



Published in final edited form as:

Dev Psychol. 2020 March ; 56(3): 418–430. doi:10.1037/dev0000860.

An empirical test of the model of socialization of emotion: Maternal and child contributors to preschoolers' emotion knowledge and adjustment

Stephanie F. Thompson¹, Maureen Zalewski², Cara J. Kiff³, Lyndsey Moran⁴, Rebecca Cortes¹, Liliana J. Lengua¹

¹University of Washington

²University of Oregon

³UCLA Semel Institute for Neuroscience & Human Behavior

⁴McLean Hospital/Harvard Medical School

Abstract

This study tested child characteristics (temperamental executive control and negative reactivity) and maternal characteristics (parenting behaviors and maternal depressive symptoms) as predictors of mother's emotion-related socialization behaviors (ERSBs). Further, parenting behaviors and ERSBs were examined as predictors of children's emotion knowledge, social competence, and adjustment problems. ERSBs and children's emotion knowledge were tested as mediators of the effects of child and parent characteristics on adjustment. A community sample ($N=306$) of mothers and children (36–40 mos. at T1) were assessed 4 times, once every 9 months, and assessments included maternal reports of depressive symptoms, observed temperament, and observational ratings of general parenting at T1, maternal report of ERSBs at T1 & T2, behavioral measures of emotion knowledge at T3, and teacher ratings of children's adjustment at T4. There were no predictors of ERSBs above prior levels. Higher executive control and lower maternal depressive symptoms predicted greater child emotion knowledge, highlighting the roles of maternal and child contributors to emotion knowledge. Greater emotion knowledge and positive affective quality in parenting predicted children's adjustment, with emotion knowledge mediating the effects of executive control on children's adjustment. In addition, lower levels of maternal supportive ERSBs predicted greater adjustment problems. This study highlights the roles of key variables in Eisenberg's (1998) heuristic model of emotion socialization, and the importance of emotion socialization and emotion knowledge in children's adjustment.

Keywords

emotion socialization; emotion knowledge; maternal depression; temperament; parenting

Eisenberg (1998) framed the socialization of emotion as a process that influences a child's learning regarding the experience, expression, and regulation of emotions that is expected to affect the child's adaptation in society. Outlined in the model were various child, parent, cultural, and contextual factors thought to promote unique emotion-related parent socialization practices, and in turn children's emotion knowledge and child behavioral, social, and emotional adjustment. In the 20 years since the model was proposed, few studies have simultaneously tested the comprehensive set of predictors of parents' emotion-related socialization behaviors (ERSBs), and the putative mediating role of ERSBs in the relation of child, parent and contextual factors to children's emotion knowledge and adjustment. This study tests a comprehensive model, guided by Eisenberg's conceptual model, that examines child characteristics (temperament), maternal characteristics (maternal depressive symptoms and parenting behaviors), and contextual factors (family SES) as predictors of mothers' ERSBs. It further examines parenting behaviors and ERSBs as predictors of children's emotion knowledge, social competence, and adjustment problems and potential mediators of those effects (see Figure 1).

Maternal Reactions to Children's Emotions

Emotion-related socialization behaviors (ERSBs) can take numerous forms. Here we focus on two particular forms of emotion socialization, contingent supportive and negative responses to children's negative emotions. These maternal reactions are thought to be particularly important in shaping children's emotion regulation capacities as they provide immediate feedback regarding the appropriateness of the expression of emotion (Binion & Zalewski, 2018; Eisenberg, Cumberland, & Spinrad, 1998; Eisenberg, Spinrad, & Cumberland, 1998). Maternal supportive responsive to negative emotions, or acceptance, allowance, and willingness to engage with children's negative emotions are theorized to be associated with children's subsequent emotional awareness, regulation, and social-emotional adjustment (Eisenberg, Cumberland, et al., 1998; Eisenberg, Spinrad, et al., 1998; Gottman & Katz, 2002). Indeed, high levels of maternal support for emotions relate to academic achievement and positive peer relations (Cunningham, Kliewer, & Garner, 2009). In contrast, negative responses to children's emotions such as expressing disapproval, ignoring, dismissing, or even punishing emotions, relate to more psychological distress (Garside & Klimes-Dougan, 2002), adjustment problems (Klimes-Dougan, Ronsaville, Wiggs, & Martinez, 2006), and lower social competence (Fabes, Leonard, Kupanoff, & Martin, 2001). Supportive responses are thought to affirm children's emotional experiences as valid and appropriate, whereas negative responses dismiss, invalidate or even denigrate children's experience of their emotions (Thompson & Meyer, 2007).

Predictors of Maternal Responses to Negative Emotions

Given the importance of maternal supportive and negative responses to child negative emotion, it is important to understand the factors that predict this aspect of mothers' emotion socialization. Eisenberg (1998; 1998) theorized effects of child, parent, cultural, and contextual factors. However, there has been limited work in empirically testing the exogenous predictors of maternal supportive and negative responses to child negative emotion, with existing studies generally emphasizing context predictors such as home chaos

and marital dissatisfaction (Nelson, O'Brien, Blankson, Calkins, & Keane, 2009; Premo & Kiel, 2016; Valiente, Lemery-Chalfant, & Reiser, 2007) or focusing on a more limited set of factors.

Child characteristics.

Research indicates that temperament may influence socialization experiences such as parenting (Kiff et al., 2011), and may predict parents' ERSBs. Temperament is defined as physiologically-based individual differences in reactivity and self-regulation (Rothbart 1989). Negative reactivity includes the arousal of or proneness to fear and frustration (Rothbart, 1989; Rothbart & Bates, 1998). Self-regulation includes processes that modulate reactivity to facilitate or inhibit affective responses, including attention and inhibitory control (Goldsmith & Rothbart, 1991), which together are often referred to as executive control. Executive control involves the ability to shift attention from irrelevant or distracting stimuli, focus on relevant stimuli, and inhibit an undesired or dominant response to produce a preferred or correct non-dominant response, thereby facilitating the regulation of attention, emotions and behavior to match the demands of a situation (Rothbart & Bates, 2006).

There is a sparse, though suggestive, literature that both reactive and self-regulatory components of child temperament relate to mothers' support for preschoolers' negative emotions (Eisenberg et al., 1999; Eisenberg, Spinrad, Taylor, & Liew, 2017) and that infant self-regulation predicts maternal support for negative emotions in the preschool period (Li, Pawan, & Stansbury, 2014).

Maternal characteristics.

Maternal depression may uniquely contribute an internal focus that competes with the ability to attend to children's negative emotions, a particularly negative view of emotions, or less availability to children for conversations related to emotions (Grieg & Howe, 2001). Although it has been theorized that maternal depression would predict maladaptive emotion socialization responses, only two studies were identified that examined maternal depression as a predictor of maternal supportive or negative responses to children's negative emotions in the preschool period, with both studies providing evidence that parent depressive symptoms are related to negative responses (Nelson et al., 2009; Premo & Kiel, 2016).

Similarly, although Eisenberg and others have noted that parenting styles or general-context parenting reflect constructs that are different from, and related to, ERSBs, there have been few studies of general context-parenting as a predictors of ERSB in mother-preschooler dyads. In older children, authoritative parenting was positively related to support for children's negative emotions and negatively related to non-support for children's negative emotions, whereas authoritarian parenting shows the opposite association, all with small to medium effect sizes (Chan, Bowes, & Wyver, 2009). Examining parenting styles that collapse across affective and control dimensions as predictors of ERSBs may obscure unique effects of more specific parenting behaviors. For example, the affective dimensions of parenting behaviors, such as warmth and negativity, might impact the overall emotional climate of the parent-child relationship that in turn provides a reinforcing or negative context, respectively, for parents' responses to children's emotions. Parenting behaviors that

reflect control components of parenting, such as limit setting and scaffolding that are consistently applied across situations might establish a pattern of interaction that may be more likely to be maintained in emotionally charged situations. Therefore, in this study, we examined the affective quality of the parent-child relationship (positive affective quality) as well as scaffolding and limit setting parenting behaviors (positive structuring) as predictors of mothers' supportive or negative ERSBs.

Context effects.

In considering contextual factors that might predict maternal ERSBs, low income is a marker for the potential presence of a number of risk factors including negative life events, residential instability, family conflict and disorganization, and many factors that often cooccur within the context of continuous economic and social stress (Conger, Ge, Elder, Lorenz, & Simons, 1994). Parents living in low income contexts have been theorized to engage in unique types of emotion socialization behaviors (Chaplin, Casey, Sinha, & Mayes, 2010; O'Neal & Magai, 2005). However, emotion socialization research has tended to utilize relatively advantaged samples or exclusively low-income samples (Chaplin et al., 2010; Cunningham et al., 2009; Garner, Jones, & Miner, 1994), potentially obscuring the associations of income and emotion socialization across the income spectrum. Therefore, although it has been theorized that parents living in low-income contexts may be too overwhelmed to appraise children's negative emotions as an immediate demand or to appraise negative emotions such as sadness as a liability in low-income, inner city contexts (O'Neal & Magai, 2005), these relations require further study in samples representing the full range of income. Similarly, family process models of families living in low income contexts emphasize that factors such as maternal education can serve as a useful markers for other factors associated with socioeconomic risk (Brody & Flor, 1998). Educational experience may capture correlates such as home environment, nutrition, lack of access to/ knowledge of resources, and cognitive stimulation, when in-depth measures of family environments are not feasible (Hollomon, Dobbins, & Scott, 1998). A few studies have examined maternal education in relation to ERSBs, finding that support for negative emotions was positively associated with maternal education (Baker, Fenning, & Crnic, 2011; Cunningham et al., 2009). Taken together, although it has been established that child, parent, and context factors are relevant to emotion socialization processes, few studies have examined the effects of these potential influences in combination on maternal supportive and negative responses to children's negative emotions. This is a particular gap in the research literature given the proposed associations of ERSBs to children's emotion knowledge and consequent adjustment.

Emotion Knowledge

Core to emotion socialization is facilitating children's emotion knowledge, which includes awareness of and insight into their own emotions and the emotions of others. Although emotion knowledge is promotable (e.g. Ornaghi, Brockmeier, & Grazzani, 2014), there is evidence that relative levels of emotion knowledge are maintained over time (Pons & Harris, 2005). Therefore, it is important for researchers to understand the predictors of the early emerging emotion knowledge, which is nascent within the preschool period.

Child effects.

There is substantial evidence that emotionality and self-regulation contribute to children's social-emotional adjustment (Rothbart & Bates, 1998; Zentner & Bates, 2008). Despite a strong theoretical grounding for predicting an association of temperament with emotion knowledge (Denham, 1986, 2003), empirical support is mixed (Bennett, Bendersky, & Lewis, 2005; Cole, Dennis, Smith-Simon, & Cohen, 2009; Denham, 1986; Denham, Bassett, Zinsser, & Wyatt, 2014; Denham et al., 2014; Garner & Power, 1996). One study that examined this association found relations not on the zero-order level, but when controlling for other variables (Giesbrecht, Miller, & Müller, 2010), and another found first graders' negative emotionality did not predict concurrent levels of emotion knowledge (Fine, Izard, & Trentacosta, 2006). However, negative emotionality was a significant predictor of slower growth in emotion knowledge between first and fifth grades (Fine et al., 2006). This finding raises the possibility that negative emotionality is central to emotion socialization in that it may hamper subsequent growth in emotion knowledge.

The evidence supporting an association between self-regulation and emotion knowledge during the preschool period is robust (Denham, Bassett, Brown, Way, & Steed, 2015; Denham et al., 2012; Fine et al., 2006; LaBounty, Bosse, Savicki, King, & Eisenstat, 2017; Laible, 2004; Leerkes, Paradise, O'Brien, Calkins, & Lange, 2008; Schultz et al., 2004; Verron & Teglasi, 2018). Self-regulation affords children opportunities for enhancing their emotion knowledge through sustained social interactions, their regulated emotional reactions, and facilitates perspective taking and information processing. One study found children's emotion knowledge to mediate the relation of temperament with social competence (Verron & Teglasi, 2018).

Parent effects.

The affective quality of the parent-child relationship and parental structuring or control behaviors are frequently identified as important dimensions of parenting (e.g. Grusec, 2002) and are consistently found to relate to children's externalizing and internalizing problems (Galambos, Barker, & Almeida, 2003). On balance, affective dimensions of parenting, specifically higher maternal warmth and lower levels of anger and sadness expressed towards the child, are related to greater emotion knowledge in preschoolers (Camras et al., 1990; Denham, Zoller, & Couchoud, 1994), although some studies do not find evidence of this association (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991). Fewer studies have examined the relations of structuring or control dimensions of parenting on children's emotion knowledge, with existing studies generally relying on maternal self-report of punitive strategies (for exception, see Dunn et al., 1991). These studies do not support an association between structuring dimensions of parenting and emotion knowledge (Garner et al., 1994; Sullivan, Carmody, & Lewis, 2010), and suggest that perhaps affective dimensions of parenting are more relevant to the socialization of children's emotion knowledge. Observational studies and studies that examine a broader range of structuring strategies (e.g. limit setting, scaffolding) are needed to clarify potentially unique effects of general-context affective versus structuring dimensions of parenting on children's emotion knowledge.

ERSBs as Mediators of the Effects of Child, Parent and Contextual Factors on Emotion Knowledge and Adjustment

Taken together, the model of emotion socialization situates child, maternal, and contextual variables as predictors of ERSBs, with maternal ERSBs, in turn, putatively mediating the effects of predictors on emotion knowledge (Garner et al., 1994). Whereas maternal acceptance of emotions relates to some aspects of emotion knowledge (Denham & Kochanoff, 2002; Dunn et al., 1991; Warren & Stifter, 2008), discouragement of negative emotions relates to more limited emotion knowledge (Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997; Garner et al., 1994; Warren & Stifter, 2008). However, we were unable to identify comprehensive tests of ERSBs as mediators of the relations of child, parent and context predictors and children's subsequent emotion knowledge and adjustment. One study of older children found ERSBs to mediate the relations of maternal emotion dysregulation and child emotion regulation (Morelen, Shaffer, & Suveg, 2016), but further tests of mediation by ERSBs within comprehensive models of emotion socialization are clearly warranted.

Children's emotion knowledge is theorized to mediate the relations of child, parent, contextual and ERSB factors on children's adjustment. Children's knowledge of emotions is closely related to their adjustment. (Harris, de Rosnay, & Pons, 2016; Trentacosta & Fine, 2010). Teachers rate children high on emotion knowledge as being more socially competent (Cassidy, Werner, Rourke, Zubernis, & Balaraman, 2003) and less aggressive (Schultz, Izard, & Bear, 2004), whereas difficulty with emotion knowledge is associated with poor social-emotional adjustment, including lower peer likability (Denham & Holt, 1993). When preschoolers can identify others' feelings, they may respond with empathy. In contrast, preschoolers who struggle to understand others' emotions may misinterpret peers actions and feelings or even their own feelings, and therefore are may be more likely to respond with aggression or antisocial responses (Denham, Bassett, Brown, Way, & Steed, 2015). As previously noted, child temperament, maternal characteristics such as depressive symptoms, maternal parenting, be it in the general-context or in the context of negative emotions, and context all predict children's emotional adjustment spanning social competence to adjustment problems. These factors may ultimately impact children's adjustment through emotion knowledge. However, there are few tests of these mediating effects. As a notable exception, emotional knowledge mediated the relation between caregivers' emotional socialization and boys' internalizing behaviors and between caregivers' emotional socialization and girls' social skills in a small study of at-risk African American youth (Cunningham et al., 2009). Again, tests of the comprehensive model of emotion socialization and the pathways of these effects are needed.

Child Sex Differences in Proposed Associations

Child sex is potentially relevant to numerous aspects of children's socialization, emotion knowledge, and ultimate emotional well-being. There is mixed support that child sex correlates with parental emotion socialization behaviors (Chaplin et al., 2010; Eisenberg, Fabes, & Murphy, 1996). Parents may be more supportive of emotions in their daughters and

have more negative responses to emotional displays in their sons (see Brody & Hall, 2000; Klimes-Dougan et al., 2007). Perhaps as a consequence of these socialization experiences, girls are often observed to have superior emotion knowledge (see Cunningham et al., 2009). Few studies within the emotion socialization literature have examined child sex as contributing to differential emotion socialization, representing a direction for further research.

This Study

This study sought to extend existing studies linking maternal-child-and context characteristics with children's emotion knowledge and adjustment in a sample of preschool-age children. This study was unique in testing a comprehensive model of emotion-socialization, testing child temperament, maternal depressive symptoms, general context parenting behaviors, and socioeconomic context as predictors of maternal support for and negative responses to negative emotions. In addition, maternal responses to child negative emotions were tested as predictors of children's emotion knowledge, adjustment problems, and social competence. ERSBs were examined as putative mediators between predictors and children's emotion knowledge and adjustment, and children's emotion knowledge was tested as a mediator accounting for effects on children's adjustment. These relations were examined using a longitudinal design, which facilitates the study of a developmental process over cross-sectional models. The sample included families representing a full range of income rather than a sample with restricted income range, allowing a robust examination of the effects of income. Based on the socialization of emotion model (Eisenberg, Cumberland, et al., 1998; Eisenberg, Spinrad, et al., 1998), we predicted that child temperament, maternal depression, general-context parenting, and socioeconomic context would predict maternal supportive and negative responses to negative emotions and children's emotion knowledge. Based on the theoretical model and prior research, we predicted that higher child self-regulation, greater maternal supportive responses, and lower negative responses to children's negative emotions would predict higher children's emotion knowledge and better adjustment. Given the mixed support for the role of reactive aspects of temperament on emotion knowledge, we made no specific prediction for these relations. We predicted that maternal depressive symptoms have unique effects above general-context parenting in that they would predict lower supportive responses and higher negative responses to children's negative emotions. Based on prior literature, we predicted that positive affective quality in general-context parenting would predict children's emotion knowledge and adjustment, and explored the role of positive structuring in parenting on these outcomes. Given their limited prior study, we made no predictions regarding the relations of socioeconomic risk on ERSBs. We tested maternal supportive and negative responses to children's negative emotions and children's emotion knowledge as mediators of the effects of child, mother and contextual factors on adjustment outcomes and explored child sex differences in observed relations.

Method

Participants

Participants were a community-based sample of 306 children and their mothers. They were assessed at 4 time points each separated by 9 months when children were 36–40 (T1), 45–49 (T2), 54–58 (T3), and 63–67 (T4) months. Families were recruited from a university hospital subject pool, preschools, co-ops, and daycares. The sample represents the demographic characteristics of the urban area surrounding the university in the Pacific Northwest. Children with developmental disabilities and families not fluent in English were excluded from the study to ensure adequate comprehension of the procedures. A female primary caregiver was required to participate. At T1 the sample consisted of 50% girls, 9% African Americans, 3% Asian Americans, 2% Native Americans, 10% Latino or Hispanic, 64% European Americans, and 12% children with other or multiple ethnic or racial backgrounds. The sample over-represented families in poverty and low income, with 29% of the sample at or near poverty (at or below 150% of the federal poverty threshold), 28% low income (below the local median income of \$58K), 25% middle income (above the median income to \$100K), and 18% upper income (above \$100K). Attrition was low with 95% of participants remaining at T2-T3.

There was complete data on 98% of the sample for T1 maternal depression, 97% of the sample for T1 temperament variables, and 94% of the sample for T1 observational ratings of parenting. For T2 emotion socialization variables, data were available for 94% of the sample, and for T3 emotion knowledge, data were available for 93% of the sample. At T4, teacher report of adjustment was available for 76% of the sample. Comparisons of participants missing no data with those missing any data on any variable at any time point indicated no significant differences.

Procedures

Families were assessed in offices on a university campus. The primary aim of the larger study was to investigate the relations of income, adversity and parenting with children's developing self-regulation and adjustment. With approval by the Human Subjects Institutional Review Board at the University of Washington (Approval #32596, "Low Income, Family Disruption, and the Development of Effortful Control"), informed parental consent and child assent were obtained from all participants included in the study prior to data collection. Children completed neuropsychological measures of executive control and observed temperament tasks while mothers completed questionnaire measures of demographics, maternal depressive symptoms and ERSBs in a separate room. Mothers and their child engaged in parent-child interaction tasks. Children's teachers were sent brief adjustment questionnaires. Families received \$70 for their first assessment and compensation increased by \$20 for each subsequent assessment.

Measures

Socioeconomic Context.—Mothers reported on household income from all sources on a 14-point Likert scale that provided a fine-grained breakdown of income at the lower levels, facilitating identification of families at the federal poverty cutoff using an income-to-needs

ratio (e.g., 1 = \$14,570 or less, 2 = \$14,571-\$18,310, 3 = \$18,311–22,050, etc.). The 14-point variable representing the full range of income was used for analyses ($M = 8.75$ [\approx \$38-\$39K], $SD = 3.93$, $Range = 1.00$ [\$14,570 or less] – 14.00 [above \$150K]). Mothers reported their highest level of education obtained on a 10-point Likert scale (e.g. 1 = Less than 8th grade, 2 = 8th grade, 3 = Some high school, 4 = High school graduate, etc.). The full range of maternal education was observed in the sample ($M = 6.64$, $SD = 1.77$).

Temperament negative reactivity and executive control.—At T1, negative reactivity and executive control were assessed using observational and performance ratings on neurocognitive measures. For a detailed description of the construct, please see Lengua et al., 2014. Briefly, attention regulation (focusing and shifting) was assessed using the NEPSY-II auditory and visual attention subscales (Korkman, Kirk, & Kemp, 2007). Cognitive inhibitory control was assessed using the Inhibition task on the NEPSY-II and Day/Night (Gerstadt, Hong, & Diamond, 1994). The Dimensional Change Card Sort (Zelazo, Muller, Frye, & Marcovitch, 2003) was used to assess cognitive flexibility and set-shifting. Behavioral inhibitory control was measured using Bear-Dragon (Kochanska, Murray, Jacques, Koenig, & Vandegest, 1996). Finally, Head, Toes, Knees, Shoulders (HTKS) was utilized as a measure that integrates attention and inhibitory control (Ponitz et al., 2008). Measure scores were the proportion of the score across items to the total possible score. From these measures, an index of executive control was created by computing the mean of the proportion scores of the individual tasks ($\alpha = 0.67$, $ICC = 0.83$).

Temperamental reactivity was assessed by two observed measures adapted from the Laboratory Temperament Assessment Battery: Preschool Version (Goldsmith, Reilly, Lemery, Longley, & Prescott, 1999). Child frustration reactivity was measured by observing children's behavioral responses to the Transparent Box Task ($ICC = 0.79$), and child fear reactivity was measured based on the child's behavioral responses to a toy spider that was triggered to jump when touched ($ICC = 0.97$).

Maternal depression.—At T1, mothers reported on their depressive symptoms over the previous month using the 20-item Center for Epidemiological Studies–Depression Scale (CESD; Radloff, 1977). This questionnaire was designed to measure depressive symptoms in the general population. Participants indicated whether each symptom was present on a scale of 0 (rarely/never) to 3 (most of the time), and the items were summed for a total score at each time point. The CES-D has demonstrated adequate reliability and validity, and a factor structure that is similar across a wide variety of demographic characteristics in the general population (Radloff, 1977). The alpha in the current study was .88.

Parenting.—At T1 mothers and children engaged in 4 activities (7 minutes child directed play, 7 minutes mom directed play, 7 minutes instructional activity, 3 minutes clean-up; Kerig & Lindahl, 2000). Warmth, negativity, limit setting, and scaffolding were coded in 1-minute epochs for all segments, and then each dimension was averaged across epochs and across segments. Parenting was coded from videotapes by advanced undergraduates using a coding system that was adapted from established coding systems: the System for Coding Interactions and Family Functioning (SCIFF; Lindahl & Malik, 2000), the Parenting Style Ratings Manual (Cowan & Cowan, 1992) and the Parental Warmth and Control Scale—

Revised (Rubin & Cheah, 2000), and used previously by this research team (e.g. Lengua et al., 2014). All behaviors were rated on 6-point scales (0=absent/lowest, 5=highest). Warmth captured the frequency and level of behavioral and verbal expressions of happiness, comfort, connection, and the quantity of verbal and non-verbal engagement. Negativity assessed the negative tone or tension expressed by the mother and included verbal and non-verbal expressions of irritation or frustration with the child that were harsh and critical that were not in specific response to children's emotions. Warmth and negativity (reversed scored) were correlated .24 ($p < .001$) and were combined into a measure of affective quality of the parent-child relationship. Limit setting assessed mothers' clarity, consistency, and follow-through of directives when children were noncompliant, oppositional, or disruptive. Scaffolding was a combination of guidance/structuring, encouragement of autonomy, and low negative or intrusive control. Limit setting and scaffolding were correlated .42 and were combined into a measure of positive structuring. Inter-rater reliability was assessed by independent recoding of 20% of the interactions. The intra-class correlations (ICCs) were: positive affective quality, ICC = .72; positive structuring, ICC = .64. The lower reliability for positive structuring can in part be understood by the fact that limit setting was coded contingent on mothers setting a limit / child non-compliance. 94% of mothers were observed to engage in some limit setting, but these observations were based on fewer cases per subject.

Maternal responses to negative emotions.—At T1 and T2, mothers reported on their supportive (18-items) and negative (27-items) reactions to their children's emotional experiences of sadness, anger, and fear on the Emotion as a Child (EAC) questionnaire (Magai, 1996). Mothers reported how they typically responded to their children's emotions in the past month. Supportive response scores were the average of parental behaviors that encourage the expression of emotion, such as providing comfort, empathy, and problem solving (e.g. "Helped my child deal with the issue."). Negative response scores were the average of parental behaviors ignoring a child's emotion expression, (e.g., "When my child was sad, I did not pay attention to her/his sadness."), overriding emotions, encompassing dismissive or distracting parental behaviors, (e.g. "When my child was sad, I bought her/him something s/he liked."), magnifying emotions, in which a parent responds with their own emotion, equal to and often greater than the child's original emotion such that a child who expresses sadness, for example, is faced with a parent who cries in response, (e.g. "When my child was sad, I got very upset."), and punishing emotions, which captures behaviors that discourage the expression of emotion, such as expressing disapproval or making fun of the child (e.g. "When my child was sad, I told my child that s/he was acting younger than her/his age."). Mothers reported on how typical their response was to their children's expression of each emotion (sadness, anger, and fear) on a 5-point Likert scale from 0 (not at all) to 4 (very often). The aggregated supportive and negative response to emotion scales were used based on their association with child adjustment and to reduce the overall number of variables included in the complex model being tested. Alpha was .86 for each the supportive and negative response scales. Construct validity has been shown by correlating the EAC responses with observed parental behaviors during interactions with their children (Hastings, Zahn-Waxler, & Duggal, 2001), as well as independent factor analysis.

Emotion knowledge was assessed at T3 using the Affect Knowledge Test (AKT; Denham, 1986). This task uses puppets depicting emotion faces. During the expressive subtest, children were asked to label each of the faces using an emotion word. In the receptive knowledge task, children were asked to point to each emotion face when named. During the situation subtest, the experimenter used puppets to describe age-appropriate scenarios to the child, with the puppet and experimenter displaying the intended emotions, and children being asked to identify the correct emotion. In each subtest, the children received two points for correctly identifying the emotion and one point for identifying the incorrect emotion with the same valence (positive or negative; e.g., sad instead of afraid). The complete task includes an additional task tailored to “nonstereotypical” responses unique to the child responses as reported by the child’s parent. Consistent with other research, and as supported by psychometric study, only the generic “stereotypical” vignettes were utilized (Sette, Bassett, Baumgartner, & Denham, 2015). Total scores were the proportion of correct answers ($\alpha = .66$). Validation studies find the measure to relate to other measures of affective perspective taking and to predict teachers’ reports of preschoolers’ social competence (Bassett, Denham, Mincic, & Graling, 2012; Dunn & Cutting, 1999).

Child adjustment.—Teachers rated child problem behaviors and social competence at T1 and T4 using the preschool teacher form of the Social Skills Rating System (SSRS; Gresham & Elliot, 1990). Teachers rated children’s externalizing problems (seven items), internalizing problems (six items), and hyperactivity (six items) for a total adjustment problems score (scale $\alpha = .90$). For social competence, teachers rated children’s cooperation (twelve items), assertiveness (eight items), and self-control (10 items; scale $\alpha = .91$). The score for both adjustment problems and social competence was the mean-weighted sum of the scale items.

Results

Analytic Plan

Path models were tested to examine the relations of child, mother and contextual factors with ERSBs, emotion knowledge, and adjustment outcomes including social-emotional competence and adjustment problems. Controlling for child sex and T1 ERSBs, child temperament, maternal depressive symptoms, maternal general context parenting, and socioeconomic context were tested as predictors of ERSBs. In addition, controlling for child sex, temperament, maternal depression, general context parenting, and ERSBs, were tested as predictors of children’s emotion knowledge, and in turn, as predictors of children’s social competence and adjustment problems. Indirect effects were examined to test whether ERSBs mediated the effects of SES, maternal depression, temperament and parenting behaviors on emotion knowledge and adjustment, as well as to test whether emotion knowledge mediated their effects on children’s adjustment. To assess for potential differences in the pattern of relations across child sex, cross-group path models in which all parameters were free to differ across child sex were compared to models in which all paths were constrained to be equal across sex. Models were tested in Mplus 6.0 (Muthén & Muthén, 2010) using Full Information Maximum Likelihood Estimation (FIML). Our examination of bias in missing data (see above) suggested that the pattern of missing data introduced minimal bias and

aligned with the assumptions of FIML. Therefore, families with any data were included in the analyses for a sample size of 306. Hypothesized paths are depicted in Figure 1. Only significant paths are depicted in Figure 2, however, all paths (including non-significant paths) were retained in the final model and are reported in Table 4.

Correlations

Associations among study predictors were examined to assess the degree of overlap among predictors (Table 2). Associations were generally small to moderate in magnitude indicating the potential for unique contributions to ERSBs. Next, associations of study predictors with ERSBs were examined (Table 3). All of the predictors were related to negative responses to negative emotions, in the expected directions, except negative emotionality which was unrelated. In addition, associations of predictors with emotion knowledge were examined. Lower depressive symptoms and higher executive control with higher emotion knowledge, indicating that these were plausible predictors of emotion knowledge. Finally, emotion knowledge was correlated with both higher social competence and lower adjustment problems.

Predictors of maternal supportive and negative responses to child negative emotion

See Table 4 for results of the test of the path model. The overall model demonstrated adequate fit to the data ($\chi^2(30) = 50.03, p = 0.01; CFI = .97; RMSEA = .05$). See Figure 2 for depiction of significant paths. In testing the model of socialization of emotion, no child, maternal, and contextual factors predicted maternal supportive and negative responses to children's negative emotions after controlling for T1 levels of these variables, which showed substantial stability.

Predictors of children's emotion knowledge

Children's executive control predicted greater emotion knowledge whereas maternal depressive symptoms predicted lower emotion knowledge. General context parenting, maternal supportive and negative responses to children's negative emotions, and children's temperamental negative reactivity did not predict emotion knowledge.

Child adjustment

Controlling for T1 level of social competence, being a girl, maternal positive affective quality, and greater emotion knowledge predicted higher social competence at T4. Controlling for T1 adjustment problems, boys had higher T4 adjustment problems, and maternal supportive responses to negative emotions, maternal positive affective quality, and children's emotion knowledge predicted lower adjustment problems.

Test of ERSBS and Emotion Knowledge as Mediators of Child, Maternal and Contextual Predictors of Adjustment

Tests of indirect effects were used to determine whether maternal supportive or negative responses to children's negative emotions or emotion knowledge mediated the effects of child temperament, depressive symptoms, T1 general context parenting and ERSBs, and socioeconomic risk on children's adjustment. Tests of indirect effects of predictors on

emotion knowledge or adjustment through ERSBs were nonsignificant. Indirect effects of executive control on social competence ($b = 3.63$, $SE = 1.39$, $\beta = .05$, $p = .008$; c' path $b = -0.28$, $SE = 4.59$, $\beta = -0.004$, $p = ns$) and adjustment problems ($b = -2.32$, $SE = 0.90$, $\beta = -.05$, $p = .01$; c' path $b = 4.95$, $SE = 3.14$, $\beta = 0.11$, $p = ns$) through emotion knowledge were significant, whereas the remaining indirect effects for the other predictors through emotion knowledge were nonsignificant.

Tests of Differences in Relations by Child Sex

To assess for potential differences in relations based on child sex, cross-group path modelling was used, with χ^2 difference test indicating differences in model with paths free to vary across sex compared to the same model with all paths constrained to be equal across groups. Tests of the overall model did not converge. Therefore, cross-group differences were tested sequentially for component parts of the model. Tests for sex differences in the relations of T1 predictors with ERSBs were nonsignificant for both supportive and negative responses to children's negative emotions (χ^2 -difference (7) = 3.966, $p = 0.78$ and χ^2 -difference (7) = 3.744, $p = 0.81$, respectively). This pattern of non-significant χ^2 differences was repeated for models comparing constrained and unconstrained paths predicting emotion understanding (χ^2 -difference (7) = 2.74, $p = 0.91$), adjustment problems (χ^2 -difference (9) = 6.53, $p = 0.69$, and social competence (χ^2 -difference (9) = 6.56, $p = 0.68$). Finally, Box's M, a test which provides a conservative test of any sex differences in the covariance matrix, was non-significant, further supporting no sex-differences in observed relations (*Box's M*(120, 24,335) = 165.29, $p = .16$).

Discussion

The socialization of emotion is a complex developmental process that may be influenced by numerous factors, including child characteristics, maternal parenting behaviors, maternal emotional well-being or depressive symptoms, and contextual factors. Although Eisenberg (1998) offered a comprehensive model of the socialization of children's emotion knowledge and competence, few studies have examined a comprehensive set of variables suggested by the model or putative mechanisms of the socialization process. The present study tested a comprehensive set of predictors of emotion-socialization, examining child, parent, and contextual predictors of maternal supportive and negative responses to negative emotions, as well as parent and child predictors of children's emotion knowledge and adjustment. There was support for child and parent factors predicting children's emotion knowledge and adjustment. In addition, children's emotion knowledge may be a mediator through which the predictors operate on children's adjustment.

Maternal Emotion Related Socialization Behaviors

Child temperament, maternal characteristics, and context are often discussed as central to children's emotion socialization processes. However, these factors did not predict later ERSBs when controlling for prior levels of ERSBs, which were highly stable. There were in fact significant correlations of ERSBs with maternal parenting behaviors, maternal depression, and socioeconomic context despite these variables not predicting changes in ERSBs. This pattern of findings may reflect that children and parents have already

established patterns of interacting around emotions by the preschool period, highlighting the need for additional research on the process of socializing emotion in earlier periods of development, and for the consideration of a broader range of factors that could predict change in these processes. It is valuable to note that each of the predictors and ERSBs contributed to either child emotion knowledge, social competence or adjustment problems above the effects of the other variables in a conservative test of multiple predictors of these outcomes. This suggests that each variable contributes, sometimes additively, to children's adjustment despite the lack of prediction of changes in ERSBs.

Emotion Knowledge

Both maternal and child factors predicted children's emotion knowledge. Greater depressive symptoms predicted less emotion knowledge in children. Depressive symptoms may contribute to emotion dysregulation in children, reducing their opportunity to learn from their emotional experiences. Alternatively, exposure to a limited range of maternal emotion, or the distorted negative bias and internal preoccupation often associated with high depressive symptoms may disrupt a child's understanding of how emotions are related to external situations, a process core to emotion knowledge (Harris, 1994).

Emotion knowledge was expected to be related to individual child characteristics such as temperament. In line with prior research (Fine et al., 2006), the current study found children's executive control, and not reactivity, to be most salient to children's emotion knowledge within the preschool period. Preschooler's capacity to inhibit prepotent responses and focus and shift attention may afford them greater opportunities to attend to and observe their own emotions and the emotions of others. Inconsistent with prior evidence, children's reactivity did not predict children's emotion knowledge. Given that the emotion knowledge task occurs in an emotionally neutral context, it is possible that the task did not capture deficits in emotion knowledge which would be evident when a highly fearful or frustrated child is emotionally aroused. Further, Fine (2006) found that temperamental negative reactivity predicted less growth in emotion knowledge over time. Therefore, future studies should continue to include the reactive component of temperament in the study of children's emotion socialization and consider its role across development.

Contrary to prediction, emotion knowledge was not predicted by maternal general context parenting or ERSBs. It is possible that controlling for general-context parenting encompasses some of the variance in supportive and negative responses to children's negative emotions and vice versa, suggesting that the differences and commonalities in parenting behaviors and emotion socialization behaviors might need more attention and articulation. However, as observed in the current study, general context parenting and maternal supportive and negative responses to children's negative emotions were not so highly correlated to preclude both contributing to children's emotion knowledge. It should also be noted that the current study examines a somewhat narrow aspect of maternal emotion-related socialization behaviors: supportive and negative responses to children's negative emotions, with a measure that has been utilized in low-income, albeit older samples of children and families (O'Neal & Magai, 2005). Future study of varied ERSBs such as

maternal discussion of emotion and family emotional expressiveness using preschool-sensitive measures is warranted.

Child Adjustment

Eisenberg's model of the socialization of emotion weaves together child, parent, and context factors to predict not only a child's learning or knowledge of emotion, but ultimately, the expression of emotion-related adjustment. In this study, children's emotion knowledge, the variable most proximal to adjustment, significantly predicted both children's social competence and their adjustment problems. Emotion knowledge may increase children's propensity to choose behaviors that evoke positive feelings (in themselves and others) and dissuade them from engaging in problem behaviors vis-à-vis the anticipation of negative feelings (in themselves and others). In support of the process model, there were significant indirect effects of temperamental executive control, through children's emotion understanding, on both social competence and adjustment problems. This finding points not only to an important mechanism of the socialization of emotion, but also to the potential utility of early intervention for young children at risk for deficits or delays in the emergence of emotion knowledge (e.g. those low in temperamental executive control or whose mothers demonstrate high levels of depressive symptoms). Of note, the current study is limited in not assessing and therefore not controlling for levels of emotion knowledge at previous points in development, necessitating additional study of this potential mechanism of emotion socialization.

Beyond emotion knowledge, only maternal factors predicted adjustment. Specifically, greater positive affective quality predicted higher social competence. Similarly, maternal positive affective quality as well as maternal supportive responses to children's negative emotions predicted lower adjustment problems. Parental acceptance, allowance, and willingness to engage with children's negative emotions are theorized to afford children the space to explore emotional events and their meanings, ultimately facilitating not only emotion knowledge, but emotional adjustment (Eisenberg, Cumberland, et al., 1998).

There is mixed support that child sex correlates with emotion socialization behaviors (Eisenberg et al., 1996). In the present study, sex was unrelated to ERSBs and observed patterns of relations did not appear to vary as a function of child sex. It is possible that sex differences in the socialization process are contingent on the specific negative emotion being expressed. For example, more supportive and fewer punitive responses to have been observed of boys' anger relative to girls' (Chaplin et al., 2010) and adolescent boys have reported being more punished than girls for displays of sadness (Garside & Klimes-Dougan, 2002). These findings highlight the potential utility of further study on discrete emotions.

Parent sex may interact with child sex in the socialization of emotion (Garside & Klimes-Dougan, 2002; Wong et al., 2009). Parents, especially mothers, may be more supportive of emotions in their daughters and fathers may have more negative responses to emotional displays in their sons (see Brody & Hall, 2000). The study is limited in studying only mothers and not their partners. There is good theory and evidence that mothers and fathers both contribute uniquely and differently to their child's emotion socialization, and it is myopic to consider emotion socialization "comprehensively" and exclude the role of fathers.

Broadly, the findings of this study highlight the need to elucidate what child, family, and context variables contribute to and account for socialization of emotion across development. This study takes an important step by modeling child, maternal and contextual predictors of emotion socialization, finding, for example, that maternal and child factors predict children's emotion knowledge. This study also contributes to a limited knowledge on mechanisms of socialization, finding that children's emotion knowledge is a pathway through which predictors influence children's social-emotional wellness. Findings support the potential utility of two generation interventions that simultaneously integrate services designed to improve maternal well-being and child development services that can promote parenting or child education. Child development services could target general context and emotion-related parenting behaviors or support children's early childhood education on emotion knowledge. In doing so, these two generation interventions would marry our understanding of the predictors and mechanisms of children's emotion socialization and emotional health.

Acknowledgments

This study was supported by grants awarded to Liliana Lengua from the National Institutes of Child Health and Human Development (R01HD054465). The authors thank the families who participated in this research.

References

- Baker JK, Fenning RM, & Crnic KA (2011). Emotion socialization by mothers and fathers: coherence among behaviors and associations with parent attitudes and children's social competence. *Social Development*, 20(2), 412–430. [PubMed: 21532915]
- Bassett HH, Denham S, Mincic M, & Graling K. (2012). The structure of preschoolers' emotion knowledge: Model equivalence and validity using a structural equation modeling approach. *Early Education and Development*, 23(3), 259–279.
- Bennett DS, Bendersky M, & Lewis M. (2005). Antecedents of emotion knowledge: Predictors of individual differences in children. *Cognition & Emotion*, 19, 375–396.
- Binion G, & Zalewski M. (2018). Maternal emotion dysregulation and the functional organization of preschoolers' emotional expressions and regulatory behaviors. *Emotion*, 18, 386–399. [PubMed: 28493749]
- Brody GH, & Flor DL (1998). Maternal resources, parenting practices, and child competence in rural, single-parent African American families. *Child Dev*, 69, 803. [PubMed: 9680686]
- Brody LR, & Hall JA (2000). Gender, emotion, and expression In Lewis M. & Haviland-Jones JM (Eds.), *Handbook of Emotions* (2nd ed, pp. 338–349). New York: Guilford Press.
- Camras LA, Ribordy S, Hill J, Martino S, Sachs V, Spaccarelli S, & Stefani R. (1990). Maternal facial behavior and the recognition and production of emotional expression by maltreated and nonmaltreated children. *Developmental Psychology*, 26(2), 304.
- Cassidy KW, Werner RS, Rourke M, Zuberis LS, & Balaraman G. (2003). The relationship between psychological understanding and positive social emotions. *Social Development*, 12, 198–221. 10.1111/sode.2003.12.issue-2
- Chan SM, Bowes J, & Wyver S. (2009). Parenting Style as a Context for Emotion Socialization. *Early Education & Development*, 20(4), 631–656.
- Chaplin TM, Casey J, Sinha R, & Mayes LC (2010). Gender differences in caregiver emotion socialization of low-income toddlers. *New Directions for Child and Adolescent Development*, 128, 11–27. 10.1002/cd.266
- Cole PM, Dennis TA, Smith-Simon KE, & Cohen LH (2009). Preschoolers' emotion regulation strategy understanding: Relations with emotion socialization and child self-regulation. *Social Development*, 18, 324–352.

- Collins LM, Schafer JL, & Kam C-M (2001). A comparison of inclusive and restrictive strategies in modern missing data procedures. *Psychological Methods*, 6(4), 330–351. [PubMed: 11778676]
- Conger RD, Ge X, Elder GH, Lorenz FO, & Simons RL (1994). Economic Stress, Coercive Family Process, and Developmental Problems of Adolescents. *Child Development*, 65(2), 541–561. 10.1111/j.1467-8624.1994.tb00768.x [PubMed: 8013239]
- Cowan P, & Cowan C. (1992). *Parenting style ratings: School children and their families project*. Berkeley: University of California.
- Cunningham JN, Kliewer W, & Garner PW (2009). Emotion socialization, child emotion understanding and regulation, and adjustment in urban African American families: Differential associations across gender. *Development and Psychopathology*, 21, 261. [PubMed: 19144233]
- Denham SA (1986). Social Cognition, Prosocial Behavior, and Emotion in Preschoolers: Contextual Validation. *Child Development*, 57(1), 194–201.
- Denham SA (2003). Social emotional learning, early childhood In *Encyclopedia of primary prevention and health promotion* (pp. 1009–1018). New York: Kluwer Academic/Plenum.
- Denham SA, Bassett HH, Brown C, Way E, & Steed J. (2015). “I Know How You Feel”: Preschoolers’ emotion knowledge contributes to early school success. *Journal of Early Childhood Research*, 13(3), 252–262. 10.1177/1476718X13497354
- Denham SA, Bassett HH, Zinsler K, & Wyatt TM (2014). How preschoolers’ social-emotional learning predicts their early school success: Developing theory-promoting, competency-based assessments. *Infant and Child Development*, 23(4), 426–454.
- Denham SA, & Holt RW (1993). Preschoolers’ likeability as a cause or consequence of their social behavior. *Developmental Psychology*, 29, 271–275.
- Denham SA, & Kochanoff AT (2002). Parental Contributions to Preschoolers’ Understanding of Emotion. *Marriage & Family Review*, 34(3–4), 311–343.
- Denham SA, Mitchell-Copeland J, Strandberg K, Auerbach S, & Blair K. (1997). Parental contributions to preschoolers’ emotional competence: Direct and indirect effects. *Motivation and Emotion*, 21(1), 65–86.
- Denham SA, Zoller D, & Couchoud EA (1994). Socialization of preschoolers’ emotion understanding. *Developmental Psychology*, 30(6), 928.
- Dunn J, & Cutting AL (1999). Understanding others and individual differences in friendship interactions in young children. *Social Development*, 8, 201–219.
- Dunn J, Brown J, Slomkowski C, Tesla C, & Youngblade L. (1991). Young children’s understanding of other people’s feelings and beliefs: Individual differences and their antecedents. *Child Development*, 62(6), 1352–1359. 10.2307/1130811 [PubMed: 1786720]
- Eisenberg N, Cumberland A, & Spinrad TL (1998). Parental Socialization of Emotion. *Psychological Inquiry*, 9(4), 241–273. 10.1207/s15327965pli0904_1 [PubMed: 16865170]
- Eisenberg N, Fabes RA, & Murphy BC (1996). Parents’ reactions to children’s negative emotions: Relations to children’s social competence and comforting behavior. *Child Development*, 67(3), 227–227.
- Eisenberg N, Fabes RA, Shepard SA, Guthrie IK, Murphy BC, & Reiser M. (1999). Parental reactions to children’s negative emotions: Longitudinal relations to quality of children’s social functioning. *Child Development*, 70(2), 513–534. [PubMed: 10218267]
- Eisenberg N, Spinrad TL, & Cumberland A. (1998). The Socialization of Emotion: Reply to Commentaries. *Psychological Inquiry*, 9(4), 317–333.
- Eisenberg N, Spinrad TL, Taylor ZE, & Liew J. (2017). Relations of Inhibition and Emotion-Related Parenting to Young Children’s Prosocial and Vicariously Induced Distress Behavior. *Child Development*. 10.1111/cdev.12934
- Fabes RA, Leonard SA, Kupanoff K, & Martin CL (2001). Parental coping with children’s negative emotions: Relations with children’s emotional and social responding. *Child Development*, 72(3), 907–920. [PubMed: 11405590]
- Fine SE, Izard CE, & Trentacosta CJ (2006). Emotion situation knowledge in elementary school: Models of longitudinal growth and preschool correlates. *Social Development*, 15(4), 730–751.

- Galambos NL, Barker ET, & Almeida DM (2003). Parents do matter: Trajectories of change in externalizing and internalizing problems in early adolescence. *Child Development*, 74(2), 578–594. 10.1111/1467-8624.7402017 [PubMed: 12705574]
- Garner PW, Jones DC, & Miner JL (1994). Social Competence among Low-Income Preschoolers: Emotion Socialization Practices and Social Cognitive Correlates. *Child Development*, 65(2), 622–633. 10.2307/1131405 [PubMed: 8013243]
- Garner PW, & Power TG (1996). Preschoolers' Emotional Control in the Disappointment Paradigm and Its Relation to Temperament, Emotional Knowledge, and Family Expressiveness. *Child Development*, 67(4), 1406–1417. 10.2307/1131708 [PubMed: 8890491]
- Garside RB, & Klimes-Dougan B. (2002). Socialization of discrete negative emotions: Gender differences and links with psychological distress. *Sex Roles*, 47(3–4), 115–128.
- Gerstadt CL, Hong YL, & Diamond A. (1994). The relationship between cognition and action: Performance of children 3.5–7 years old on a Stroop-like day-night test. *Cognition*, 53, 129–153. [PubMed: 7805351]
- Giesbrecht GF, Miller MR, & Müller U. (2010). The anger–distress model of temper tantrums: Associations with emotional reactivity and emotional competence. *Infant and Child Development*, 19(5), 478–497. 10.1002/icd.677
- Goldsmith HH, Reilly J, Lemery KS, Longley S, & Prescott A. (1999). The Laboratory Assessment Battery: Preschool Version (LAB-TAB). Madison: University of Wisconsin.
- Goldsmith HH, & Rothbart MK (1991). Contemporary instruments for assessing early temperament by questionnaire and in the laboratory In Strelau J. & Angleitner A. (Eds.), *Explorations in temperament: International perspectives on theory and measurement* (pp. 249–272). New York: Plenum.
- Gottman JM, & Katz LF (2002). Children's Emotional Reactions to Stressful Parent-Child Interactions. *Marriage & Family Review*, 34(3–4), 265–283.
- Gresham FM, & Elliot SN (1990). *Social Skills Rating System*. Circle Pines, MN: American Guidance Service.
- Grusec JE (2002). Parental socialization and children's acquisition of values In *Handbook of Parenting: Volume 5: Practical Issues in Parenting* (pp. 143–167).
- Harris P. (1994). The Child's understanding of emotion: Developmental change and the family environment. *Journal of Child Psychology and Psychiatry*, 35(1), 3–28. [PubMed: 8163629]
- Harris P, de Rosnay M, & Pons F. (2016). In Barrett LF, Lewis M, & Haviland-Jones JM (Eds.), *Understanding emotion* (Fourth Edition, pp. 293–306). New York: Guilford Press.
- Hastings PD, Zahn-Waxler C, & Duggal S. (2001). On paper and in person: Relating emotion socialization to expressed affect Presented at the 109th annual convention of the American Psychological Association, San Francisco, CA.
- Hollomon H, Dobbins D, & Scott K. (1998). The effects of biological and social risk factors on special education placement: Birth weight and maternal education as an example. *Research in Developmental Disabilities*, 19(3), 281–294. [PubMed: 9653804]
- Kerig PK, & Lindahl KM (Eds.). (2000). *Family Observational Coding Systems: Resources for Systemic Research*. Philadelphia, PA: Brunner/Mazel.
- Klimes-Dougan B, Ronsaville D, Wiggs EA, & Martinez PE (2006). Neuropsychological functioning in adolescent children of mothers with a history of Bipolar or Major Depressive Disorders. *Biological Psychiatry*, 60(9), 957–965. [PubMed: 16934765]
- Kochanska G, Murray KT, Jacques T, Koenig A, & Vandegeest K. (1996). Inhibitory control in young children and its role in emerging internalization. *Child Development*, 67, 490–507. [PubMed: 8625724]
- Korkman M, Kirk U, & Kemp S. (2007). *NEPSY-II: Clinical and interpretive manual*. San Antonio, TX: The Psychological Corporation.
- Lengua LJ, Kiff C, Moran L, Zalewski M, Thompson SF, Cortes R, & Ruberry EJ (2014). Parenting mediates the effects of income and cumulative risk on the development of effortful control. *Social Development*, 23, 631–649.

- Li I, Pawan C, & Stansbury K. (2014). Emerging effortful control in infancy and toddlerhood and maternal support: A child driven or parent driven model? *Infant Behavior and Development*, 37(2), 216–224. 10.1016/j.infbeh.2014.01.003 [PubMed: 24607991]
- Lindahl KM, & Malik N. (2000). The System for Coding Interactions and Family Functioning (SCIFF) In Kerig PK & Lindahl KM (Eds.), *Family Observational Coding Systems: Resources for Systemic Research* (pp. 77–92). Philadelphia, PA: Brunner/Mazel.
- Magai CM (1996). *Emotions as a child self-rating scale*. New York: Long Island University.
- Morelen D, Shaffer A, & Suveg C. (2016). Maternal emotion regulation: Links to emotion parenting and child emotion regulation. *Journal of Family Issues*, 37(13), 1891–1916.
- Muthén LK, & Muthén BO (2010). *Mplus User's Guide*, Sixth Edition. Los Angeles, CA: Múthen & Múthen.
- Nelson JA, O'Brien M, Blankson AN, Calkins SD, & Keane SP (2009). Family stress and parental responses to children's negative emotions: Tests of the spillover, crossover, and compensatory hypotheses. *Journal of Family Psychology*, 23(5), 671–679. [PubMed: 19803603]
- O'Neal CR, & Magai C. (2005). Do parents respond in different ways when children feel different emotions? The emotional context of parenting. *Development and Psychopathology*, 17(2), 467–487. 10.1017/S0954579405050224 [PubMed: 16761554]
- Ornaghi V, Brockmeier J, & Grazzani I. (2014). Enhancing social cognition by training children in emotion understanding: A primary school study. *Journal of Experimental Child Psychology*, 119, 26–39. 10.1016/j.jecp.2013.10.005 [PubMed: 24280639]
- Ponitz CEC, McClelland MM, Jewkes AM, Conner CM, Farris CL, & Morrison FJ (2008). Touch your toes! Developing a direct measure of behavioral regulation in early childhood. *Early Childhood Research Quarterly*, 23(2), 141–158.
- Pons F, & Harris P. (2005). Longitudinal change and longitudinal stability of individual differences in children's emotion understanding. *Cognition and Emotion*, 19, 1158–1174.
- Premo JE, & Kiel EJ (2016). Maternal depressive symptoms, toddler emotion regulation, and subsequent emotion socialization. *Journal of Family Psychology*, 30(2), 276–285. [PubMed: 26461486]
- Radloff LS (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1(3), 385–401.
- Root AK, & Stifter C. (2010). Temperament and maternal emotion socialization beliefs as predictors of early childhood social behavior in the laboratory and classroom. *Parenting, Science and Practice*, 10(4), 241–257. 10.1080/15295192.2010.492035
- Rothbart MK (1989). Temperament in childhood: A framework In Kohnstamm JE, Bates JE, & Rothbart MK (Eds.), *Temperament in Childhood* (pp. 59–73). New York: John Wiley & Sons Ltd.
- Rothbart MK, & Bates JE (1998). Temperament In Eisenberg N. (Ed.), *Handbook of Child Psychology* (Fifth Edition, Vol. 3, pp. 105–176). New York: Wiley.
- Rubin KH, & Cheah CSL (2000). *Parental warmth and control scale—revised*. University of Maryland.
- Schultz D, Izard CE, & Bear GG (2004). Children's emotion processing: Relations to emotionality and aggression. *Development and Psychopathology*, 16, 371–387. [PubMed: 15487601]
- Sette S, Bassett HH, Baumgartner E, & Denham SA (2015). Structure and validity of Affect Knowledge Test (AKT) in a sample of Italian preschoolers. *The Journal of Genetic Psychology*, 176(5), 330–347. 10.1080/00221325.2015.1075466 [PubMed: 26287657]
- Sullivan MW, Carmody DP, & Lewis M. (2010). How neglect and punitiveness influence emotion knowledge. *Child Psychiatry & Human Development*, 41(3), 285–298.
- Thompson RA, & Meyer S. (2007). Socialization of Emotion Regulation in the Family In *Handbook of Emotion Regulation* (pp. 249–268). New York, NY, US: Guilford Press.
- Trentacosta CJ, & Fine SE (2010). Emotions knowledge, social competence, and behavior problems in childhood and adolescence: A meta-analytic review. *Social Development*, 19, 1–29. 10.1111/sode.2010.19.issue-1 [PubMed: 21072259]
- Valiente C, Lemery-Chalfant K, & Reiser M. (2007). Pathways to problem behaviors: Chaotic homes, parent and child Effortful Control, and parenting. *Social Development*, 16(2), 249–267. 10.1111/j.1467-9507.2007.00383.x

- Verron H, & Teglas H. (2018). Indirect effects of temperament on social competence via emotion understanding. *Early Education and Development*, 29(5), 655–674.
- Warren HK, & Stifter CA (2008). Maternal emotion-related socialization and preschoolers' developing emotion self-awareness. *Social Development*, 17(2), 239–258.
- Wong MS, McElwain NL, & Halberstadt AG (2009). Parent, family, and child characteristics: Associations with mother-and father-reported emotion socialization practices. *Journal of Family Psychology*, 23(4), 452–463. [PubMed: 19685981]
- Zelazo PD, Muller U, Frye D, & Marcovitch S. (2003). The development of executive function in early childhood. *Monographs of Society for Research in Child Development*, 68(3), Serial No. 274.
- Zentner M, & Bates JE (2008). Child temperament: An integrative review of concepts, research programs, and measures. *International Journal of Developmental Science*, 2, 7–37. 10.3233/DEV-2008-21203

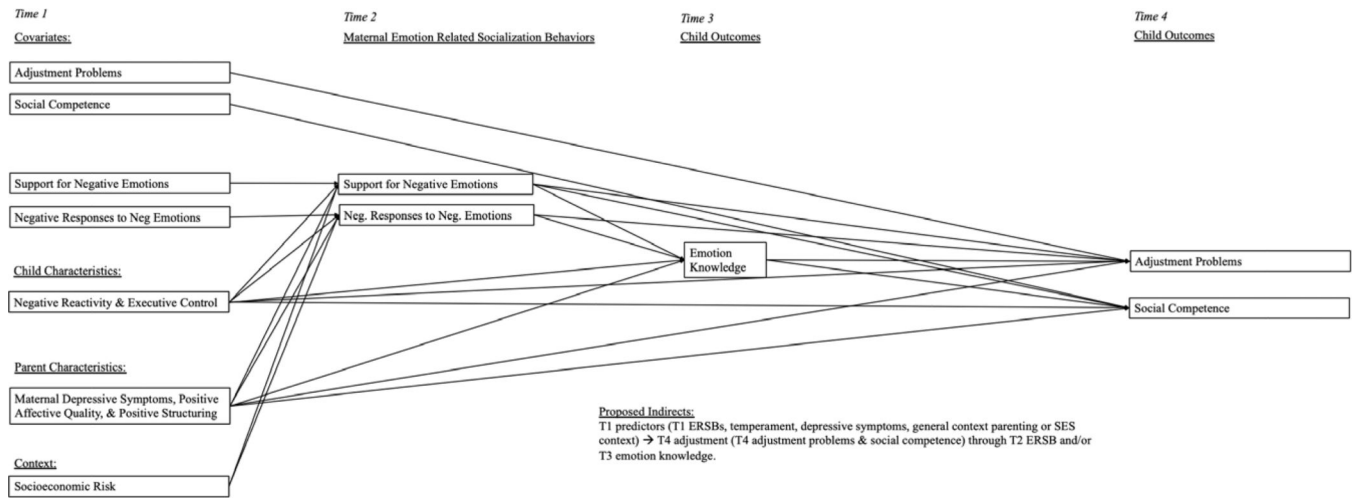


Figure 1. Conceptual model of preschooler’s emotion socialization incorporating maternal characteristics, child characteristics, context, and maternal emotion-related socialization behaviors
 Note: Child sex was covaried but not depicted. Variables were correlated within timepoint, but correlations not depicted.

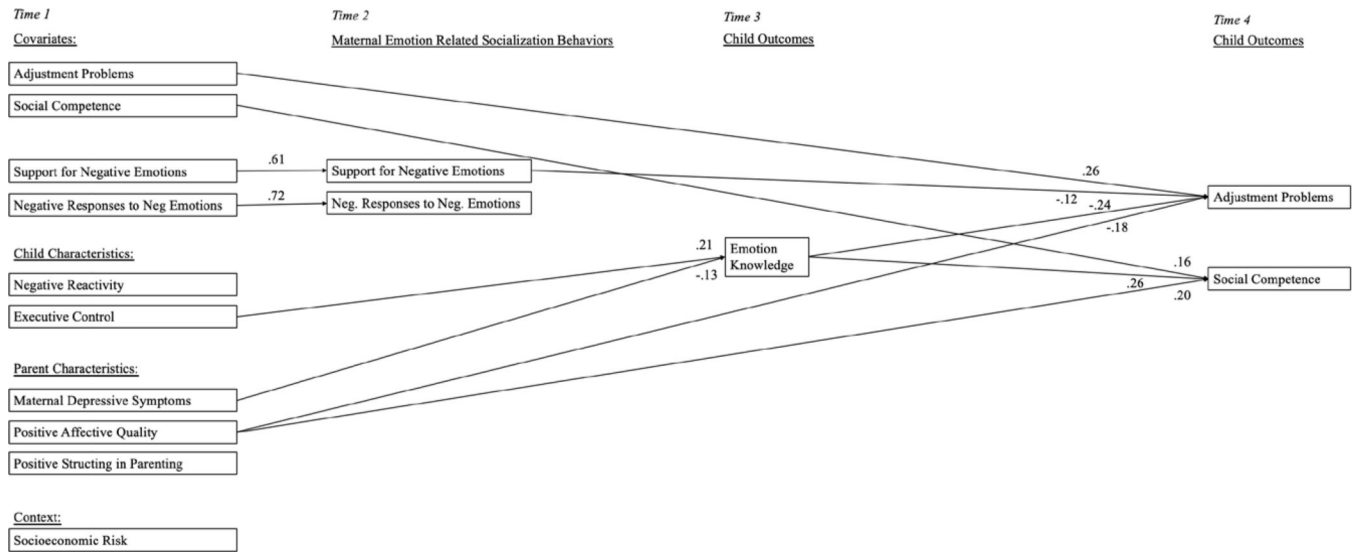


Figure 2. Significant standardized β coefficients from path model of child, maternal, and contextual predictors of maternal emotion socialization behaviors, child emotion knowledge, and adjustment. Only significant paths are depicted, although all proposed paths were retained in model tests. Note: Child sex was covaried, but its effects are not depicted.

Table 1

Descriptive Statistics for Study Variables

| | Mean | STD | MIN | MAX | Skewness | Kurtosis |
|----------------------------------|-------|-------|-------|-------|----------|----------|
| T1 SES Context | 0.64 | 0.20 | .07 | 1.00 | -.51 | -.51 |
| T1 Maternal Depression | 10.02 | 8.38 | .00 | 46.67 | 1.55 | 2.83 |
| T1 Child Neg. Emotionality | 0.32 | 0.17 | .01 | .81 | .40 | -.61 |
| T1 Child Executive Control | 0.29 | 0.15 | .00 | .77 | .66 | .18 |
| T1 Positive Affective Quality | 0.78 | 0.05 | .60 | .90 | -.75 | .86 |
| T1 Positive Structuring | 0.65 | 0.08 | .28 | .78 | -1.14 | 1.71 |
| T1 Maternal Supportive Responses | 59.49 | 6.58 | 37.00 | 72.00 | -.44 | .04 |
| T1 Maternal Negative Responses | 20.86 | 9.71 | .00 | 63.00 | .86 | 1.45 |
| T2 Maternal Supportive Responses | 77.03 | 7.26 | 38.00 | 90.00 | -.93 | 2.82 |
| T2 Maternal Negative Responses | 48.66 | 10.34 | 27.00 | 90.00 | .73 | .82 |
| T3 Child Emotion Knowledge | 0.82 | 0.19 | .00 | 1.00 | -1.10 | 1.02 |
| T1 Child Adjustment Problems | 11.56 | 6.29 | .00 | 30.00 | .53 | -.09 |
| T4 Child Adjustment Problems | 9.05 | 7.06 | .00 | 30.00 | .90 | .36 |
| T1 Child Social Competence | 37.38 | 8.74 | 12.69 | 56.40 | -.39 | -.02 |
| T4 Child Social Competence | 43.07 | 10.15 | 5.00 | 60.00 | -.89 | .75 |

Table 2

Correlations among Study T1 Predictors

| | SES Context | Child Sex | Mat Dep | NE | EC | Pos Affect | Pos Struct |
|--------------------------------------|-------------|-----------|----------|-------|----------|------------|------------|
| SES Context | - | -0.08 | -0.35*** | -0.02 | 0.23*** | 0.37*** | 0.43*** |
| Child Sex | | - | -0.01 | -0.04 | -0.08 | -0.03 | -0.08 |
| Maternal Depression | | | - | -0.02 | -0.15*** | -0.15*** | -0.24*** |
| Child Neg Emotionality | | | | - | -0.03 | -0.04 | 0.03 |
| Child Executive Control | | | | | - | 0.30*** | 0.28*** |
| T1 Positive Affective Quality | | | | | | - | 0.59*** |
| T1 Positive Structuring in Parenting | | | | | | | - |

Note: Mat Dep = Maternal Depression; NE = Negative Emotionality; EC = Executive Control; Pos Affect = Positive Affective Quality; Pos Struct = Positive Structuring.

* $p < .05$

** $p < .01$

*** $p < .001$

Child sex is coded 1 = female, 2 = male.

Table 3

Correlations among Predictors and Outcomes

| | T1 Support | T2 Support | T1 Negative | T2 Negative | T3 Emo Know | T1 Prob | T4 Prob | T1 Comp | T4 Comp |
|----------------------------------|------------|------------|-------------|-------------|-------------|----------|----------|----------|----------|
| T1 SES Context | -0.08 | -0.05 | -0.28*** | -0.31*** | 0.12 | -0.20** | -0.24*** | 0.32*** | 0.16** |
| T1 Child Sex | 0.07 | 0.08 | -0.14 | -0.11 | -0.08 | 0.08 | 0.18** | -0.21*** | -0.19** |
| T1 Maternal Depression | -0.22*** | -0.20** | 0.25*** | 0.20** | -0.12* | 0.03 | 0.16** | -0.09 | -0.07 |
| T1 Child Neg Emotionality | 0.01 | -0.04 | -0.03 | -0.03 | -0.01 | 0.11 | 0.04 | 0.01 | -0.1 |
| T1 Child Executive Control | 0.00 | 0.01 | -0.20** | -0.19** | 0.21*** | -0.29*** | -0.10 | 0.32*** | 0.17** |
| T1 Positive Affective Quality | 0.05 | 0.01 | -0.23*** | -0.24*** | 0.07 | -0.32*** | -0.26*** | 0.36*** | 0.26*** |
| T1 Positive Structuring | 0.06 | 0.01 | -0.21*** | -0.26*** | 0.04 | -0.21*** | -0.18** | 0.21*** | 0.14 |
| T1 Maternal Supportive Responses | - | 0.62*** | 0.03 | 0.06 | 0.04 | 0.15** | -0.06 | -0.14 | 0.00 |
| T2 Maternal Supportive Responses | - | - | 0.02 | 0.10 | -0.08 | 0.16** | -0.09 | -0.18** | -0.04 |
| T1 Maternal Negative Responses | - | - | - | 0.75*** | 0.03 | 0.22*** | -0.03 | -0.25*** | 0.01 |
| T2 Maternal Negative Responses | - | - | - | - | 0.02 | 0.22*** | -0.01 | -0.22*** | -0.04 |
| T3 Child Emo Knowledge | - | - | - | - | - | -0.05 | -0.26*** | 0.20** | 0.31*** |
| T1 Child Adjustment Problems | - | - | - | - | - | - | 0.34*** | -0.48*** | -0.27*** |
| T4 Child Adjustment Problems | - | - | - | - | - | - | - | -0.31*** | -0.72*** |
| T1 Child Social Competence | - | - | - | - | - | - | - | - | 0.38*** |
| T4 Child Social Competence | - | - | - | - | - | - | - | - | - |

Note: Support = Support for negative emotions, Negative = Negative response to negative emotions, Emo Know = Emotion Knowledge, Prob = Adjustment Problems, Comp = Social Competence

* $p < .05$

** $p < .01$

*** $p < .001$

Child sex is coded 1 = female, 2 = male.

Table 4

Unstandardized coefficients, standard errors and Beta coefficients from path analyses testing the effects of child, maternal and contextual predictors of maternal supportive or negative responses to negative emotions, child emotion knowledge and adjustment

| T1 Predictors | T2 Supportive Responses to Negative Emotion | T2 Negative Responses to Negative Emotion | T3 Emotion Knowledge | T4 Social Competence | T4 Adjustment Problems |
|----------------------------|---|---|-----------------------------------|---------------------------------|-------------------------------|
| Child Sex | 0.47, 0.68, .03 | -0.58, 0.83, -.03 | -0.02, 0.02, -.04 | -3.18, 1.21, -0.16** | 2.25, 0.83, 0.16** |
| Social Competence | -- | -- | -- | 0.19, 0.09, 0.16* | -- |
| Adjustment Problems | -- | -- | -- | -- | 0.29, 0.07, 0.26*** |
| Supportive Responses | 0.68, 0.06, .61*** | -- | -- | -- | -- |
| Negative Responses | -- | 0.75, 0.05, 0.71*** | -- | -- | -- |
| Socioeconomic Risk | -0.46, 2.01, -0.01 | -4.42, 2.47, -0.09 [†] | -- | -- | -- |
| Negative Reactivity | -1.83, 1.97, -0.04 | -0.81, 2.41, -0.01 | -0.01, 0.07, -0.01 | -6.26, 3.56, -0.11 [†] | 0.57, 2.45, 0.01 |
| Executive Control | 0.86, 2.43, 0.02 | -1.02, 2.91, -0.02 | 0.27, 0.08, 0.21** | -0.28, 4.59, -0.004 | 4.95, 3.14, 0.11 |
| Maternal Depression | -0.07, 0.05, -0.08 | -0.03, 0.05, -0.02 | -0.03, 0.001, -0.13* | -0.03, 0.08, -0.02 | 0.09, 0.05, 0.11 [†] |
| Positive Affective Quality | -2.11, 8.06, -0.02 | -1.70, 9.87, -0.01 | 0.18, 0.26, 0.05 | 37.06, 15.65, 0.20* | -23.61, 10.71, -0.18* |
| Positive Structuring | -2.52, 5.27, -0.03 | -9.38, 6.46, -0.08 | -0.14, 0.17, -0.06 | -3.71, 10.37, -0.03 | -1.48, 7.20, -0.02 |
| T2 ERSBs | | | | | |
| Supportive Responses | -- | -- | -0.003, 0.002, -0.11 [†] | -0.01, 0.08, -0.01 | -0.11, 0.06, -0.12* |
| Negative Responses | -- | -- | 0.002, 0.001, 0.09 | 0.01, 0.06, 0.02 | -0.05, 0.04, -0.07 |
| T3 | | | | | |
| Emotion Knowledge | -- | -- | -- | 13.34, 3.14, 0.26*** | -8.51, 2.15, -0.24*** |

Note:

[†] < .10

* $p < .05$

** $p < .01$

 $p < .001$ Child sex is coded. 1=female, 2=male.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript