Abstract

Objective: To test the hypothesis that toddlers at highest risk for behavioral problems from the most economically vulnerable families will benefit most from maternal talk about emotions.

Methods: This study included 89 toddlers and mothers from low-income families. Behavioral problems were rated at two time points by masters-level trained Early Head Start home visiting specialists. Maternal emotion talk was coded from a wordless book-sharing task. Coding focused on mothers' emotion bridging which included labeling emotions, explaining the context of emotions, noting the behavioral cues of emotions, and linking emotions to toddlers' own experiences. Maternal demographic risk reflected a composite score of five risk factors.

Results: A significant three-way interaction between Time 1 toddler behavior problems, maternal emotion talk, and maternal demographic risk ($P = .001$) and examination of slope difference tests revealed that when maternal demographic risk was greater, more maternal emotion talk buffered associations between earlier and later behavior problems. Greater demographic risk and lower maternal emotion talk intensified Time 1 behavior problems as a predictor of Time 2 behavior problems. The model explained 54% of the variance in toddlers' Time 2 behavior problems. Analyses controlled for maternal warmth to better examine the unique contributions of emotion bridging to toddlers' behaviors.

Conclusions: Toddlers at highest risk, those with more early behavioral problems from higher demographic-risk families, benefit the most from mothers' emotion talk. Informing parents about the use of emotion talk may be a cost-effective, simple strategy to support at-risk toddlers' social-emotional development and reduce behavioral problems.

Index terms: Emotions; Emotion Socialization; Emotion Talk; Language; Low-Income; Parenting; Toddlers

Toddlers with Early Behavioral Problems at Higher Family Demographic Risk Benefit the Most

from Maternal Emotion Talk

Early externalizing behavior problems in toddlers are a precursor to longer term

behavioral difficulties and trajectories of childhood mental health problems,[1-4] especially in

children from lower-income families who are at higher risk for poor behavioral and mental

health outcomes.[5-7] Pediatricians and clinicians working with parents and toddlers are on the

front line of preventive efforts in identifying and responding to early behavioral concerns.[4] Such

preventive efforts are critical because children with early behavior problems are five times more

likely to be rated as lacking school readiness skills by kindergarten entry; in fact, they are more

likely to show delays in motor, language, play, pre-academic, and social-emotional skills by

kindergarten entry than children without early behavioral problems.[8] For very young children at

higher risk, specifically those with early behavior problems growing up in economically-stressed

families, parenting plays a particularly critical role in buffering the effects of these risks on

children's behavioral outcomes. The current study focuses on a specific type of positive

parenting, maternal emotion talk, which may buffer the impact of such risk on young children.

Mothers' emotion talk is a specific form of emotion socialization that is linked to children's

social-emotional development, [9,10] including their behavioral outcomes.[7,11,12]

Toddlerhood reflects a particularly developmentally salient period in which to study

interactions between children's behaviors and parenting behaviors, including emotion talk.

Specifically, toddlerhood marks the period in which behaviors first begin to coalesce into more

organized patterns[4] that predict longer term trajectories, suggesting that parenting in toddlerhood

is critically important. Given the emphasis on strength-based frameworks in examining the early

development of toddlers in economically-strained families[2], there is a critical need to identify socialization mechanisms that reduce the likelihood of early, problematic behavioral trajectories. Parents often turn to their pediatricians and family doctors for advice in behavior management. Pediatricians are increasingly being called on to play active roles in promoting not only the physical health but also the social-emotional well-being of very young children.[13] Subsequently, healthcare settings are viewed as contemporary forums for efficient parenting education efforts.[14] We examined maternal emotion talk and demographic risk as moderators of relations between toddlers' earlier and later behavior problems in a low-income sample. Results of this study have key implications for clinic-based interventions in support of toddlers' social-emotional health and positive behavioral trajectories. Specifically, we propose that the promotion of maternal emotion talk is a low-cost, efficient method for supporting the early emotional health of toddlers at risk for behavioral problems.

Emotion Talk and Children's Outcomes

Emotion talk includes mothers' labeling of emotions (e.g. *She's sad*) as well as the information they may provide about the contexts of emotions (e.g. *She's sad because she lost her dog*), the behavioral indicators of emotion (e.g. *She looks sad. Look, she's crying*) and mothers' attempts to link emotions to the child's own experiences (e.g. *You were sad when you lost your toy*). Emotion talk appears to support children's social-emotional competencies by helping them to understand emotions in context and to more ably interpret and manage emotional situations.[10,11] These are critical skills that help children, over time, manage emotional impulses, cope with stress and emotionally-arousing events, and interact in socially appropriate ways with peers and adults.

Conversations about emotions also provide models of empathic behavior and other emotionally-competent behavior and provide opportunities for young children to practice using emotion talk. For example, mothers' explanations about emotions are related to preschoolers' empathic role-taking abilities.[15] Mother-child emotion talk is related to preschoolers' emotion understanding,[16,17] and, in turn, to preschoolers' reduced behavioral problems.[17] A growing body of literature examining the effects of mother-child emotion talk on toddlers' developmental outcomes has shown similar findings. For example, mothers' emotion talk and explanation of emotions with toddlers are associated with toddlers' empathic responses to distress [18] and to toddlers' delay of gratification skills.[12,19] Conversations about emotions displayed during family and sibling interactions late in toddlerhood, at age 3 years, predict children's affective perspective-taking skills (e.g. understanding and identifying what another person's emotions are) at 6 years.[20] Mothers' conversations about emotions and contexts of emotions in toddlerhood are related to toddlers' later abilities to regulate negative emotions.[21] Finally, mothers' explanations about causes and consequences of emotion and their empathy-related statements during book-sharing tasks are related to toddlers' prosocial behaviors.[18]

Collectively, the literature presents a strong case for the supposition that maternal conversation about emotions can promote toddlers' and young children's behavioral competencies. Yet, little research has examined how emotion talk may serve as a protective factor for toddlers at risk for poor behavioral trajectories, especially for toddlers from economically-vulnerable families. Existing research suggests that emotion socialization practices may be particularly important for children in economically-vulnerable families, and, among these families, emotion socialization practices may offer protective benefits. For example, Garrett-Peters and colleagues[22] found that family income attenuated the positive effects

of maternal engagement with children on mothers' use of emotion talk with their infants. For the poorest families, the effects of parental engagement on mothers' emotion talk with infants were robust but this was not the case with higher income families. Similarly, Meins and colleagues[7] found that mothers' use of internal state language, including their use of emotion talk, with their infants moderated the effects of family stressors on young children's later internalizing and externalizing behavior problems at age three in lower income but not in higher income families. Emotion talk, then, may have more robust effects on children's outcomes in the context of lower family socioeconomic status.

Given evidence of the stability of early patterns of behavioral problems,[3,23] intervening early in response to indicators of behavioral problems in toddlerhood will be most impactful in promoting positive behavioral trajectories. It is critical that research and subsequent intervention efforts better understand how to promote emotional and behavioral competencies among children from families who are low-income. Toddlers from low-income families face several additional risks associated with economic vulnerability. First, toddlers from low-income families are at higher risk of behavioral problems,[7] in part due to less emotionally-supportive parenting associated with the stressors of poverty.[24] Emotionally supportive and informative interactions between parents and at-risk toddlers, such as those involving meaningful maternal emotion talk, may not only provide a nurturing experience in support of the parent-child relationship but also the emotional scaffolding needed to develop behavioral competencies.

Second, early onset of behavior problems are often associated with sustained poor behavioral trajectories.[3] This is significant because by the preschool years mothers whose children have behavioral problems report fewer conversations with their children that involve talk about emotions.[25] More broadly, their conversations with their children tend to include fewer

examples of contingent responsiveness to their children's behavioral cues and tend to lack emotional connectedness.[26] Hence, toddlerhood likely provides an opportune time to support mothers in the sensitive use of emotion talk as a strategy to promote early behavioral competencies before interaction patterns are disrupted and negative behavioral trajectories become more solidified.

A key contribution of the current study is the focus on mothers' early emotion talk as buffering the effects of early risk and behavioral problems on toddlers' later behavioral outcomes. To our knowledge, the Meins study[7] is the only existing work highlighting the potential moderating effects of maternal internal state language on young children's behavioral outcomes. The current study extends the work of Meins and colleagues[7] in two ways by (1) focusing specifically on emotion bridging rather on internal state language in general, and, (2) by examining the moderating effects of risk and emotion bridging specifically for toddlers with early behavioral problems. We hypothesized that toddlers at greatest risk, those showing early behavioral problems who were also from more demographically at-risk families, would benefit the most from mothers' emotion talk during an in-home book sharing task as compared to toddlers with early behavioral problems from lower risk families. Given that book reading and book sharing tasks are more likely to elicit more complex language from parents,[27] this mode of assessment was particularly suited for the study. We specifically focused on four forms of mothers' emotion talk which, collectively, provide a rich context for the parent-toddler relationship, the provision of information about emotion and the support of toddlers' behavioral competencies: mothers' labeling of emotions (e.g., *sad*); explanation of the contexts of emotions (e.g., *She's sad because she lost her bird*); behavioral indicators of emotions (e.g., *She's crying; that means she sad*); and, mothers' attempts to relate emotional content to the child (e.g.,

Remember when you lost your bear and you were sad?). In the current study, we refer to this

group of behaviors as mothers' emotion bridging because these aspects of emotion talk provide a

comprehensive context in which the toddler is exposed to multiple aspects of emotion

information. Our conceptualization of emotion bridging as providing a comprehensive context

for emotion information is in line with recent research[22] highlighting the need to go beyond

parents' use of emotion vocabulary alone in studies of internal state language.

METHODS

Procedure

Data were collected as part of a larger curriculum development and evaluation project in

three Early Head Start (EHS) programs.[28] Mother-toddler dyads (N = 89) were recruited via

their masters-trained EHS home visitors. For the current study, we utilized data from toddlers

who were at least 18 months old at the Time 1 assessment (mean age = 25.32 months, SD = 4.19

months; 41 males; 48 females) and their primary caregiving mothers (mean age = 27.72 years,

SD = 6.53 years). At Time 2, mean age for children was 32.70 months (SD = 4.19 months).

Mothers were primarily Caucasian (88%, n = 79; 7% African American, n = 6; 4% Hispanic, n =

4; 1% other) and not married (63%, n = 56); most had a high school education (49%, n = 44) or

had not completed high school (26%, n = 23); and, the majority of mothers were not employed

outside the home at the Time 1 assessment (66%, n = 58). Eight-six percent of families earned

$30,000 or less annually at the first assessment (mean income = $17,205, *SD* = $12,929; 12

families reported making more than $30,000 per year). Data were collected during home visits

at Time 1 and Time 2 (mean time between visits was 6.88 months, SD = 1.27 months) that were

carried out by trained research staff. The study was approved by the university institutional

review board, and informed consent was obtained prior to data collection.

Emotion Talk

Mothers and children shared a wordless book and were given the following brief instructions by the data collector during the home visit: *"Look at the pictures in this book. Talk with your child about the pictures. Let me know when you are finished."* The coding system, based on Taumoepeau and Ruffman's protocol,[10] included the total amount of internal state language, including emotion talk such as *sad*, cognitive state words such as *think* and *know*, modulations of assertion such as *perhaps* and *maybe*, and desire words such as *want* and *like*. For the current study, we were particularly interested in maternal emotion bridging, characterized as maternal internal state language used to label the emotion, provide descriptions of the context and behavioral indicators of emotions depicted in the story illustrations (e.g. *She's sad because she lost her bird; She's sad. See? She's crying*) and make relations between the emotion and the toddler's experience (e.g. *Remember when you were sad this morning*?). The total number of relevant maternal bridge comments made were tallied and then divided by the total time of the interaction to yield a per-minute rate. The mean length of the book sharing task, which was audiotaped, transcribed verbatim, and videotaped, was 4.75 minutes (SD = 2.60, range = 14.96 minutes). All coding was completed following the data collection by trained graduate student coders (Cohen's Kappa = .92 for coding emotion bridging).

Behavior Problems

Children's Early Head Start home visitors (EHS staff), who worked on a weekly basis with children, were asked to complete the Brief Infant-Toddler Social-Emotional Assessment (BITSEA).[29] The Problem Behaviors subscale is comprised of 31 items scored on a 3-point scale ranging from (0) not true/rarely, (1) somewhat true/sometimes, and (2) very true/often (α = .89 in this study).

Demographic Risk

A cumulative maternal risk index covariate included the following variables, dummy coded to indicate whether the risk was present: currently unemployed, currently single, currently living below the poverty line, teenage parenthood at the time of the focus child's birth, and less education than completion of high school or a GED. This risk index is based on research indicating the accumulation of stressors may be a more powerful predictor of social and behavioral risk among poor families than single risks[30] and is replicated from previous work with this population.[31]

Covariates

Child age and child gender were included as covariates. These data were collected at study enrollment. We also controlled for maternal warmth during the book sharing task in order to better identify the unique contributions of emotion bridging to the model. Maternal warmth was rated on a 5-point scale, created by the research team, ranging from no warmth (0) to high warmth (4) (Intraclass correlation = .91; kappa = .66 to .89 for ratings of warmth) and was based on the degree of warmth evident across the interaction. Warmth was characterized by behaviors such as positive affect and vocal tone. Coders of maternal warmth were not involved in other aspects of coding. Also with the goal of identifying the specific contributions of emotion bridging, we included toddler effortful control, using Rothbart and colleagues' Early Childhood Behavior Questionnaire.[32] The effortful control scale consists of 48 items ($\alpha = .85$ in this study) scored by the mother on a 1 (Never) to 7 (Always) scale indicating how often the behavior has occurred. The 11-item Center for Epidemiological Studies-Depression[33] (CES-D; $\alpha = .77$ in this study), reported by the mother, reflects a three-point scale indicating that items occur 0 (Hardly Ever or Never to 2 (Much or Most of the Time).

As noted, data in the current study were drawn from a larger intervention study. In the current sample, 48 dyads were in the comparison group of the larger study and 41 dyads were in the intervention group to which they had been randomly assigned. The larger study was a curricular intervention,[28] focused on early social-emotional development. There were no differences in study variable scores by study recruitment site. Toddlers' time 1 behaviors problems were significantly higher at study entry in the intervention group in this subsample (mean = 0.53, SD = 0.26 and mean = 0.39 SD = 0.26 for the comparison group, F (1, 87) = 5.11, p = .020). Program group (intervention or comparison group) was examined as a covariate.

Data Analysis

Descriptive values for the study variables are summarized in Table 1. There were no significant differences in BITSEA behavior problems scores between boys and girls at Time 1 (boys: mean = 0.50, SD = 0.24; girls: mean = 0.42, SD = 0.29, p = 0.17) or at Time 2 (boys: mean = 0.35, SD = 0.18; girls: mean = 0.27, SD = 0.20, p = 0.06). BITSEA scores declined between Time 1 and Time 2, t (88) = 7.854, p = .000. Maternal emotion bridging did not vary significantly for the mothers of boys or girls at Time 1 (p = 0.47) or at Time 2 (p = 0.18). Maternal emotion bridging did not change significantly between Time 1 and Time 2 (p = 0.78). Maternal risk did not change significantly between Time 1 and Time 2 (p = 0.46). Maternal emotion bridging occurred, on average, about 1.2 times (SD = 2.27) during book sharing. As noted, most book sharing interactions were just under 5 minutes.

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Insert Table 1 Here

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Our general analytic approach was to use moderated hierarchical multiple regression to test the study hypotheses. In moderated multiple regression analyses, three-way interactions are used to examine the joint, collective effect of three independent variables on the outcome of interest.[34] Prior to testing the three-way interaction, each relevant two-way interaction must be created and the main effects of the two way interactions included in the model. Thus, interaction terms, using mean centered variables, were created for maternal demographic risk X Time 1 behavioral problems, Time 1 behavioral problems X Time 2 emotion bridging, and maternal demographic risk X Time 2 maternal emotion bridging. Finally, a three-way interaction between Time 1 behavior problems, maternal emotional bridging and maternal demographic risk was calculated and evaluated by plotting means 1 standard deviation above and below the means. Slope differences tests were employed to evaluate statistical differences in slopes.[34]

RESULTS

Preliminary Analyses

Bivariate correlations, means and standard deviations for study variables included in the final regression model are illustrated in Table 1. As explained below, maternal depressive symptoms and children's effortful control were not significant contributors to the study model and were excluded from further analyses. For the sake of brevity, we have not included descriptive statistics for either of these variables in Table 1. However, we do note that maternal depressive symptoms were significantly and negatively related to children's behavioral problems, $r = 0.21$, $p = .049$ but were not significantly associated with emotion bridging, $r = -.048$, $p = .654$. Children's effortful control was significant related to behavior problems, $r = -0.31$, $p = .003$, and to maternal emotion bridging, $r = .278$, $p = .008$.

Regression Predicting Children's Behavior Problems

Our hypothesis for the current study was that children at highest risk—those with both higher behavior problems and those with higher demographic risk—would benefit the most from maternal emotion bridging. To test this hypothesis, we utilized hierarchical multiple regression modeling. Results are presented in Table 2. Variables entered in Step 1 included maternal demographic risk and program group (intervention or comparison group). Program assignment to the comparison or intervention group was not significant in any model. To preserve model parsimony, it was dropped from the final model. Step 2 included the addition of main effects for Time 1 child behavior problems, $\Delta F = 69.43$, $p = .000$. In preliminary models, child gender, child age, child effortful control and maternal depressive symptoms were entered into the model at this point. These variables were not significant and were eliminated from further analyses in favor of a more parsimonious model. In Step 3, maternal Time 1 and Time 2 emotion bridging and maternal warmth during the book task were entered. Interaction terms (T1 behavior problems X T2 maternal bridging, T2 demographic risk X T2 maternal bridging, T1 behavior problems X T2 demographic risk) were entered in Step 4, $\Delta F = 3.89$, $p = .013$. In Step 5, the three-way interaction term (T1 behavior problems X T2 demographic risk X T2 maternal bridging) was entered, $\Delta F = 4.89$, $p = .031$. In total, the model accounted for 54% of the variance in children's Time 2 behavior problems, $F (9, 68) = 11.08$, $p = .000$. In the final model, significant predictors of Time 2 behavior problems included: T1 behavior problems, $\beta = 0.47$, $p = .000$; T2 maternal bridging, $\beta = -0.11$, $p = .011$; the two-way interaction between T1 behavior problems and maternal bridging, $\beta = -0.43$, $p = .042$; and, the three-way interaction between T1 behavior problems, T2 risk and T2 maternal bridging, $\beta = -0.51$, $p = .031$.

While much of the variance was attributed to Time 1 behavior problems, Adjusted $R^2 = 0.46$, Cohen's $f^2 = 0.85$ (large effect size per Cohen[35]), interactions between behavior problems,

demographic risk and maternal emotion bridging accounted for an additional 8% of the variance in scores, Adjusted $R^2 = 0.54$, Cohen's $f^2 = 1.17$ (large effect size). To better interpret the interactions, we plotted the relations between Time 1 behavior problems (X) and Time 2 behavior problems (Y) at higher and lower levels of maternal emotion bridging (Z) (Figure 1). Per probing techniques by Aiken and West[36] high and low values for risk and for maternal bridging represented one SD above and below the mean.

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Insert Table 2 Here

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Insert Figure 1 Here

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In the context of higher maternal demographic risk, children with higher Time 1 behavior problems showed fewer Time 2 behavior problems when maternal emotion bridging was higher. When maternal bridging was lower, children with higher Time 1 behavior problems continued to show higher Time 2 behavior problems. Slope difference tests, as recommended by Dawson and Richter[33], indicated that the slopes representing higher demographic risks and higher maternal bridging and representing higher demographic risks and lower maternal bridging significantly differed, $t = -4.77$, $p = .000$. In the context of lower demographic risks, levels of maternal emotion bridging did not differentiate relations between Time 1 and Time 2 behavior problems. The slopes representing lower demographic risk and higher maternal bridging and those signifying lower risk and lower maternal bridging were not significantly different, $t = 0.77$, $p = .459$.

DISCUSSION

The current study tested relations between earlier and later behavioral problems in toddlers in the contexts of maternal demographic risk and mothers' emotion bridging. Results indicated that maternal emotion bridging most benefitted toddlers with early behavior problems who were from the highest demographic risk families. In the context of lower demographic risk, levels of maternal emotion bridging had no significant effects on Time 2 behavior problems, regardless of Time 1 behavior problems. Further, results highlight the unique role of mothers' emotion bridging above and beyond more global measures of parenting quality such as warmth during parent-child interactions. Likewise, the positive effects of emotion bridging were evident even though emotion bridging occurred in low frequencies during brief book sharing sessions. These results suggest the positive benefits of emotion bridging even in small doses.

Study findings add to a small but growing body of research showing differential benefits of parenting characteristics for children according to risk status. For example, Meins and colleagues[7] recently found that mothers' sensitive comments about their infants' internal feeling states and mental states (referred to as mind-minded comments) were related to children's fewer behavioral problems later in the early preschool period. Similar to the current study, the positive effects of mothers' mind-minded comments were most salient for children from low-income families and not for children from higher income families. Further, Meins and colleagues found that mothers' mind-mindedness mitigated the effects of stressors associated with poverty on children's internalizing and externalizing behaviors.

There are several potential mechanisms that may explain why maternal emotion bridging plays an important role in behavioral outcomes for toddlers at higher risk. First, emotion bridging provides exposure to emotion words and the contexts of emotions. Over time, exposure

to emotion words and concepts may aid the toddler in acquiring new linguistic and social tools and skills to regulate emotions and behavior, resulting in reduced behavioral problems. Some research has shown that the emotional skill-building that occurs during conversations about emotions likely aids young children in regulating their own behaviors.[37-38] For example, the acquisition of emotion words may support toddlers' regulatory behaviors and reduce behavior problems by acting as a tool through which toddlers can begin to use simple emotion words to express emotions, needs, and wishes. Likewise, research on mother-child discourse about events suggests that mothers' support is related to young children's advanced understanding of emotion.[39] Such a process of emotional scaffolding may support toddlers' early self-regulation and, subsequently, the demonstration of fewer behavior problems. These skills may be particularly important for children where the multitude of stressors associated with heightened demographic risk result in an increased need for self-regulation and behavioral competencies.

Second, parent-child emotion-themed discourse may offer unique opportunities for toddlers to observe their mothers' responses and gradually acquire empathy-related skills, prosocial skills, and regulatory skills[12] that will, over time, allow them to better manage emotional contexts. For example, Ruffman and colleagues[40] suggest that parents' mental state talk may directly facilitate the development of child competencies--in their case, cooperation--by promoting children's abilities to maintain other-oriented perspectives. Three-year-olds have acquired initial understanding of the causes of emotions and the behavioral expressions of common emotions, and they can understand reminders about the relations between an emotion and their own experiences, such as a time a child felt sad.[41] Deficits in emotion understanding in school-aged elementary children are linked with patterns of continued disruptive behaviors problems,[42] underscoring the need to promote social-emotional competencies in early childhood.

We propose that early emotion bridging likely enhances these growing capacities and allows young children to better manage their behaviors.

Third, the effects of increased demographic risk are not limited to the child, but impact parents too. For children in these high risk environments, an increased understanding of their own and other emotions may facilitate more positive relations with stressed adults. Mothers' expressions of appropriate comments about emotions in context, including making meaningful links to the child's own emotional experiences, likely provide an emotionally-supportive environment and contribute positively to the parent-child relationship. This is important where the material and psychological distress often associated with high demographic risk leave families vulnerable to relationship disruption. As toddlers gain skills in the context of the parent-child relationship, they may begin to engage in new ways with their mothers. It may be that emotion bridging promotes greater emotional connectedness with mothers and their toddlers who are having behavioral problems, perhaps contributing to subsequent reductions in child behavior problems, or reducing parental perceptions of some normal toddler behavior as problematic. For children at higher behavioral risk, opportunities to create new patterns of interactions with their parents may be particularly meaningful and important. As we noted earlier, by the preschool years, patterns of mother-child interactions for children with behavioral difficulties are characterized by less emotion talk and conversation[25] than those of mothers and children without behavioral problems. Toddlers with early behavioral difficulties not only need warm interactions, but also benefit from more specific emotion bridging. If mothers are able to be supported in making these connections between emotions and toddlers' experiences, it may be possible to interrupt the transactional spiral of negative interaction that often occurs between young children with behavioral challenges and their stressed parents.

As described earlier, there is clear evidence that parent-child conversation about emotion is related to children's emotional competencies. Our results particularly underscore the salience of emotion bridging for toddlers who are at highest risk, based on the presence of their own behavioral problems and maternal demographics. The use of emotion bridging may be less critical to toddlers at lower risk, both in terms of their less challenging behavioral profiles and fewer stressors associated with maternal demographic risk. It may be that the presence of additional resources associated with higher income status, such as reduced family stressors and access to resources such as high quality early childhood care and education, contributes to a less critical need for emotion bridging as a uniquely important aspect of parenting. Other studies have suggested that in the context of the variety of supports that are more readily available among higher income families, single aspects of parenting may produce fewer effects on children's behaviors.[22] Further examinations of emotion talk in higher and lower risk contexts are needed to elucidate specific mechanisms and additional moderators of risk and resilience.

Implications for Practice and Intervention

Results suggest the promise of clinic-based and home-based interventions to promote parents' use of emotion bridging with their toddlers. This work fits well within broader, current initiatives led by the American Academy of Pediatrics[43] and other groups to close the "word gap" in poor families: very young children in poor families hear fewer words overall and words within a more limited range compared to children in middle and upper income families.[44] These efforts have the goal of improving school readiness, and strategies to increase and improve emotion talk have goals that are well aligned. At minimum, the provision of parenting information on emotion talk and emotion bridging could be made available in pediatric primary care settings as part of bigger efforts to increase and diversify language use between parents and

young children. This type of intervention is concrete and lends itself well to this setting as compared to other parenting interventions requiring more intensive resources to improve more global positive parenting behaviors, such as warmth. In fact, providing parents with concrete interaction strategies, such as using emotion talk during book sharing tasks, may promote more global positive parenting behaviors, such as warmth. Efforts to promote emotion bridging could easily be tied to existing clinic-based intervention programs, in particular the Reach Out and Read Program.[45-46] A vast number of infant and toddler board books that contain emotion content, such as board books displaying photographs of different emotions, are available and could be selected for inclusion in programs such as Reach Out and Read. Already shown to increase the quality of the home literacy environment,[47] the inclusion of books also designed to promote conversations about emotions could have the additional benefits of promoting early behavioral competencies. At a more intensive level, randomized controlled trials to test the effectiveness of emotion bridging in behaviorally at-risk toddlers, particularly those from economically vulnerable families, hold promise for cost effective prevention efforts.

Limitations

Of note, findings are limited by a small sample size. Likewise, the current study was comprised mainly of Caucasian participants. Emotion socialization practices, including emotion talk, vary between racial and cultural groups,[48] limiting generalizability of study findings to more diverse populations. We acknowledge the possibility that mothers' using emotion bridging may also be engaging in other, unmeasured positive parenting behaviors that contribute to children's behavioral competencies; however, we did control for maternal warmth, which was related to children's behavioral outcomes. The relatively low frequency of mothers' emotion bridging raises concerns that a possible basement effect influenced study findings; however, there was no

significant association between maternal demographic risk and frequency of emotion bridging, in part alleviating the concern that the significant interaction might be due to a reduced rate of emotion bridging in the most at risk families in the sample. Further, effect sizes for the contributions of emotion bridging itself were small; however, the three way interaction term that included emotion bridging yielded a medium effect size and the overall regression model yielded a large effect size, suggesting that the *joint effects* of early behavior problems, risk, and emotion bridging contributed significantly and meaningfully to the model. Examining emotion bridging in daily contexts in addition to book sharing, such as during daily tasks, transitions, and during parent-child conflicts, would yield additional insights into the role of emotion bridging in supporting children's early social-emotional competencies. Finally, investigations into the potentially protective role of emotion bridging in other contexts of risk, such as children's chronic illness, may provide novel insights into promoting children's behavioral competencies and coping strategies.

Conclusions

This study provides valuable and novel insights into relations between mothers' emotion bridging and toddlers' behavioral outcomes in a high-risk, low-income population. Findings offer promise for specific, cost effective strategies to support the early behavioral competencies of toddlers most at risk for poor behavioral outcomes. Within-group variations in demographic risk and in parenting in the current study underscore the need to more carefully study parenting in at-risk populations. Contrary to common misperceptions about parenting in low-income populations, there was variation in mothers' use of sophisticated forms of emotion bridging during the book-sharing task with their toddlers. Toddlerhood presents a unique time for

intervention and for support of parent-child emotion talk before behavioral problem trajectories are in place.

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Table 1. Descriptive Statistics for Study Variables Included in Final Regression Model

Variables	Mean	SD	Range (min - max)	1	2	3	4	5	6
1. Maternal Demographic Risks	2.39	1.03	0-4.00						
2. T2 Warmth	2.91	1.08	0-4.00	-0.35**					
3. T1 BITSEA Behavior Problems	0.46	0.26	0.08-1.34	0.04	-0.15+				
4. T2 BITSEA Behavior Problems	0.30	0.20	0-1.00	-0.05	-0.16+	0.69***			
5. T1 Bridging Emotion Content Total During Book share	1.17	3.28	0-8.00	-0.18	0.32**	-0.19*	-0.17+		
6. T2 Bridging Emotion Content Total During Book share	1.21	2.27	0-8.00	0.03	0.28*	-0.13	-0.12	0.22*	

Table 2. Multiple Regression Model Testing Relations Between Toddlers' Behavior Problems, Risk and Maternal Emotion Bridging.

Variables	B	SE	Beta	R^2	ΔR^2
Step 1				-0.01	0.00
Maternal demographic risk	-0.02	0.02	-0.11		
Step 2				0.47	0.48***
Time 1 child behavior problems	0.47	0.06	0.67***		
Step 3				0.46	0.01
Time 1 emotion bridging rate	-0.01	0.03	-0.04		
Time 2 emotion bridging rate	-0.11	0.04	-0.39*		
Maternal warmth	-0.01	0.01	-0.06		
Step 4				0.52	0.07*
Time 1 behavior problems X Time 2 emotion bridging	-0.43	0.21	-0.26*		
Time 1 behavior problems X Risk	0.02	0.07	0.02		
Risk X Time 2 emotion bridging	-0.05	0.03	-0.16		
Step 5				0.54	0.03*
Time 1 behavior problems X Risk X Time 2 bridging	-0.51	0.23	-0.30*		

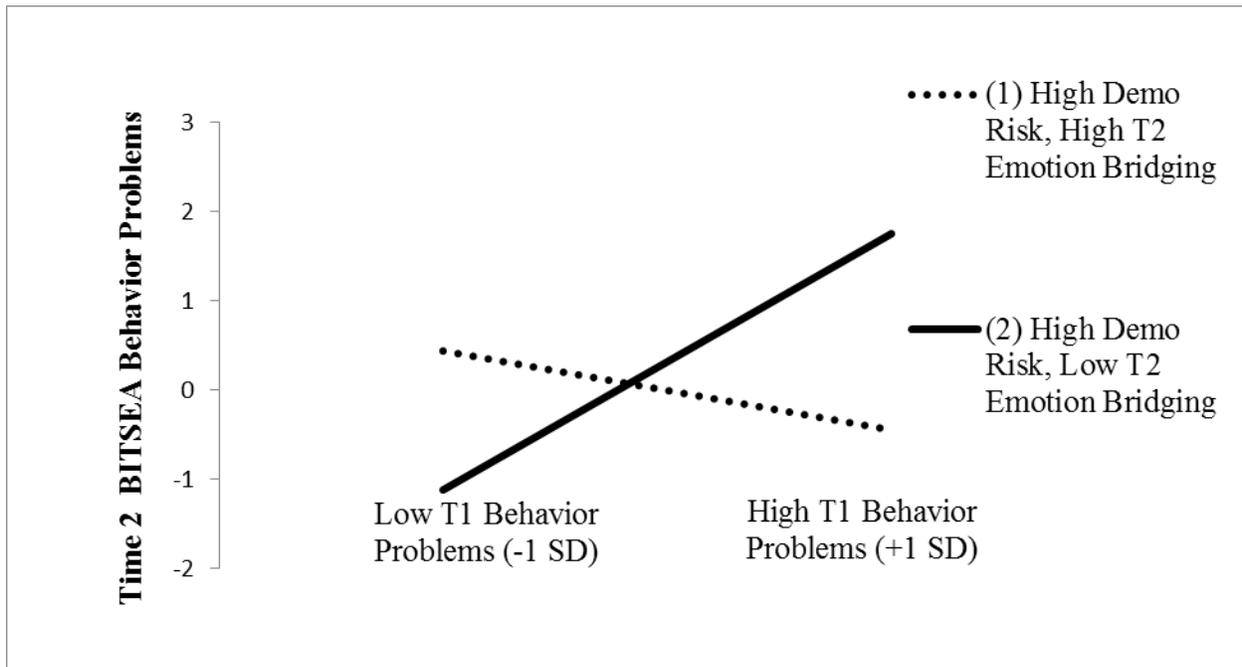$^+ p < .10$, $*p < .05$, $**p < .01$, $***p < .001$, $R^2 = 0.54$, $F = 11.08***$.

Figure 1. Contrasting the slopes for the two lines illustrates the experiences of children growing up in families characterized by greater economic vulnerability but who experienced higher (dashed line) versus lower (solid line) maternal emotion bridging. Higher levels of maternal emotion bridging reduced Time 2 behavior problems for those children at greatest risk, those with high family demographic risk and high behavioral risk (dashed line). These children showed fewer T2 behavioral problems than did their peers who experienced lower levels of emotion bridging (solid line). Slopes representing children growing up in families with less economic vulnerability did not differ, regardless of children's Time 1 behavioral problems (behavioral risk) or exposure to emotion bridging, and are not reflected in the figure.