyses were used to examine the bidirectional effects of maternal scaffolding and child dysregulation over time. Mplus Version 6 (Muthén & Muthén, 1998–2010) was used to test two two-wave cross-lagged

Table 2
Key variables by status delay group at all time points.

Child age + variable	TD	DD	<i>t</i>
Age 3 maternal scaffolding	3.6 (0.6)	3.3 (0.7)	<i>t</i> (203) = 3.60***
Age 5 maternal scaffolding	3.7 (0.8)	3.0 (0.9)	<i>t</i> (222) = 6.28***
Age 8 maternal scaffolding	3.2 (0.8)	3.0 (0.9)	<i>t</i> (109.8) = 1.02
Age 3 child dysregulation	1.3 (0.7)	2.1 (0.8)	<i>t</i> (206) = 7.23***
Age 5 child dysregulation	0.5 (0.4)	1.3 (1.0)	<i>t</i> (110.4) = 7.89***
Age 8 child dysregulation	0.9 (0.5)	1.8 (0.8)	<i>t</i> (91.9) = 7.63***

*** *p* < .001.

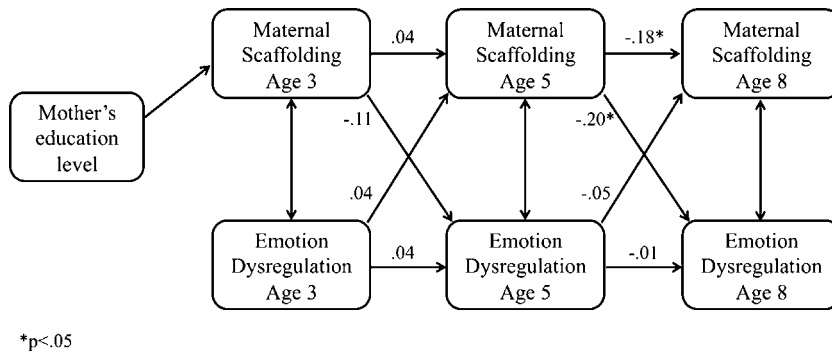


Fig. 1. Cross-lagged panel model, TD group.

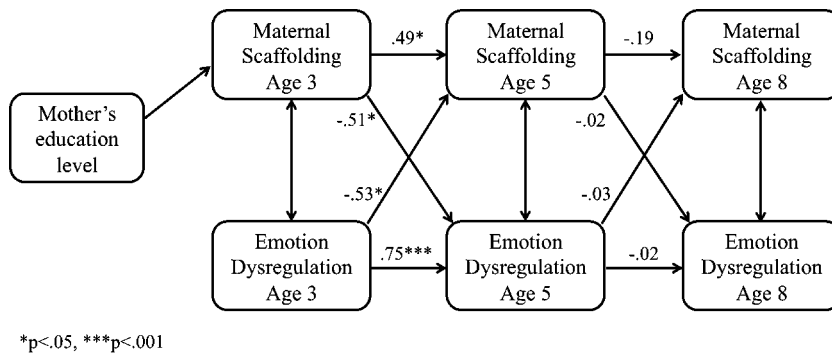


Fig. 2. Cross-lagged panel model, DD group.

models, one for the TD group and one for the DD group. Mother's education level was included as a covariate in predicting maternal scaffolding at Time 1 (age 3). The dependent variables, maternal scaffolding and child dysregulation, were measured at child ages 3, 5, and 8. Predictor variables included maternal scaffolding and child dysregulation from the preceding time point (e.g., when dependent variables were maternal scaffolding and child dysregulation at age 5, predictor variables were maternal scaffolding and child dysregulation at age 3).

Fig. 1 shows the results of the cross-lagged panel analysis for the TD group. In the TD group, there was variable stability for maternal scaffolding across the three time points; the stability effect was significant from child ages 5–8 ($\beta = -.18$) but not 3–5. Child ER was not stable across the three time points. Next, we examined cross-lagged effects between maternal scaffolding and child dysregulation. In this analysis, one of the two cross-lagged effects from scaffolding to dysregulation was significant. Maternal scaffolding at age 5 predicted child dysregulation at age 8 ($\beta = -.20$, $p = .022$). Neither of the cross-lagged effects from dysregulation to scaffolding was significant in the TD group. Last, maternal scaffolding and dysregulation were significantly correlated at age 5 ($r[134] = -0.34$, $p < .001$) and age 8 ($r[104] = 0.90$, $p < .001$) and were marginally correlated at age 3 ($r[132] = .14$, $p = .10$).

Fig. 2 shows the cross-lagged panel analysis for the DD model. There was stability for maternal scaffolding from child ages 3–5 ($\beta = .49$), and marginally from 5 to 8 ($\beta = .19$). There was stability for child dysregulation from child ages 3 to 5 ($\beta = .75$), but not 5–8. In addition, the cross-lagged effects from ages 3 to 5 were significant in both directions (from scaffolding to dysregulation: $\beta = -.51$; from dysregulation to scaffolding: $\beta = -.53$). However, the cross-lagged effects from ages 5 to 8 were nonsignificant in both directions. Lastly, in the DD group, child dysregulation and maternal scaffolding were significantly correlated at all three time points (age 3: $r[69] = 0.90$, $p < .001$; age 5: $r[86] = -.31$, $p = .001$; age 8: $r[61] = 0.90$, $p < .001$).

4. Discussion

We examined the transactional relationship between maternal scaffolding and child emotion regulation across middle childhood, in families of children with or without developmental disabilities. Consistent with prior studies that have found a relationship between child intellectual functioning and dysregulation (Baker et al., 2007; Yates et al., 2010), children with DD were significantly more dysregulated than children with TD at ages 3, 5, and 8 years. There was also a status group difference in maternal scaffolding in early childhood, such that mothers of children with DD exhibited fewer instances of scaffolding behavior at ages 3 and 5. This finding with one specific aspect of parenting quality is consistent with the empirical support for

(a) especially high levels of parenting stress in the preschool years (Kuczynski & Kochanska, 1990), (b) higher parenting stress associated with an intellectual disability (Baker et al., 2003; Hassall, Rose, & McDonald, 2005), and (c) the relationship between parenting stress and parenting quality in families of children with ID (Aunos, Feldman, & Goupil, 2008).

To examine possible bidirectionality between scaffolding and dysregulation across childhood, we created cross-lagged panel models for the DD and TD groups. There was a significant transactional relationship for the DD group only. The TD group did not show a bidirectional relationship between parent and child factors. In the DD group, maternal scaffolding at age 3 predicted child dysregulation at age 5, and child dysregulation at age 3 predicted maternal scaffolding at age 5. Studies that compare low-risk to high-risk child populations lend tentative support for these findings. First, researchers have found exacerbated transactional relationships within families with vulnerable children. For example, Pluess and Belsky (2009) found that infants with difficult temperaments were more affected by parenting, such that they exhibited more problem behaviors when reared in less supportive environments and fewer when reared supportively. Second, for children with developmental delays specifically, researchers have found increased sensitivity to proximal versus distal family processes. Lieshout and colleagues examined the effects of family context and parenting on personality development in children with genetic syndromes implicated in intellectual disabilities (Lieshout, De Meyer, Curfs, & Fryns, 1998). Family context variables included family stress, marital conflict, and parental consistency, and parenting variables were warmth, anger, respect for the child's autonomy, setting limits, and quality of information. They found support for proximal and mediational models but not distal models of effects. That is, parenting (proximal) had direct effects on child outcomes and mediated the effect between family context (distal) and child outcomes; however, family context did not have a direct effect on child outcomes.

More recently, Wieland and Baker (2010) studied the effects of marital quality on behavior problems of children with and without ID. Their findings show that marital factors impacted behavioral outcomes only in children with TD, and this may suggest that marital quality is too distal a factor to impact outcomes in children with DD. The present results are supported by the finding by Baker et al. (2007) that early scaffolding predicted later social skills in children with DD but not those with TD. Together, these findings suggest that children with DD constitute a specific risk group that may be uniquely less susceptible to distal family processes (e.g., SES, marital quality) and more sensitive to proximal processes (e.g., scaffolding).

While researchers have mostly conceptualized proximal processes as any parenting practices, differentiation among forms of parenting may be meaningful and necessary. Scaffolding, in particular, is a practice in which parents directly interact with and explicitly teach and guide their children. Thus scaffolding, in contrast to a more global, less explicit measure of parenting such as warmth or sensitivity, may be a more proximal form of parenting. As such, scaffolding may be more crucial for the healthy development of children with DD, who seem to benefit from more directive instruction. On the other hand, children with TD are affected by both proximal and distal family processes, so it may be the case the maternal scaffolding is only a small piece of their environmental picture. It, therefore, would not contribute significantly to ER outcomes in this group.

No bidirectional relationships were found from age 5 to 8 for either status group. One possible reason for this finding is that the transition to school is accompanied by an increase in peer influence and a decrease in parent influence. Between the ages of 5 and 8, youth begin the process of moving away from their parents and toward their peers for emotional and social support. Masten and Coatsworth (1998) posit that a main developmental task from infancy through preschool is attachment to the caregiver whereas in middle childhood it shifts to making friends and getting along with peers. It is perhaps this transition that inhibited the relationship between maternal scaffolding and emotional dysregulation. Future studies should further examine the relationship between developmental periods and parenting influences.

4.1. Limitations

Certain limitations of the study should be noted. First, scaffolding and dysregulation were assessed through careful behavioral coding, but additional sources of information may have improved the reliability and validity of these variables. Since prediction across types of measurement can remove shared method variance and minimize potential biases, future studies could incorporate multiple methods of assessment and/or observation in varying contexts. Also, while the longitudinal approach to prediction provides additional evidence for causal pathways, it does not prove causation. Experimental research would be necessary to establish causation, such as an early intervention program focusing on one domain (e.g., child regulatory skills) and outcome assessment on another (e.g., parent scaffolding).

4.2. Implications

These findings enhance understanding of the development of emotion regulation across early and middle childhood and how endogenous child factors (intellectual functioning) and exogenous family factors (maternal scaffolding) affect this process. They provide clear implications for early intervention for children with intellectual disabilities. Because of the bidirectional relationship between parenting and emotion regulation, child-focused interventions that provide explicit instruction regarding emotion regulation would be valuable. In addition, instructional programs for parents could involve coaching on scaffolding, a potentially difficult skill rarely addressed in parent training protocols. As we found a transactional relationship from age 3 to 5, it is critical that these interventions happen very early, even in toddlerhood. Perhaps the most important takeaway message from the present study is the importance of strong emotion regulation ability across childhood.

Acknowledgements

This paper was based on the activities of the (blinded for review), supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, grant number 34879-1459 (blinded for review). This work also was supported by a National Science Foundation Graduate Research Fellowship to the first author. The authors are grateful to Dr. Nim Tottenham, the (blinded for review) Statistical Consulting Group, as well as to the participant families and to the staff at the (blinded for review) who made this work possible.

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