



The Influence of Positive Maternal Involvement on the Relationship Between Maternal Emotion Dysregulation and Preschooler Internalizing and Externalizing Problems

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Abstract

Children of mothers with elevated emotion dysregulation (ED) may be at greater risk for developing internalizing (INT) and externalizing (EXT) problems and, in turn, future psychopathology. While previous studies have investigated early risk pathways that may explain this association (e.g., unsupportive maternal responding), our understanding of factors that protect against the downstream effects of maternal ED on child outcomes is limited. To explore prospective protective factors, the current study examined the moderating role of positive maternal involvement on the relationship between maternal ED and preschoolers' INT and EXT problems. This study included 178 mother-child dyads, where maternal ED was assessed using the Difficulties in Emotion Regulation Scale, positive maternal involvement was assessed using the Alabama Parenting Questionnaire – Preschool Revision, and preschoolers' INT and EXT problems were assessed with the Child Behavior Checklist. Maternal ED and positive maternal involvement had significant direct effects on preschoolers' INT and EXT problems; however, the moderating effect of positive maternal involvement on the relationship between maternal ED and preschooler INT and EXT problems was nonsignificant. Further examination of factors that may mitigate risk among children of mothers with elevated ED is necessary to inform effective prevention and intervention efforts.

1. Introduction

The emergence of internalizing ([INT]; e.g., withdrawn behavior) and externalizing ([EXT]; e.g., aggressive behavior) problems in preschool-aged children has been found to be associated with an increased risk for psychopathology (Basten et al., 2016; Carneiro, Dias, & Soares, 2016). This understanding has sparked curiosity for many researchers and encouraged efforts geared towards reducing the risk for later mental health challenges. Research demonstrates that preschool children of mothers who experience elevated emotion dysregulation ([ED]; i.e., difficulties effectively managing and expressing emotions)

may be at increased risk for the development of INT and EXT problems (Buckholdt, Parra, & Jobe-Shields, 2014). However, while previous studies have investigated early pathways that may help to explain this association, the vast majority have focused on factors that increase intergenerational risk (e.g., Frigoletto et al., 2022) and our understanding of factors that protect against the effects of maternal ED on child outcomes is limited. For example, positive parental involvement, such as supportive emotion socialization, may serve as a prospective protective factor that mitigates the effect of maternal ED (Lee et al., 2023; Okorn, Verhoeven, & Van Baar, 2022). The current study sought to

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shift focus towards a strength-based approach by asking the following question: Does positive maternal involvement moderate the association between maternal ED and preschoolers' INT and EXT problems?

1.1. Preschoolers' Internalizing and Externalizing Problems

The preschool years represent an important period for social and emotional development, where children begin to understand and regulate their expression of emotions along with their behaviors (Cole et al., 2009; Laible & Thompson, 1998). This progression in development often coincides with the emergence of emotional and behavioral problems (Fanti & Henrich, 2010). Emotional and behavioral difficulties among preschool-aged children have most commonly been explored within two broad categories: INT problems, which refer to aspects of an individual's internal state (e.g., withdrawn behavior, symptoms of depression and anxiety), and EXT problems, which refer to the ways that an individual outwardly responds to their environment (e.g., aggressive, defiant, hyperactive, and impulsive behavior) (Achenbach, 1991; Campbell, 1995).

Importantly, studies suggest that preschoolers with INT and EXT problems may go on to have poorer mental health outcomes, including increased risk for chronic stress and various psychiatric disorders later in life (Arslan et al., 2021; Campbell, 1995; Champion, Goodall, & Rutter, 1995). Young children who display INT and EXT problems are more prone to engage in risky behaviors, have associations with deviant peers, face peer rejection, and demonstrate antisocial behaviors (Fanti & Henrich, 2010). Moreover, evidence has found that INT and EXT problems during the preschool period may serve as an indicator of poor school readiness (Blair, 2002). Further examination of factors that may protect against the development of INT and EXT problems

among preschool-aged children is necessary to inform tailored clinical efforts that intervene in and support malleable targets and early childhood development.

1.2. Maternal Emotion Dysregulation as a Risk Factor

Primary caregivers play a significant role in shaping their children's social and emotional development throughout the preschool years (Campbell, 1995; von Salisch, 2001). ED is a risk factor for mental health challenges and a process underlying many forms of psychopathology. Specifically, ED is largely understood as the inability to effectively monitor, evaluate, and modify one's emotional experience and reactions (Cole, Michel, & Teti, 1994; Fernandez, Jazaieri, & Gross, 2016; Thompson, 1994). Many parents experience elevated ED, in part due to increased parenting stress and coinciding difficulty utilizing effective emotion regulation strategies (Binion & Zalewski, 2018; Rutherford et al., 2015; Thompson, 2019). Importantly, evidence has shown that children of parents with elevated ED may be at greater risk for developing INT and EXT problems (Buckholdt, Parra, & Jobe-Shields, 2014; Zimmer-Gembeck et al., 2022) and may impact how children learn to regulate their own emotions and behaviors (Rutherford et al., 2015). Better understanding the ways in which maternal ED impacts young children is critical and will advance our ability to prevent and intervene prior to the onset of later psychopathology.

1.3. Prospective Effects of Positive Maternal Involvement

Parents play an integral role in the upbringing and socio-emotional development of their young children (Morris et al., 2007). Research indicates that parental psychopathology may have adverse effects on parenting behaviors and may negatively affect both a parent and their children (Rutherford

et al., 2015). Specifically, elevated maternal ED has been found to be associated with greater unsupportive emotion socialization practices (Price & Kiel, 2022). Moreover, unsupportive parenting behaviors, such as harsh discipline, inconsistency in responding, dismissiveness, and punitive behavior, may help to explain known associations between elevated maternal ED and child INT and EXT problems (Campbell, 1995; Carneiro, Dias, & Soares, 2016; Frigoletto et al., 2022; Rademacher, Zumbach, & Koglin, 2023). Notably, while maternal ED is well-established as a factor that influences emotion socialization practices (Dix, 1991), these constructs are not synonymous.

To date, there is a scarcity of research examining how supportive emotion socialization practices may buffer against the downstream, intergenerational effects of elevated maternal ED. Positive parental involvement, for example, is understood as a parent's provision of love, warmth, and support when interacting with their child and responding to their emotions (Rademacher, Zumbach, & Koglin, 2023; Zimmer-Gembeck et al., 2022). Some findings indicate that greater maternal ED may predict less positive maternal involvement and more INT problems in children (Zimmer-Gembeck et al., 2022). However, effect sizes are small, and these associations have been explored less frequently. As parental support is robustly associated with lower levels of INT and EXT problems in children (Kotchick & Forehand, 2002; Okorn, Verhoeven, & Van, 2022), efforts seeking to understand positive maternal involvement as a protective factor that may mitigate against the intergenerational effects of maternal ED are needed.

1.4. The Current Study

Using data collected within a longitudinal, multi-site, randomized control trial, this study sought to expand on existing literature by exploring positive maternal involvement as a prospective protective

factor that mitigates the effect of maternal ED on preschoolers' INT and EXT problems. This study hypothesized that maternal ED would be significantly associated with preschoolers' INT and EXT problems, such that higher levels of maternal ED would predict greater levels of INT and EXT problems. Additionally, it was hypothesized that greater reported positive maternal involvement would be associated with fewer INT and EXT problems in preschool-aged children. Finally, it was hypothesized that positive maternal involvement would moderate this relationship, such that more positive maternal involvement would buffer against the effects of elevated maternal ED on preschoolers' INT and EXT problems.

2. Methods

2.1. Participants

Participants included 178 mothers (Mage = 33.16 years, SD = 4.85; 28% ethnoracial minoritized status) and their preschool-aged children (Mage = 42.32 months, SD = 4.01; 37% ethnoracial minoritized status) who participated in a longitudinal, multi-site (i.e., University of Oregon, University of Pittsburgh), randomized control trial. Participants were recruited from community sources, including university-based, targeted multimedia and digital messaging programs, craigslist, and psychiatric treatment clinics within the same geographic regions. To achieve greater variability in maternal ED, mother-child dyads were oversampled for maternal symptoms of borderline personality disorder (i.e., a mental health disorder hallmarked by severe difficulties with emotion regulation). All participants provided informed consent and were compensated for their study contributions.

Families interested in this study were contacted for phone screening and given a brief introduction to the study. Mothers verified their age of 18 or older and the age of the target child (i.e., 3 years old). To be eligible, mothers needed

to be the biological mother of the target child and have had at least 50% physical custody of the child since birth. Mothers and their preschool-aged children then completed a clinical intake consisting of semi-structured diagnostic interviews and intelligence testing to further determine eligibility.

2.2. Procedure

Eligible dyads were enrolled to complete four assessments in a laboratory setting (i.e., baseline, 4-month, 8-month, and 12-month follow-ups). The current project focused on data obtained during the baseline assessment. Self-report questionnaires were completed by mothers to assess maternal ED, positive maternal involvement, and their preschoolers' INT and EXT symptoms. All study procedures were IRB-approved. 92.7% of mother-child dyads completed the baseline assessment.

2.3. Measures

2.3.1. Maternal Emotion Dysregulation

Mothers self-reported on ED at each of the four study time points using the 36-item Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004). The DERS is a measure in which respondents rate how often the items apply to them on a 5-point Likert-type scale (1 = almost never, 3 = about half of the time, 5 = almost always). The DERS is comprised of six subscales representing difficulties in emotion regulation, including nonacceptance of emotional responses (6 items; e.g., "When I'm upset, I feel guilty for feeling that way"), difficulty engaging in goal-directed behavior (5 items; e.g., "When I'm upset, I have difficulty concentrating"), impulse control difficulties (6 items; e.g., "When I'm upset, I lose control over my behaviors"), lack of emotional awareness (6 items; e.g., "I am attentive to my feelings"), limited access to emotion regulation strategies (8 items; e.g., "When I'm upset, I believe

that I'll end up feeling very depressed"), and lack of emotional clarity (5 items; e.g., "I have difficulty making sense out of my feelings"). Scores on each item were summed to create a total score for maternal ED, with higher total scores indicating greater levels of ED.

2.3.2. Positive Maternal Involvement

Mothers self-reported their parenting behaviors using the Alabama Parenting Questionnaire – Preschool Revision (Clerkin et al., 2007). The APQ-PR consists of 32 items, assessing the frequency of various parenting practices commonly associated with conduct problems in preschool-aged children. Items are assessed across three domains, including positive parenting (12 items; e.g., "You compliment your child when he/she does something well"), negative/inconsistent parenting (7 items; e.g., "You threaten to punish your child and then do not actually punish him/her"), and punitive parenting (5 items; e.g., "You slap your child when he/she has done something wrong").

Using the APQ-PR, mothers indicated the likelihood of responding to their child in a given way on a 5-point Likert-type frequency scale (1 = never, 3 = sometimes, 5 = always). Scores on each of the items from the positive parenting subscales were summed to create a total score for positive maternal involvement, with higher scores indicating greater endorsement of positive parenting strategies.

2.3.3. Child Internalizing and Externalizing Problems

Mothers reported on their child's INT and EXT problems using the child behavior checklist 1½–5 (CBCL) from the Achenbach System of Empirically Based Assessment (ASEBA; Achenbach & Edelbrock, 1983). The CBCL 1½–5 contains 32 items assessing INT problems (e.g., "shows panic for no good reason," "too fearful or anxious") and 34 items assessing EXT problems (e.g., "gets in

many fights,” “hits others”) among children between ages 1½–5 years of age. Items are rated on a 3-point Likert-type scale ranging from 1 (not true) to 3 (very true). Items were summed to create total scores for INT and EXT problems, with higher scores indicating greater INT and/or EXT problems. CBCL data was unavailable for 14 children.

2.4. Covariates: Demographic Variables

Preschooler sex (0 = male; 1 = female) and age, as well as maternal age, were reported on by mothers at baseline assessment and included in analyses as covariates. Additionally, a cumulative risk proportion score was included in analyses as a covariate.

The cumulative risk proportion score was comprised of three sociodemographic questions (i.e., maternal education [0 = completion of at least high school; 1 = did not complete high school], family annual income [0 = > \$22,311; 1 = < \$22,331], and single parent status [0 = two-parent home; 1 = single-parent home]) which were summed and divided by three to create a proportion score, ranging from 0 to 1, such that higher proportion scores indicated greater cumulative risk.

2.5. Data Analytic Strategy

Using Jamovi version 2.3.28 (The jamovi project, 2022), preliminary analyses were conducted to examine descriptive statistics and bivariate correlations between primary study variables. To examine the effect of maternal ED and positive maternal involvement on preschoolers’ INT and EXT problems, two models were tested using a linear regression. Direct effects of maternal ED and positive maternal involvement were examined prior to including the interaction term between maternal ED and positive maternal involvement, and multicollinearity was assessed.

3. Results

3.1. Descriptive Statistics and Bivariate Correlations

Table 1 provides mean and standard deviations for study variables. Table 2 provides bivariate correlations between all study variables.

Table 1. Means and standard deviations for study variables.

	TOTAL (n = 178)	
	M/%	SD
<u>Demographic Variables</u>		
Maternal Age (years)	33.16	4.85
Child Age (months)	42.32	4.01
Child Sex	52%	---
Cumulative Risk Proportion	26%	---
<u>Primary Study Variables</u>		
Maternal Emotion Dysregulation	81.59	32.04
Positive Maternal Involvement	53.25	5.32
Internalizing Problems	49.33	11.42
Externalizing Problems	50.2	12.83

Maternal age and the cumulative risk proportion score were negatively associated, indicating that mothers of younger age reported higher cumulative risk proportion scores. Maternal age and maternal ED were negatively associated, suggesting that mothers of a younger age reported higher levels of ED. In addition, maternal age was negatively associated with both child INT and EXT symptoms, such that younger mothers reported more child INT and EXT symptoms. The cumulative risk proportion score was positively correlated with maternal ED, indicating that mothers with greater cumulative risk reported more elevated ED. Additionally, the cumulative risk proportion score was positively associated with both child INT and EXT problems, suggesting that mothers with greater cumulative risk reported more INT and EXT problems in their children. Maternal ED was negatively correlated with positive maternal involvement, such that mothers reporting higher levels of maternal ED reported less positive involvement. Maternal ED

and child INT and EXT problems were positively associated, indicating that mothers who reported greater levels of ED reported more INT and EXT symptoms in their children. Positive maternal involvement was negatively associated with both child INT and EXT symptoms, suggesting that more reported positive maternal involvement was associated with fewer child INT and EXT symptoms. Finally, child INT problems were positively associated with child EXT problems, such that children with elevated levels of maternal-reported INT problems also had elevated levels of maternal-reported EXT problems. Additionally, a moderate association between maternal ED and positive maternal

involvement emerged, suggesting variability in positive maternal response at various levels of maternal ED.

To assess multicollinearity and reduce the chances of Type I error (i.e., obtaining a false positive), tolerance statistics and Variance Inflation Factor (VIF) were examined. Tolerance statistics for models examining primary study hypotheses ranged from 0.61 to 0.67, and VIF statistics ranged from 1.64 to 1.49, indicating that multicollinearity was not likely an issue. To further reduce the potential effects of multicollinearity, independent variables were standardized prior to their inclusion in regression analyses.

Table 2. Bivariate correlations between all study variables.

	1	2	3	4	5	6	7
1. Maternal Age							
2. Child Age	0.074						
3. Child Sex	0.084	0.101					
4. Cumulative Risk Proportion	-0.214**	0.037	-0.026				
5. Maternal Emotion Dysregulation	-0.228**	-0.127	-0.152	0.347***			
6. Positive Maternal Involvement	-0.050	-0.015	0.015	0.081	-0.281***		
7. Internalizing Symptoms	-0.260***	-0.025	-0.066	0.321***	0.547***	-0.345***	
8. Externalizing Symptoms	-0.163*	-0.107	-0.101	0.282***	0.517***	-0.325***	0.769***

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). ***Correlation is significant at the 0.001 level (2-tailed).

3.2. The Effect of Maternal ED and Positive Maternal Involvement on Preschoolers' INT and EXT Problems

To assess the effect of maternal ED and positive maternal involvement on preschoolers' INT and EXT problems, two models utilizing linear regressions were tested. First, demographic covariates were entered, followed by maternal ED and positive maternal involvement, then the interaction term between maternal ED and positive maternal involvement. Analyses revealed significant direct effects of both maternal ED ($b =$

0.39, $SE = 0.03$, $p < .001$) and positive maternal involvement ($b = -0.26$, $SE = 0.14$, $p < .001$) on preschoolers' INT problems. However, the interaction effect between maternal ED and positive maternal involvement on preschoolers' INT problems was not significant ($b = -0.02$, $SE = 0.005$, $p > .05$). Direct effects were also found for both maternal ED ($b = 0.38$, $SE = 0.03$, $p < .001$) and positive maternal involvement ($b = -0.23$, $SE = 0.17$, $p < .01$) on preschoolers' EXT problems. However, the interaction between maternal ED and positive maternal involvement on preschoolers' EXT problems was not significant ($b = -0.04$, $SE = 0.005$, $p > 0.05$). These findings indicate that maternal ED

and positive maternal involvement both significantly predict preschoolers' INT and EXT problems. However, results suggest that positive maternal involvement does not influence the strength of the relationship between maternal ED and preschoolers' INT and EXT problems.

4. Discussion

Preschool children of mothers with elevated ED may be at increased risk for INT and EXT problems during this critical window of social and emotional development (Buckholdt, Parra, & Jobe-Shields, 2014). Importantly, the emergence of INT and EXT problems during early childhood has been associated with increased risk for the development of psychopathology later in life (Basten et al., 2016; Champion, Goodall, & Rutter, 1995), underscoring the importance of identifying factors that may protect against maladaptive outcomes. Positive parental involvement (i.e., warmth, support, encouragement) has been associated with fewer INT and EXT problems in young children (Okorn, Verhoeven, & Van Baar, 2022) and was examined as a prospective protective factor that may buffer against the downstream effects of elevated maternal ED. The current study sought to examine the impact of positive maternal involvement on the relationship between maternal ED and preschoolers' INT and EXT problems. Specifically, this project took a strengths-based approach to understanding how a potential protective factor (i.e., positive maternal involvement) may mitigate the intergenerational effects of maternal ED. Consistent with hypotheses, maternal ED and positive maternal involvement had significant direct effects on preschoolers' INT and EXT problems, even after accounting for demographic covariates. Specifically, elevated maternal ED was associated with greater INT and EXT problems, and more positive maternal involvement was associated with fewer INT and EXT problems in preschool-aged children. However, the moderating effect of

positive maternal involvement on the relationship between maternal ED and preschoolers' INT and EXT problems was found to be non-significant.

This study demonstrated that preschool-aged children of mothers with elevated ED may be more likely to develop INT and EXT problems. These findings are substantiated by a well-established literature base which suggests that children of parents with elevated ED are at increased risk for experiencing emotional and behavioral problems themselves (Buckholdt, Parra, & Jobe-Shields, 2014; Cole, Michel, & Teti, 1994; Zimmer-Gembeck et al., 2022). The relationship between child behavior and parental ED may be interpreted through the seminal tripartite model proposed by Morris and colleagues (2007), which describes that the socialization of emotion regulation occurs in part through parental modeling and child observational learning. The preschool period is a time in early childhood development typically marked by an increase in one's ability to understand and express their emotional experiences (Cole, Michel, & Teti, 1994). Therefore, preschool-aged children may be particularly sensitive to learning which emotional and behavioral expressions are appropriate or accepted through their parents' modeling. For example, a preschooler who more frequently observes dysregulated emotional responding (e.g., reactive aggression) may adopt this pattern of responding themselves.

Additionally, the present study found that greater positive maternal involvement, including the provision of warmth, support, and encouragement, may predict fewer INT and EXT problems in preschool-aged children. Previous works have emphasized the significant role of parenting and emotion socialization behaviors in facilitating a child's socio-emotional development (Kotchick & Forehand, 2002; Morris et al., 2007). This project expanded on existing knowledge by highlighting this potential protective parenting factor. Our understanding of parenting factors that protect against the development of INT and

EXT problems among at-risk preschool children (e.g., preschoolers of parents with elevated ED), is currently limited (Lee et al., 2023). To our knowledge, this study was one of few extant works to explore the relationship between positive maternal involvement and preschooler INT and EXT problems among an at-risk sample of preschoolers (i.e., approximately two-thirds of children in the current sample have mothers with elevated ED).

Interestingly, contrary to the study hypothesis, the relationship between maternal ED and preschoolers' INT and EXT problems did not vary as a function of positive maternal involvement. In other words, positive maternal involvement did not emerge as a factor that protects against the downstream effects of elevated maternal ED on preschooler INT and EXT problems in the present sample. This finding may be considered in the context of several theoretical explanations. Some prior evidence suggests that elevated parental ED may increase the likelihood that parents will engage in more negative responding to their children rather than reduce positive aspects of parenting (Zimmer-Gembeck et al., 2022). For example, previous findings have demonstrated that maternal unsupportive responding is a potential risk factor that explains the link between elevated maternal ED and preschooler INT problems and aggressive behavior (Frigoletto et al., 2022). This underscores that while maternal ED may increase the likelihood of maternal unsupportive responding (i.e., mechanistic risk factor for child INT and EXT), it may not directly impact positive maternal involvement (i.e., prospective protective factor against child INT and EXT).

Taken together, the present findings indicate that although more positive maternal involvement is related to fewer INT and EXT problems among preschool-aged children, it does not serve to protect against the downstream effects of elevated maternal ED. Recent evidence suggests that supportive maternal emotion socialization

practices may buffer against the effects of elevated maternal ED in the context of specific child emotions, such as sadness and anger (Lee et al., 2023). Given that the current study did not examine preschooler affect or emotion regulation, future works may be encouraged to further explore the protective effects of positive parenting factors on young children in the context of specific child emotions and elevated maternal ED.

4.1. Limitations

While this study provided support for the direct effects of maternal ED and positive maternal involvement on INT and EXT problems among an at-risk sample of preschoolers, it is important to note several key limitations. This study was cross-sectional, so causal conclusions cannot be drawn. Future research should consider examining the same associations longitudinally to allow for the true identification of causal mechanisms.

Additionally, future studies may examine the interplay between maternal ED, parenting factors, and child INT and EXT problems to gain a better understanding of relevant causal mechanisms. This project utilized a sample that may not be large enough to adequately estimate statistical power and detect true interaction effects (Vize et al., 2023). Future projects may expand on the present sample to be better powered to detect expected effects. Finally, the measures utilized in this study consist of solely maternal self-reporting, leaving room for reporter biases (Morsbach & Prinz, 2006). To reduce the potential for bias, future studies would benefit from including multiple informants/methods when assessing primary study constructs, such as teacher reports or direct behavioral observation.

4.2. Clinical Implications

Though not the primary aim of this study, the significant direct effects of maternal ED and positive maternal involvement on preschoolers'

INT and EXT problems highlight the importance of continued prevention and intervention efforts targeting elevated ED and positive parenting behaviors in mothers of young children. These approaches are of critical relevance as they may simultaneously reduce the risk for preschooler INT and EXT problems (Martin et al., 2017). Given that positive maternal involvement was not found to be a significant moderator, future research is needed to identify factors that may protect against the intergenerational effects of elevated maternal ED to better support mothers and their young children.

4.3. Conclusions

This study aimed to examine if positive maternal involvement moderated the association between maternal ED and preschoolers' INT and EXT problems. Contrary to expected results, positive maternal involvement did not moderate this association. However, maternal ED and positive maternal involvement both independently predicted preschooler INT and EXT problems. While positive maternal involvement may not act as protective in the context of elevated maternal ED, it may still serve to protect against the development of preschooler INT and EXT problems alone. ED and positive parenting underscore a need for further examination of protective factors that may buffer against the intergenerational effects of elevated maternal ED.

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