Brophy-Herb, H.E., Stansbury, K., **Bocknek, E. Horodynski, M. (2012). Modeling emotion-related parenting in a low-income sample and relations with toddlers' self regulation. *Early Childhood Research Quarterly,* 27, 352-364.

Abstract

This study tested the validity of an emotion-related parenting construct, indicated by six key emotion-related socialization behaviors (ERSBs) occurring in daily, developmentally-salient parenting in a low-income sample of mothers ($N = 123$) of toddlers, and examined the relationship between the ERSB construct and toddlers' self-regulation. Structural equation modeling confirmed a latent emotion-related parenting construct, indicated by observed maternal warmth and supportiveness, observed emotional responsivity in the home, maternal report of mealtime socialization practices, observed maternal use of mental state language and emotion talk, and maternal report of positive self-expressivity in the family. Emotion-related parenting significantly related to toddlers' effective coping and delay of gratification (medium effect sizes). Maternal demographic risk was negatively related to emotion-related parenting (large effect size) but positively related to toddlers' effective coping (medium effect size); toddler age and gender were not significantly related to ERSBs. Results suggest that maternal ERSBs are cohesive in a low-income population, reflecting emotion-related parenting, and play a role in economically at-risk toddlers' self-regulation. Implications for parenting and family support programs as well as implications for future research are discussed.

Key Words: emotion-related socialization behaviors; Early Head Start; toddlers; self-regulation

Modeling Maternal Emotion-Related Socialization Behaviors in a Low-income Sample:
Relations with Toddlers' Self-Regulation

Existing heuristic models of parents' emotion-related socialization behaviors (ERSBs), most notably the seminal model put forth by Eisenberg and colleagues (Eisenberg, Cumberland, & Spinrad, 1998), posit that specific components of social interactions with parents play major roles in structuring children's social-emotional development, including self-regulation. Such models have proven useful in understanding the ways in which early environments can support early social-emotional development.  Yet, these conceptual models have rarely been tested empirically, particularly among low-income populations.  This lack of research leaves questions as to whether or not multiple ERSBs are present in parenting in low-income populations and how their effects on children's self-regulation are similar to or different from those found in middle-income and upper-income populations.

**Defining ERSBs**

ERSBs refer to a range of parenting characteristics and behaviors that are particularly salient to children's social-emotional development. Broadly speaking, ERSBs include characteristics and behaviors such as maternal positive emotional expressivity, support of children's self-regulation attempts (which can be structured either verbally or nonverbally) and emotion discourse between parent and child. Much research to date has examined ERSBs as they relate to strength-based, competent outcomes, including attachment (Laranjo, Bernier, & Meins, 2008; Meins, Fernyhough, Fradley, & Tuckey, 2001), aspects of children's theory of mind (Meins et al., 2002), emotion understanding (Dunn, Brown, & Beardsall, 1991; Warren & Stifter, 2008), and emotional expressiveness (Sallquist et al., 2010; Strayer & Roberts, 2004).  However, an emerging body of literature has examined ERSBs as they relate to self-regulation. For

example, in a recent review, Zeman and colleagues (Zeman, Cassano, Perry-Parish, & Stegall, 2006) described relationships between key ERSBs, including parental positive emotion expressivity and emotion talk, and children's regulatory development.

**Defining Self Regulation**

Self-regulation refers to a variety of skills related to self-management of emotions, responses, and behaviors (McCabe, Cunnington, & Brooks-Gunn, 2004). There are several phases of self-regulatory development in toddlers. Skills such as coping effectively with internal and environmental stimuli allow the child to engage in intentional, goal-directed behaviors, involving the kind of impulse control that is present in delaying gratification (Kopp, 1982). Here, we examined two self-regulation outcomes reflecting competence in toddlers' everyday experiences: coping effectiveness in sensorimotor organization, which reflected regulation of internal and external stimuli (e.g. regulation of sensory stimuli through adaptive responses and purposeful use of sensory and motor systems) (Zeitlin, Williamson, & Szczepanski, 1988), and delay of gratification, which represented the ability to manage emotions to achieve a goal. Self-regulation is considered to be a key protective factor for children, particularly for children with multiple environmental and economic risk factors (Lengua, 2002). Effective self-regulation has been shown to contribute to young children's positive adjustment (Blair & Diamond, 2008; Lengua, 2002), preschoolers' social competence (Diener & Kim, 2003), school readiness (Eisenberg, Valiente, & Eggum, 2010), and achievement (Howse, Lange, Farran, & Boyles, 2003).

**Relevance of ERSBs to Self-regulation and Gaps in the Literature**

Because ERSBs are a critical part of the underpinnings of early social-emotional development and are a likely entrée for intervention methods in families with very young

children, it is critical that the significant gaps in the existing work be addressed. First, most research related to ERSBs has been carried out with children of preschool age or older children, despite the fact that social-emotional development in the toddler period appears to be exceptionally malleable in response to environmental differences  (Raffaelli, Crockett, & Shen, 2005). Second, we know little about the occurrence of ERSBs and how they relate to child outcomes in low-income populations.  A wealth of literature suggests that children from low-income families are at higher risk for problems with self-regulatory skills (Morris & Gennetian, 2003; Raikes, Robinson, Bradley, Raikes, & Ayoub, 2007), and that parent-child interactions are less positive than in higher-income families (Jackson, Brooks-Gunn, Huang, & Glassman, 2000). Other research has shown that low-income preschoolers demonstrate emotion-regulation skills comparable to their more economically advantaged peers (Garner & Spears, 2000).  As we discuss later, parenting practices, too, vary widely within low-income samples, with many parents engaging in emotionally-supportive parenting (Whiteside-Mansell, Pope, & Bradley, 1996). To explore multiple ERSBs and their effects on self-regulation, a modeling approach that tests a multi-dimensional operationalization of an ERSB construct is needed. In this study, we addressed all three issues:  we studied toddlers, in very low-income families, and used structural equation modeling to examine multiple maternal ERSBs as they related to toddlers' self regulation.

**ERSB Components**

As noted by Eisenberg and colleagues (Eisenberg, Cumberland, & Spinrad, 1998), a wide variety of parental ERSBs exist. Over the past decade, an impressive body of work has emerged examining various ERSB components, including positive parental expressivity (Valiente, Fabes, Eisenberg, & Spinrad, 2004a; Valiente et al., 2004b; Valiente, Eisenberg, Spinrad, & Reiser,

2006), supporting self-regulation efforts (Cole, Dennis, Smith-Simon, & Cohen, 2009; Cole, Teti, & Zahn-Waxler, 2003), emotional supportiveness (Warren & Stifter, 2008), and use of mental state language and emotion talk (Adams, Kuebli, Boyle, & Fivush, 1995; Fivush, Brotman, Buckner, & Goodman, 2002; Jones & Garner, 1998; Warren & Stifter, 2008) as they relate to children's outcomes. Further, Baker and colleagues (Baker, Fenning, & Crnic, 2011) have suggested that, as a collection, ERSBs reflect a cohesive construct. In the only study we know of to formally test an ERSB construct, Baker et al. (2011) examined three ERSBs (parental reactions to children's emotions, family emotional expressiveness, and parental emotion coaching) in a structural model. For mothers, they found that reactions to emotions and positive emotional expressiveness were significant indicators of an emotion-related parenting latent construct.

As described, a variety of ERSBs exist across the literature. In the current study, we offer one example of an ERSB construct. We included exemplars of ERSBs that represent emotional and cognitive support for toddlers' developing self-regulation. These ERSBs are thought to be imbedded in the parent-child interactions that occur in daily life, focusing on maternal warmth, emotional supportiveness, emotional responsivity, maternal use of mental state language and emotion talk, and positive self-expressivity in the home. We selected these variables because they represented multiple aspects of parenting across a variety of contexts (teaching tasks, mealtime, book sharing) salient to the everyday experiences of toddlers, and, therefore, increased the ecological validity of the putative ERSB construct. We first begin by reviewing the literature on emotion-related parenting in low-income samples, and then address each ERSB component that we hypothesized would form a latent ERSB construct in our study.

**ERSBs in a Low-Income Population**

Virtually all of the research on parental emotion-related socialization behaviors, to date, has focused on middle-income families (Evans & English, 2002; Morris, Silk, Steinberg, Myers, & Robinson, 2007; Morris & Gennetian, 2003; Raikes et al., 2007). There is a startling paucity of research on the patterns of ERSBs in low-income families with toddlers. This gap is underscored by the fact that outcomes for children raised in poverty are more often problematic than for middle-class children. However, it is also likely that there is great variability in the trajectories these children follow and in the patterns of resilience they may show. A more nuanced examination of parenting characteristics allows us to delineate these pathways toward resilience. Generally, the literature suggests that low-income parents are more likely to use punitive parenting techniques than are middle-income parents (Pinderhouse, Dodge, Zelli, Bates, & Pettit, 2000). However, in our own work (Brophy-Herb et al., 2011a, 2011b), as well as in others' research (Garner, Jones, & Miner, 1994; Garner & Spears, 2000; Whiteside-Mansell, Bradley, Owen, Randolph, & Cauce, 2003), results demonstrate a more positive view of low-income families. Many of these parents are engaging in supportive, emotion-related socialization behaviors, signaling significant variation in parenting among low-income populations.

The existing work on ERSBs in low-income populations has primarily been conducted by Garner, whose work has focused on low-income mothers' emotion-socialization efforts with their preschoolers (Garner, 2006; Garner et al., 1994), emotion talk between preschoolers and their low-income parents (Garner, Dunsmore, & Southam-Gerrow, 2008), and emotion expression in preschoolers (Garner, Jones, Gaddy, & Rennie, 1997). Garner and colleagues found, for example, that low-income mothers' emotion-socialization practices, particularly positive emotion expression, were related to their preschoolers' more optimal regulation of anger and sadness (Garner et al., 1994). Likewise, low-income mothers' conversations about emotions

with their preschoolers were associated with the preschoolers' emotion-regulation (Garner, 2006) and their emotion knowledge and role-taking abilities (Garner et al., 1997). Collectively, these studies provide important evidence linking emotion talk and low-income mothers' positive responses to children's emotions with preschoolers' regulatory skills, specifically their emotion-regulation.  Likewise, Garner (2006) found no differences in the effects of lower-income and higher-income mothers' emotional matching and emotion discourse with their preschoolers in children's regulatory outcomes. Garner suggested that although SES differed in her study sample, the environmental characteristics of participants may have been more alike than different.  This may have contributed to the lack of differences in emotion-related parenting as a function of SES status. Her sample was also an African American sample, unlike our primarily Caucasian sample.  This is important because her results may have reflected characteristics associated with minority status that cross SES status and are related to how ERSBs are interpreted and utilized by parents.

To some degree, then, the available body of work suggests that maternal ERSBs, at least with regard to emotion talk and parental and family expressiveness, likely function the same way irrespective of socioeconomic status.  Yet, there are still questions as to how similar or different ERSBs and their effects are in a Caucasian low-income sample.  Moreover, existing findings are sometimes contrary.  For example, Garrett-Peters and colleagues (Garrett-Peters, Mills-Koone, Adkins, Vernon-Feagans, & Cox, 2008) conducted one of the few studies to examine characteristics associated with parental emotion talk, a key ERSB, in a low-income population. They found that higher family income and positive engagement with the child were related to mothers' use of emotion talk. Hence, there is a strong need for further study of ERSBs among low-income parents.

Such studies are particularly critical with regard to use of ERSBs with toddlers, as toddlerhood represents a unique developmental window in which ERSBs should have their greatest effects on emerging development (Calkins & Bell, 1999). First, toddlerhood marks both a period of rapid growth in self-regulation when developmental trajectories may be modified (Brownell & Kopp, 2007; Kopp, 1989; Raffaelli et al., 2005). Second, these characteristics of toddlerhood are hypothesized to increase the influence of parenting during this period (Raikes et al., 2007; Zeman et al., 2006), suggesting the importance of examining ERSBs in parents of toddlers in connection with toddlers' early self regulation. Next, we address the literature on each ERSB component included in our study, giving particular attention to the extent to which each ERSB has been studied among parents of toddlers.

**Maternal warmth, supportiveness, and positive emotional responsivity**. Maternal warmth, typically operationalized as demonstrations of the parent's affection for the child and pleasure in interaction with the child (Belsky, Bradley, Stallard, & Stewart-Brown, 2007; Ispa et al., 2004), supportiveness and emotional responsivity to the child represent subtle forms of emotion-related parenting (Smith & Walden, 2001) and provide an affectively supportive context that promotes the acquisition of regulatory skills (Cummings & Davies, 1996; Eisenberg, Sadovsky, & Spinrad, 2005; Fabes, Leonard, Kupanoff, & Martin, 2001; Hastings et al., 2008; Thompson & Meyer, 2007). Maternal warmth and supportiveness in toddlerhood has been associated with children's later self-regulation in the preschool period (Eiden, Edwards, & Leonard, 2007; Silverman & Ragusa, 1992), while a lack of warmth and sensitivity is related to children's low self-regulatory development (Rodriguez et al., 2005). There are numerous contexts salient to toddlers' daily experiences during which parenting behaviors play a role supporting regulatory development. For example, play interactions marked by warmth,

emotional supportiveness and responsivity likely lead to shared control in play, turn taking, and mastery opportunities that allow the child to "practice" emerging self-regulatory skills (Morris et al., 2007). In the current study, we included mothers' socialization at mealtime as a form of emotion-related parenting. Existing work in studies of preschoolers and older children note that mealtimes reflect a key affective context in the family (Ochs & Shohet, 2006; Spagnola & Fiese, 2007) important to the socialization of emotion and to children's abilities to manage their environmental context and self-regulate (Herot, 2002). Further, parenting behaviors during mealtimes, a setting in which rituals, rules, and physical parameters exist, may serve to structure children's behaviors, subsequently facilitating self-regulation (Tulviste, Mizera, DeGeer, & Tryggvason, 2002). For toddlers in particular, mealtimes provide new opportunities to practice self-regulation because they must negotiate shared control of the rules and manage behavioral expectations once they are no longer fed solely by caregivers (Johnson & Birch, 1994). Therefore, mealtime socialization, characterized by maternal warmth and responsivity, is a meaningful component of emotion-related parenting with toddlers.

**Mental state language**. Mental state language refers to a category of parental language that is characterized by the employment of emotion words (e.g. happy, angry, sad), desire words (e.g. wish, want), modulations of assertion (e.g. maybe, perhaps), and cognitive words (e.g. think, know) in interaction with the child. Mental state talk in families reflects an important affective element of the family environment (Howe, Rinaldi, & Recchi, 2010; Jenkins, Turrell, Kogushi, Lollis, & Ross, 2003) and has been linked with greater understanding of self and others (McQuaid, Bigelow, McLaughlin, & MacLean, 2007; Meins et al., 2002), and with social-emotional competencies (Laible, 2004). More specifically, studies of preschoolers report that mental state talk, particularly emotion talk, promotes children's abilities to manage emotions and

behaviors effectively (Garner et al., 2008; Gottman, Katz, & Hooven, 1997; Lunkenheimer, Shields, & Cortina, 2007).  Garner and colleagues (2006; Garner et al., 2008) found that low-income mothers' use of emotion talk was related to preschoolers' more optimal regulatory skills. Further, studies with toddlers have shown that mothers' emotion talk and discussion of emotional contexts predicts children's abilities to regulate feelings of disappointment later at age 5 years (Spinrad, Stifter, Donelan-McCall, & Turner, 2004).

These results suggest the salient role of mental state talk in early childhood. Most of these studies have not involved samples of low-income parents of toddlers nor have they specifically examined elements of self-regulation aside from emotion-regulation.  However, in a recent study (Bernier, Carlson, & Whipple, 2010) mothers' mental state language contributed to increases in toddler self-regulation, including  delay of gratification, over time.  Mental state language likely provides an emotionally-supportive context in which toddlers gradually attain self-regulation tools, such as learning to recognize, understand, and talk about emotions, goals and desires, both their own and others' (Taumoepeau & Ruffman, 2006).  Along these lines, we anticipated that these tools would likely contribute to toddlers' successful coping with internal and environmental stimuli and to their delay of gratification.  As Vallotton points out (Vallotton & Ayoub, 2011), language in toddlerhood plays a key role in early self-regulatory development by providing toddlers with tools to support their regulatory efforts as their cognitive and language skills advance rapidly.

**Expressivity in the home**.  The general affective climate of the family represents a critical developmental context for the child's social-emotional development (Morris et al., 2007; Thompson & Meyer, 2007), and has been identified as an emotion-socialization behavior among middle-income (Baker et al., 2011) and lower-income families (Garner, 1995). Specifically,

emotional expressivity in the home provides an ongoing model of regulatory behavior and expectations as children observe the ways in which family members manage and express their own emotion (Boyum & Parke, 1995; Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blaire, 1997; Halberstadt & Eaton, 2002; Morris et al., 2007; Valiente et al., 2004a). Positive expressivity in the family may provide an affective context that is conducive to toddlers' growing capacity to manage behaviors during stressful circumstances, allowing, for example, the continuation of exploratory behavior despite frustration (Garner, 1995).

**Modeling the Latent Construct**

Heuristic models, although thought-provoking and valuable in their own right, are limited in their capacity to guide and stimulate research if not empirically tested. Further, heuristic models of important developmental processes cannot be further developed or refined until hypothesized processes are tested using modeling strategies. As suggested in the previously discussed literature, a variety of ERSBs have been studied individually. Theoretically, we might expect ERSBs to co-occur as we would assume that parents who engage in one type of ERSB likely utilize other, conceptually similar behaviors (Baker et al., 2011). Hence, the next logical step that will allow us to increase and refine the body of work on emotion-related parenting is to empirically test conceptual models of interest, including those unique to toddlerhood, when self-regulatory competencies are emerging and developmental trajectories set in place. Specifically, there is a need to determine if the conceptually linked parental emotion-related socialization behaviors are empirically cohesive as a latent construct and are related to toddler development in low-income families. In the current study, we tested the hypothesis that a constellation of emotion-related socialization behaviors would be significantly related to toddlers' self-regulation, as measured by their coping effectiveness in sensorimotor organization and their

delay of gratification.  With the exception of Baker and colleagues (2011), no other studies have

empirically tested an emotion-related parenting construct (as opposed to examining relationships

between single ERSBs and outcomes or between composite ERSBs and outcomes). Moreover,

they did not examine relations between ERSBs and children's self-regulation.  Finally, no studies

have tested such a model in a sample of low-income mothers and their toddlers.

**The Current Study**

The current study represents an exploratory examination of one configuration of an

ERSB construct with the goal of including ERSBs that reflect salient contexts for parent-child

interactions with toddlers in a low-income population. While we recognize that ERSB

components might reflect multiple factors, the purpose of this study was to explore a one-factor

solution reflecting cohesive facets of emotion-related parenting within a low-income population.

We hypothesized that the latent ERSB construct would be related to toddlers' coping

effectiveness and delay of gratification skills.  Coping effectiveness represented  toddlers'

abilities to self-regulate internal and external stimuli (Kopp, 1982). Delay of gratification was an

operationalization of  effortful and inhibitory control (Kochanska, Murray, Jacques, Koenic, &

Vandegeest, 1996; Kopp, 1982; McCabe et al., 2004), both components of early self- and

emotion-regulation (Calkins & Fox, 2002).  Delay of gratification is a developmentally-salient

assessment context as young children often have to wait for desirable items in everyday life.

Existing research has shown that some parental use of ERSBs, such as emotion talk, vary with

child age (Cervantes & Callanan, 1998) and gender (Adams et al., 1995; Baker et al., 2011;

Fivush et al., 2000). We included toddler age and gender as covariates in the exploratory model.

We also included a maternal demographic risk composite in the model, consistent with other

studies focusing on young children and parenting in a low-income population (Raikes et al.,

2006), and we controlled for concurrent maternal perceptions of dysregulatory behavior. Finally, because data utilized in this study were from a larger curricular intervention project, we included dosage to the intervention and study recruitment site (to control for Early Head Start and community-level differences) in the model. As we note later, there were no significant curriculum effects in the main study or in the current study as a function of intervention group or usual care status (Brophy-Herb, Senehi, Lee, & Horodynski, 2011c).

## Method

### Participants and Procedure

Data were collected as part of an existing study (Brophy-Herb et al., 2005) ($N = 174$) of low-income parents and their toddlers. In the current study, we utilized data from female primary caregivers with toddlers at least 18 months of age ($n = 123$; 58 boys and 65 girls) because we were interested in examining toddlers' delay of gratification as one of the outcomes.  Most caregivers were biological mothers (95%, $n = 117$; 3% were adoptive mothers, $n = 4$; and, 2% were grandmothers, $n = 2$).  The terms "mothers" is hereafter used to refer to these female primary caregivers. Mother-toddler dyads were recruited from three Early Head Start (EHS) programs, serving 12 counties in the Midwest, via their EHS home visitors. Early Head Start is a two-generational program designed to provide children and family developmental services to low-income pregnant women and their infants and toddlers.  Participants in the current study sample reflected the following study enrollment sites: 45 dyads were enrolled from Site 1; 44 dyads were enrolled from Site 2; and, 34 dyads were recruited from Site 3.  Sites did not differ significantly in terms of demographic risk (Site 1, $M = 2.29$. $SD = 1.26$; Site 2, $M = 2.23$, $SD = 1.02$; Site 3, $M = 2.10$, $SD = .88$, $F (122) = .18$, $p = .68$).

In the current study, mothers were primarily Caucasian (85%, $n = 105$; 7% were African American, $n = 8$; 4% were Hispanic, $n = 6$; 2% reported themselves as bi-racial, $n = 2$; fewer than 1% were Native American, $n = 1$, or other-unspecified by the respondent, $n = 1$), 27 years of age ($SD = 6.99$, range = 18-64 years), with limited education (68%, $n = 84$, had less than a high school education) and income ($M = \$17,463$, $SD = \$13,661$, range = \$0-\$75,000).  Although the income range is broad, only 17 respondents made more than \$30,000 annually. Of those, only five respondents earned more than \$50,000.  Mean age of toddlers at the time of enrollment into the larger study was 22.39 months ($SD = 6.67$ months, range = 10-34 months) and 28.39 months ($SD = 6.71$ months, range = 18-42 months) at the current study assessment. Full demographic characteristics are provided in Table 1. In the existing curriculum development and evaluation study from which current study data were utilized, data were collected from mother-toddler dyads in the home by trained data collectors at two time points (pre/post), approximately 7 months apart ($M = 6.88$ months, $SD = 1.20$ months). We utilized data from the second time point in order to maximize the sample of two-year-olds in this exploratory study. The study was approved by the university Institutional Review Board and informed consent was attained prior to data collection.

**The main study with curricular intervention**. The larger study was a curricular intervention (Brophy-Herb et al., 2005; Brophy-Herb et al., 2011c), focused on early social-emotional development, in which EHS sites (and their EHS home visitors) within the three primary EHS programs were randomly selected to implement the test curriculum during regularly scheduled weekly home visits with families or maintain their usual curricular practices during their weekly home visits.  Of the 123 participants in the current study, 57 had participated in the intervention group and 66 had been assigned to the usual treatment group. Intervention

implementation was designed to take about 10-20 minutes per visit and was incorporated into the typical length of an EHS home visit. The curriculum included more than 70 semi-structured lessons for home visitors to implement with participants. Home visitors were free to choose lessons they thought best met the needs of each family on their caseloads. Some lessons focused only the mother's development and her parenting and some involved the mother and child(ren) together in activities. Hence, while there were many lessons available (that varied in focus and content), participants did not necessarily receive the same lessons or the same types of lessons. The structure was designed to be flexible and to meet the individual needs of families, although this design likely contributed to lack of significant curriculum effects in the main study. There were no curricular effects in the current study either. In the main study, there were some dosage effects, as we report in detail elsewhere (Brophy-Herb et al., 2011b). Greater dosage of the intervention was related to parents' responsiveness when children were distressed during a teaching episode (a measure not used in the current study) and to parents' attitudes about children's emotions (a measure not used in the current study). Specifically related only to curricular lessons that involved the parent and the baby together, lesson dosage in the main study was related to parents' warmth (a measure used in the current study), to parents' cognitive growth fostering and response to distress during a teaching episode (a measure not used in the current study), and to toddlers' delay of gratification (a measure used in the current study). We tested these dosage effects (total minutes in dosage of the overall intervention curriculum and total minutes in dosage for the mother-baby involved lessons) in the current study sample and found no significant effects on any of the ERSB indicators or on toddler effective coping or delay of gratification.

However, to control for any potential dosage effects in the context of the model, we retained the total number of minutes spent on the test curriculum in the model. Participants in the comparison (usual care) group in the current study received a total score of 0 curricular intervention minutes. We also examined general EHS dosage (tested in three ways separately as total number of EHS home visits, the total number of EHS programming minutes the dyad received, and EHS intensity of dosage, which was calculated as total minutes X total number of EHS visits) in the model. EHS dosage was not significant in the model and was dropped from the final model. Although not the case in the current study sample, the total number of minutes spent on EHS programming in general varied between Sites 1 and 3 in the main study. In the current study sample, intervention dosage varied between sites. To account for these characteristics, as well as community-level differences, we included recruitment site in the model. Specifically, two dummy codes were included (Site 1 and Site 3 with Site 2 serving as the referent). Curricular intervention dosage by site in the current study was as follows: Site 1, $M = 54.77$ minutes ($SD = 86.83$, range = 0 - 297.92); Site 2, $M = 32.31$ minutes ($SD = 58.68$, range = 0 - 264); Site 3, $M = 89.13$ minutes ($SD = 83.56$, range = 0 - 305). Sites 2 and 3 differed significantly, $F(122) = 5.24$, $p = .007$.

**Background of the data collectors.** Data collectors for this study held bachelors or master's degrees and were trained and supervised by the PI. All data collectors were female and Caucasian. Data collectors were trained on the data collection protocol through review and discussion of the written protocol and through the use of videotaped administrations of the observation measures used in this study. All data collectors completed three practice sessions in which they audiotaped the parent interview and videotaped themselves administering the parent-child observations and the delay of gratification task. These tapes were reviewed by the research

team faculty and written and oral feedback was provided to each data collector and to the group

as a whole on a regular basis. As part of the general protocol through the course of the data

collection, every $10^{th}$ case for each data collector was carefully reviewed by the PI for data

quality, which included assessment of fidelity of administration of all study measures to the

study protocol.  Data coders were master's-level graduate students in child development or

family studies and were blind to the enrollment site and treatment status of participants.  Data

coders were all female and Caucasian. Data coding teams met bimonthly with the PI after the

initial training to view and discuss coding issues together.

**Measures**

Weighted kappas (Fleiss, Levin, & Paik, 2003) and intraclass correlations (Bland &

Altman, 1986), both of which are appropriate for ordinal, interval, ratio and absolute scales, are

reported.  Cohen's kappa (Cohen, 1960) is reported only for one measure in which a nominal

scale was utilized. Twenty percent of cases were coded for reliability on the PCI measure of

parent-toddler interaction, the warmth in book sharing, mental state language in book sharing

and delay of gratification tasks.

**Warmth**. Mothers and toddlers were asked to complete a brief, wordless book sharing

task ($M = 4.56$ minutes, $SD = 2.35$ minutes, range $= 1.06$ minutes to 16.13 minutes) using the

book, *Fly, Little Bird*, written by Tina Burke (Burke, 2006).  The wordless book included

colorful pictures depicting the story of a girl, her pet bird and their experiences as they play

together and as the bird is lost and then found. Illustrations portrayed a variety of emotions via

facial expressions and body movements. The mother was asked to: "Look at the pictures in this

book. Talk with your child about the pictures. Let me know when you are finished." Warmth was

rated on a 5-point rating scale with responses ranging from no warmth (0) to high warmth (4)

(Intraclass correlation = .91; kappa = .66 to .89) and was based on the degree of warmth evident across the interaction.  Warmth was operationalized, based on existing conceptualizations (e.g. Ispa et al., 2004), as expressions of love, attentiveness and pleasure, respect and admiration for the child.  These expressions included characteristics such as maternal voice tone, use of terms of endearment, use of the child's name in a positive manner, positive responsiveness to the child's cues during the story, and maternal positive involvement of the toddler in the book sharing experience. Coders were trained by the first author specifically for this assignment and were not involved in other aspects of coding.

**Emotional supportiveness**.  Parent Child Interaction (PCI)-Teaching Scale, formerly known as NCAST-Teaching Scale (Sumner & Spietz, 1994) consists of 73 binary-scored items designed to assess mother-child interactions (0-36 months) observed during a semi-structured teaching episode. The mother was given a list of common age-specific tasks and asked to select a task not yet known by the toddler.  Sample tasks included teaching an 18-month-old to point to a body part or teaching a 27-month-old to button a button. Tasks were videotaped in the home. The PCI Teaching Scale consists of four parenting behavior scales:  Sensitivity to Cues, Response to Distress, Cognitive Growth Fostering, and Social-Emotional Growth Fostering ($\alpha$ = .80, for the current study).  For the current study, we were specifically interested in social-emotional growth fostering as these 11 items reflect the mother's emotional supportiveness of the child's attempts at mastery and emotion-regulation during the task (coded as behavior absent, 0, and behavior present, 1, and summed). The very specific nature of both verbal and nonverbal emotional expressiveness reflected in this particular subscale is well aligned with emotion-related socialization behaviors. The social-emotional growth fostering items were more relevant to the ERSBs of interest than were items such as labeling and describing objects (as was characteristic

of the Cognitive Growth Fostering scale) or positioning items within the child's reach (as was

characteristic of Sensitivity to Cues).  Further, the response-to-distress items are dependent on

whether or not the child displays distressed behavior.  Sample social-emotional growth fostering

items included: "Caregiver praises child's efforts or behaviors"; "Caregiver makes cheerleading

types of statements to the child"; "Caregiver gently pats, caresses, strokes, hugs, or kisses the

child during the episode".  Prior to administering and scoring the PCI, data collectors completed

training by a certified PCI national instructor. As required by the PCI training protocol,

reliability coding was conducted by the certified trainer and coding was submitted to the national

office for scoring and certification.  Upon successful demonstration of reliability of at least 90%

on standardized videotapes, the national office certified use of the PCI instrument. Following the

national certification, we held bi-monthly refresher trainings were held to maintain reliability

(Intraclass correlations ranged from .82-.89; kappas ranged from .62 to .85). During each of

these bimonthly sessions, difficult-to-code cases were discussed and coding disagreements were

resolved through discussion and consensus.

        **Emotional responsivity**.  Data collectors completed the Home Observational

Measurement of the Environment scale, involving part interview/part observation (HOME)

(Caldwell & Bradley, 1984). The HOME consists of 45, binary-scored (yes/no) items reflecting

six subscales: Emotional and Verbal Responsivity, Acceptance, Organization, Learning

Materials, Involvement and Variety.  The Responsivity subscale (8 items,) and Acceptance

subscale (7 items), reflecting a sum score of all 15 items ($\alpha = .70$), were utilized in the current

study. Sample behaviors included in the responsivity items included responding positively to

praise of the child and speaking to the child in a voice that conveys positive feelings for the

child.  Behaviors addressed in the acceptance items include avoiding expressions of annoyance at

the child and avoiding scolding or criticizing the child.  Three items from the responsivity scale

and one item from the acceptance scale were deleted to improve scale reliability, resulting in the

final 15 items. Items from these subscales represent the emotional responsivity of interest in the

current study. Data collectors were trained on this measure using the administration manual,

videotaped sessions from prior work (in which permission was given to use videotapes as

training tools) in which the HOME was administered, and through the use of practice

administration sessions.

**Mental state and emotion talk.**  Maternal mental state and emotion talk was measured

during the wordless book sharing task described above. Audiotapes of the interactions were

transcribed verbatim by a university transcription service.  Transcriptions were coded using a

coding system based on existing protocols (see Howe et al., 2010; Taumoepeau & Ruffman,

2006).  Coding for maternal use of mental state language  (Intraclass correlation = .89, kappa =

.74 to .93) included (a) the total number of emotion words (e.g., "happy" or "feels afraid"); (b)

desire words (e.g., "want" or "hope"); (c) cognitive words (e.g., "think" or "believe"); and, (d)

modulations of assertion (e.g., "might" or "could be"). For the mental state language variable,

scores were derived by dividing the total number of mental state words used by the total length

in minutes of the book sharing interaction. This provided the number of words per minutes and

controlled for verbose dyads who might have engaged in longer interactions. Mean length of the

interaction was 4.45 minutes ($SD = 2.26$, range = 1.04-16.13 minutes). Coders for this

assignment did not code other mother or child behaviors.

**Social interactions at mealtime**.  Mothers completed the Mealtime Behavior

Questionnaire (MBQ) (Horodynski, Stommel, Weatherspoon, & Brophy-Herb, 2008) about

mealtime practices during an oral parent interview.  In our prior work, we have used the MBQ

reliably with more than 400 low-income African American and European mothers (Horodynski et al., 2008). The mealtimes social interaction subscale, comprised of 9 items ($\alpha = .74$ for the current study) was used in the current study. Items were scored on a 5-point scale from Never (1) to Always (5). Sample items included: "My child and I eat together"; "My child gets my full attention during meals"; "I talk to my child during mealtimes"; and, "I encourage my child to talk during mealtimes".

   **Positive expressivity in the home**. The Self-Expressiveness in the Family Questionnaire (SEFQ; Halberstadt, Cassidy, Stifter, Parke, & Fox, 1995) yielded an assessment of the mother's self-reported primary style and frequency of expressing emotion in the family. We utilized the 23 items from the positive expressivity scale ($\alpha = .90$ for the current study), yielding a total positive expressivity mean score (the negative expressivity subscale was not included in the larger study). Sample items included: "Letting someone know you feel bad for them if they are having troubles"; "Showing deep affection or love for someone"; and, "Showing forgiveness to someone who broke something you really like." Although the SEFQ utilizes a 9-point scale, we adapted the measure for use with an at-risk, low-literacy population to reflect a 5-point scale ranging from never (1) to always (5). As reported in Table 1, mean scores for the scale were high, $M = 4.18$, $SD = .48$ or about .84 of the scoring scale. This figure is on par with previous research utilizing the 9-point original version of the positive subscale of the SEFQ. For example, in McCoy's and Raver's (2011) work with low-income mothers, the mean SEFQ score for the study sample was 7.08 or .79 of the scoring scale. In mixed-income samples, Valiente and colleagues (Valiente et al., 2006) and Eisenberg and her colleagues (Eisenberg et al., 2003) reported mean SEFQ scores of 7.43, or .83 of the scoring scale, and 7.31, or .81 of the scoring scale, respectively.

**Coping effectiveness**. Adaptive behaviors were rated by toddlers' Early Head Start home visitors using the Early Coping Inventory (ECI; Zeitlin et al., 1988). The ECI includes three subscales (16 items each): Sensorimotor Organization reflects self regulation, adaptive responses to a variety of sensory stimuli, and the purposeful use of sensory and motor systems; Reactive Behavior refers to the child's actions used to respond to demands of the child's physical and social environments; and, Self-Initiated Behavior characterizes the child's autonomously generated, self-directed actions demonstrated to meet personal needs and to interact with people and objects in the environment. Because of time constraints, we asked home visitors to complete the Sensorimotor Organization scale ($\alpha = .95$ for this sample) because it most closely aligned with regulatory behaviors of interest in the study. Behavioral items were scored on a 5-point scale characterizing the behavior as (1) not effective to (5) consistently effective across situations. Sample items included: "Child demonstrates pleasures in self-initiated body movements and self exploration;" child adapts movements to be responsive to specific situations;" and, "Child demonstrates ability to self comfort." Raw total scores were converted to "effectiveness" scores using standard ECI guidelines provided in the instrument manual.

**Delay of gratification**. Toddlers completed one of three delay of gratification tasks depending on their ages. All tasks and protocols employed were taken from Kochanska's well-established battery, in which different age-appropriate delay tasks have been utilized across age groups and shown to assess the same construct (Kochanska et al., 1996). Mothers were present during the tasks but were asked not to participate in the episodes. All tasks were videotaped. Kappas ranged from .80 to .86. During an M&M task, for children between the ages of 18 and 23 months of age ($n = 14$), the toddler was asked to wait until the data collector rang a bell before eating an M&M that was placed under a clear cup. Four trials were completed with delays

of 10, 15, 20, and 30 seconds. Halfway through the delay, the data collector lifted the bell but did

not ring it. Scoring reflected a 5-point scale as follows: 0 = eats M&M before the bell is lifted; 1

= eats M&M after the bell is lifted; 2 = touches the bell or cup before the bell is lifted; 3 =

touches the bell or cup after the bell is lifted; 4 = waits for the bell to ring before touching the

cup or bell). A gift bag task was used for children ages 24-39 months of age ($n = 29$).  In this

task, the data collector told the toddler there was a special gift for him/her but that the data

collector had to leave the room for 1 minute. The child was told not to open the bag until the data

collector returned with the bow. Performance was scored on a 5-point scale as follows:  1 = child

pulls gift from the bag; 2 = child puts his/her hand into the bag; 3 = child peeks into the bag; 4 =

child touches the bag but does not peek; 5 = child does not touch or peek into the bag. For the

oldest toddlers, 30 months and above ($n = 61$), a toy naming task was used.  The toddler was

presented with a clear box with four toys inside. Toys included an animal figure, a telephone, a

vehicle, and a ball.  The toddler was asked to say the name of the toy the child wished to have

but not to touch or reach for the toy. The naming the toy task included two trials. Scores were

rated from 0-6 as follows:  0 = child immediately grabbed the toy; 1 = child waited at least 2

seconds before grabbing the toy; 2 = child touched the toy but did not pull it out of the box; 3 =

child pointed to the toy; 4 = child removed his/her hands from his/her lap; 5 = child moved

his/her hands, but kept them on his/her lap; 6 = child waited with their hands on their laps. A

mean score was calculated across trials in the tasks and Z scores were calculated for each delay

task to accommodate differences in scoring scales. For ease of interpretation, mean scores prior

to transformation to Z scores are reported in Table 2.

**Mothers' perceptions of toddler dysregulation**.  Mothers completed the Infant Toddler

Social-Emotional Assessment-Revised (ITSEA; Carter & Briggs-Gowan, 2006) during an oral

parent interview with trained data collectors. The ITSEA reflects four major domains (Internalizing, Externalizing, Dysregulatory, and Competence domains). In the current study, we utilized the Dysregulation subscale ($\alpha = .89$ for the current study) comprised of 39 items scored on a 3-point scale: (0) not true/rarely, (1) somewhat true, and (2) very true/often. Sample items included: "Often very upset" and "Cries a lot". We included this scale, reflecting mothers' perceptions of toddlers' dysregulation, as a covariate in the model in order to better discern the relationship between the ERSB and toddlers' effective coping and delay of gratification skills.

**Maternal demographic risk**. The cumulative maternal risk index covariate in the current study included the following variables (dummy coded to indicate whether the risk was present (1) or absent (0) to yield a maximum sum score of 4: currently unemployed, currently single, currently living below the poverty line, teenage parenthood at the time of the focus child's birth, and less than a high school diploma.  We replicated this scheme from nationally representative research with a similar sample in the same population, low-income families enrolled in Early Head Start (Raikes et al., 2006). Toddler age (in months) and gender (coded 0 for boys and 1 for girls) were identified at study enrollment.

**Missing Data**

The main project recruited 174 infants and toddlers and their primary caregivers. For the current study, we included only maternal primary caregivers, toddlers at least 18 months old at the time of the second data collection timepoint, and cases for which we had full intervention dosage data. Thus, 123 toddlers and their mothers were included in the final sample. Of the sample of 123, 19 respondents (15%) did not have complete data at Time 2 for the delay tasks and 33 respondents (26%) were missing complete coping effectiveness data. We imputed these data based on information provided by Time 1 scores as well as other measures of toddler

dysregulation. Fewer than 5% of cases ($n = 6$) were missing data for the variables collected during the booksharing task, fewer than 5% of cases ($n = 6$) were missing data for the self-report measures included in the ERSB, and fewer than 1% of cases ($n = 1$) were missing data for cumulative risk. No PCI data were missing. Missing data were imputed based on information provided by respondents on the same measures at the first data collection timepoint at study enrollment. All data were missing at random.

Missing data were imputed prior to SEM analyses in SPSS 17.0 using the Expectation Maximization (EM) algorithm (Dempster, Laird, & Rubin, 1977), a maximum likelihood (ML) approach. The EM method iteratively imputes missing values by using two steps in each iteration. ML approaches are ideal for preparing data for latent variable models (Musil, Warner, Yobas, & Jones, 2002; Schafer & Graham, 2002). Scholars agree that EM should yield similar results and has largely trivial differences in bias and efficiency when compared to other ML approaches, such as FIML employed concurrent with SEM analyses (Enders, 2010; Schafer & Graham, 2002).

## Results

### Preliminary Analyses

Means, standard deviations, ranges, and skewness statistics for study variables, as well as a correlation matrix, are provided in Tables 2 and 3. All data were normally distributed with skewness within the accepted ranges ($\pm$ 1). Means for ERSBs were not significantly different for mothers of boys or girls ($p = .10$ to $p = .94$). Girls demonstrated higher coping effectiveness ($M = 3.95$, $SD = .66$, range $= 1.60 - 4.90$) than did boys ($M = 3.63$, $SD = .66$, range $= 1.90 - 4.90$), $t$ (121) $= -2.76$, $p = .01$, Cohen's $d = .48$. Delay of gratification scores did not differ significantly between boys and girls.

**Primary Analyses**

Analyses were conducted with structural equation modeling AMOS 18.0 in order to test

the fit of a latent construct describing ERSBs as well as the regression of ERSBs relating to

children's self regulation, controlling for variations in children's age, cumulative risk, child

gender, and maternal reports of children's dysregulatory symptomatology. Generally accepted

guidelines for interpretation of fit indices indicate that the Comparative Fit Index (CFI) should be

.93 or above (e.g. Schreiber, Stage, King, Nora, & Barlow, 2006); the Standardized Root Mean

Square Residual (SRMR) should be .08 or below; and, the Root Mean Square Error of

Approximation (RMSEA) should be .06 or below (Hu & Bentler, 1999). The complete model

provided an excellent fit (Bollen, 1989; Hu & Bentler, 1999) with the sample data, $\chi^2$ (62, $N =$

123) = 67.23, $p = .36$; RMSEA = .03; CFI = .97; SRMR = .06. Standardized regression

coefficients are presented in Figure 1.

**Measurement model**. Variables describing ERSBs were included on a single latent

factor to confirm their associations with each other and predictive validity as a single construct.

These variables included maternal warmth (global rating from book sharing task), observed

emotional supportiveness (PCI) and responsiveness (HOME), mothers' use of mental state talk

(coded from book sharing task), maternal self-report of mealtime socialization (MBQ),and

maternal report of positive expressivity in the home (SEFQ). Additionally, the ERSB construct

includes variables measured in (and pertaining to) multiple contexts, salient to the everyday

experiences of toddlers, in which parenting occurs: teaching, mealtime, booksharing, and the

home environment. The variables loaded reasonably well ($\beta = .29$ to .68, with most factor

loadings falling between .36 and .68) onto a single latent factor (see Figure 1). We recognize that

there is a broad age range in this study, although the average age of children was close to 30

months of age, reflecting primarily older toddlers.  To ensure that our one-factor solution was

meaningful, we conducted factor analyses within sample groups of children 18-23 months of

age, 24-30 months of age, and above 30 months of age.  We did not have sufficient power to

conduct a multiple group (age) model. The factor analysis indicated that while factor loadings

became more cohesive and larger among the older groups of toddlers, the one-factor solution

was viable for younger and for older toddlers.

**Full model.** The ERSB parenting latent construct was significantly related to toddlers'

self-regulation, indicated by children's effective coping and their abilities to delay gratification.

A large effect size, $\beta = .51$, was detected for toddlers' effective coping and a medium effect size,

$\beta = .38$, was found for toddlers' delay of gratification (see Figure 1). Results demonstrate that

mothers with fewer cumulative risks were more likely to demonstrate ERSBs. Unexpectedly,

higher cumulative risk was associated with better toddler coping. There were no effects based on

variation in children's age, child gender, mothers' reports of toddlers' dysregulatory

symptomatology, or the total amount of intervention curricular minutes dyads received. The lack

of a significant relationship between dysregulation and toddlers' observed self-regulation was

surprising. This may be the result of the strong relationship between ERSB and toddlers' self-

regulation, which captures a significant amount of the variance in toddlers' regulatory outcomes.

As noted earlier, recruitment site was retained in the model.  Site was freed to predict all model

variables.  Recruitment from Site 3 was positively related to receiving more curricular

intervention minutes but was not related to any other variables in the model. Risk, maternal

ratings of dysregulation, toddler age, and gender were also freed to predict all model variables

(except for site). The intervention minutes variable was freed to predict all model variables

(except for site) but was not significantly related to other model variables. The literature

indicated that toddler gender, toddler age, and cumulative risk might be relevant, and so these variables were allowed to correlate with ITSEA dysregulation. Sites were allowed to correlate. Delay of gratification and effective coping were allowed to correlate. The overall model described a moderate amount of variance in the parenting construct ($R^2 = .32$), a moderate amount of variance in toddlers' effective coping ($R^2 = .31$), and a small amount of variance in toddlers' delay of gratification ($R^2 = .15$).

## Discussion

The present study is one of the first to examine multiple ERSBs as representing a latent factor and the first to test an ERSB construct in a low-income sample. Further, we know of no others studies that have modeled a latent ERSB construct and its connections, specifically, to toddlers' self-regulation. As hypothesized, the six ERSB indicators loaded reasonably well onto a latent ERSB factor, demonstrating the cohesiveness of the ERSB construct, using the operationalization of variables that were theoretically predicted to influence self-regulation. We were able to demonstrate the existence of this construct in a low-income population, and to show the significant connection between the ERSB construct and toddler self-regulation. Finally, the finding that the ERSB construct was more strongly related to toddlers' outcomes than were individual ERSBs extends the current knowledge base on relations between ERSBs and children's social-emotional development. As we discuss, our findings suggest that multiple ERSBs may be required in the promotion of early self-regulatory development.

### ERSBs Within a Low-Income Population

Traditionally, research on parenting in low-income samples has focused on the deficits in parenting associated with life in poverty without a great deal of thought as to how parents specifically promote their very young children's emotional development. Certainly strength-

based approaches highlighting protective factors associated with positive parenting (Bates,

Luster, & Vandenbelt, 2003; Hubbs-Tait et al., 2006; Siefert, Williams, Finlayson, Delva, &

Ismail, 2007) and research providing important insights into within-group variation in samples of

low-income parents (Fish & Pinkerman, 2003; McGroder, 2000; Raver, Gershoff, & Aber, 2007;

Whiteside-Mansell et al., 2003) have paved the way for closer examinations of ERSBs in at-risk

samples.

With the exception of Garner's research (Garner, 2006; Garner et al., 1994; Garner et al.,

1997; Garner & Spears, 2000) on emotion-socialization among low-income mothers of

preschoolers and work on aspects of maternal emotional supportiveness (Moreno & Robinson,

2005; Robinson, Emde, & Korfmacher, 1997; Whittaker, Harden, See, Meisch, & Westbrook,

2011) generated from data associated with the National Early Head Start Research and

Evaluation project (Love et al., 2005), we know little about ERSBs among low-income parents.

Thus, confirmation of the latent ERSB construct in the current study extends the parenting

literature in several key ways. First, the significant relationship between the ERSB latent

construct in the current study and toddlers' self-regulation suggests that cumulative ERSBs are

particularly important to early self-regulation as compared to individual parenting behaviors,

further underscoring the strength of testing a latent factor for this purpose.  Of interest is the

finding that individually the ERSBs included in the current study were *not* strongly related to

toddlers' self regulation.  Hence, multiple ERSBs may be required in the promotion of self

regulation.  This concept is consistent with existing heuristic models (Eisenberg et al., 1998;

Morris et al., 2007; Orthner, Jones-Sanpei, & Williamson, 2004) that typically depict examples

of multiple ERSBs as related to children's regulatory behaviors. We hypothesize that the six

different, but related, ERSBs (e.g. significant *r*'s between ERSBs ranged from .20 to .32)

assessed in the current study likely provide a rich context characterized by models of self-regulation and discourse about emotions embedded within an affectively-supportive environment. Second, the results extend current research efforts utilizing a strengths-based approach. Identifying parenting strengths in vulnerable families gives us insights in parental and family functioning, and adds to our understanding of the processes underlying resilience in at-risk families (Orthner et al., 2004). Strength-based models can contribute to further conceptual development of models that may be used to guide research efforts with low-income parents and their young children. Third, our results suggests that ERSBs function similarly in their influences on young children' self-regulation as is evident in middle-income and upper-income populations. As noted previously, Garner and colleagues found that emotion-regulation did not differ between lower-income and middle-income (Garner & Spears, 2000) peers, nor did regulatory responses vary between higher-income and lower-income African American preschoolers (Garner, 2006). Moreover, in Garner's work, maternal emotional socialization behaviors were related similarly to preschoolers' outcomes in both the lower-income and middle-income samples. Our findings extend this work by demonstrating positive relationships between ERSBs and toddler self-regulation in a low-income sample. Although our work builds on Garner's work, it is important to note that our sample was primarily Caucasian, and we did not explore the extent to which conceptualizations of ERSBs might or might not be unique to European-American understandings of social-emotional development. What remains to be seen, then, is how ERSBs and their effects might differ across and within populations based on racial and cultural orientations. Additionally, questions remain about how SES within-group differences, in an already low-income sample, may be related to ERSBs. As we discuss next, both the use of ERSBs and their effects were influenced to some degree by demographic risk status.

**Demographic risk and ERSBs**. The mothers and toddlers in the current study were at risk because of economic disadvantage. As explained by McLoyd (1990, 1998), the stresses associated with poverty can negatively impact parenting behaviors. However, all parents in this study were participants in Early Head Start, which provides support for positive parenting (Love et al., 2005). The effects of poverty may have been buffered somewhat for families in the current study, although there was a strong, negative relationship between demographic risk and ERSBs. We did not have sufficient power to test maternal risk as a potential moderator both of the ERSB construct and of relations between ERSBs and self-regulation. However, the relation between risk and ERSBs suggests this as an important next step in the research. As a follow-up analysis and point of interest, we examined a one-factor solution in lower-risk (two or fewer risk indicators) and higher-risk (more than two risk indicators) families and found that loadings were acceptable (ranging from .30 to .73 in lower-risk mothers and .35 to .73 in higher-risk dyads). While not the purpose of this study, our subsequent work will focus on ERSBs in the context of maternal risk status.

Unexpectedly, risk was positively associated with toddlers' effective coping. Work on poverty and parenting (Hashima & Amato, 1994) has demonstrated that social support has a particularly beneficial effect on parents' punitive parenting behaviors among the lowest-income parents. We wondered if perhaps a similar mechanism might be at work in the current study such that EHS home visitor support might be particularly helpful in promoting toddlers' coping in higher-risk families. Alternatively, it may be that toddlers in higher risk families must develop coping skills out of necessity. From this perspective, while demographic risk might be negatively related to mothers' use of rather sophisticated ERSBs, such risk (and more specifically the characteristics of environment that are often associated with poverty) may

promote adaptive responses in infants.  There is some evidence in the literature to support this

conclusion.  For example, Garner (2006) found that lower SES status was associated with more

optimal prosocial skills in her study of middle-income and lower-income African American

mothers and preschoolers.  She suggests that low-income minority children may experience more

situations that call for empathic and prosocial behaviors as adaptive responses.  Our sample was

primarily Caucasian but it may be that the circumstances of particularly low-SES status also call

for adaptive responses.  Although unfortunately not measured in our study, events such as

frequent changes in housing and in household composition would likely require the toddler to

develop ways to cope with these shifts in the environment. Finally, it is possible that the EHS

home visitors, who rated toddler coping, might be inadvertently giving toddlers in higher-risk

families "the benefit of the doubt" and rating them higher on coping skills.

**ERSB Model Fit**

As noted, the collective model explained a moderate amount of variance in ERSB

parenting and a small-to-moderate amount of variance in toddlers' self regulation.  First, we

suspect that several other known ERSBs, beyond the scope of this study, likely make strong

contributions to children's regulatory behaviors.  In particular, mothers' moment-to-moment

support of young children's regulatory attempts plays a key role in toddlers' inhibitory control

and coping effectiveness. For example, during fear or frustration tasks, toddlers are more likely

to experience positive affect as part of emotion-regulation when parents match children's

appropriate self-regulatory behaviors (Li, Stansbury, & Brophy-Herb, 2011). The mutual

regulatory processes between mother and child and the match between strategies used by both

reflect a key aspect of self-regulatory development in young children (Cole et al., 2003).

Similarly, among older preschoolers, maternal support of preschoolers' distress during tasks is

associated with children's increased generation of emotion-regulation strategies (Cole et al., 2009).  These close examinations of maternal and child behaviors during tasks contribute to the understanding of processes through which children develop regulatory skills, although they were beyond the scope of the current study.

The small-to-moderate amount of variance explained in toddlers' self-regulation by the complete model may also be partially due to unmeasured child variables.  We posit three potential, likely complementary, explanations as to why we were able to account for 15% of the variance in delay of gratification and about one-third of the variance in coping.  First, self-regulation is a multifaceted construct (Kopp, 1982; McCabe et al., 2004).  Due to time limitations in the main study, we did not conduct a battery of self-regulation tasks.  Such a battery may have contributed to greater variance in our model.  Over toddlerhood, multiple domains of self-regulation are thought to become increasingly cohesive (Feldman, 2009). Thus, had we the opportunity to include multiple domains of self-regulation in the model, we may have been able to explain more of the variance in regulatory outcomes.  Finally, while beyond the scope of the current study, it is likely that unmeasured, but salient, child biological characteristics contribute to emotion regulation. For example, emerging work has highlighted the role of gene-X-environment interactions that are related to children's self regulation.  Most notably, genetic polymorphisms associated with dopamine (e.g., DRD4) and serotonin (e.g., SERT) are thought to relate to regulatory capacities in children (Bell & Deater-Deckard, 2007; Canli & Lesch, 2007; Hariri & Holmes, 2006; Kochanska, Philibert, & Barry, 2009; Sheese, Voelker, Rothbart, & Posner, 2007). Hence, particular polymorphisms in interaction with maternal ERSBs would likely explain additional variance in the development of toddlers' emotion regulation.

**Implications for Practice and for Further Research**

The results of this exploratory model inform practice in several ways. Study results indicate that ERSBs are present, cohesive, and related to toddlers' self-regulation in this low-income population. Given the validity of the construct and its relation to outcomes, early prevention and support program specialists may focus on further promoting these behaviors among parents of young children. Despite the deficits facing mothers parenting in poverty, low-income mothers are engaging in sophisticated forms of parenting that are facilitative of their children's self-regulation, and supporting these parenting skills would contribute to mothers' efforts in parenting their toddlers. Moreover, our findings suggest the importance of promoting constellations of ERSBs rather than single ERSB behaviors. It may help practitioners to think about ERSBs from a conceptual perspective in which they consider conceptually-related parenting behaviors and then aim to promote sets of ERSBs in their work with parents. Study results also suggest several areas of further research. As noted, examining moderators of maternal ERSBs would shed light on variations in ERSBs themselves, and variations in the effects of ERSBs on child outcomes, depending on contextual differences. Additionally, identifying characteristics associated with low-income mothers' use of ERSBs would shed light on the contexts that promote emotion-related parenting. Results from one recent study (Garrett-Peters et al., 2008) indicated that income, ethnicity, and positive engagement with infants predicted low-income mothers' use of emotion talk. Beyond this study, little is known about other predictors of ERSB use.

Other logical extensions of ERSB research are to examine the relationships between ERSBs, early emotion regulation, a key foundation for later school readiness (Denham, 2006) and social outcomes (Brody, Murray, Kim, & Brown, 2002; Keenan, 2000; McCoy & Raver,

2011), as they relate to later school performance and social-emotional competencies with peers. In other work, we (Brophy-Herb, Zajicek-Farber, Bocknek, & McKelvey, 2011) have found that emotion-regulation mediates the relationship between low-income mothers' emotional supportiveness over toddlerhood and children's cognitive school readiness as they enter kindergarten. Similarly, children's emotion-regulation may mediate relations between parental ERSBs and subsequent child social-emotional competencies (Morris et al., 2007). Moreover, examining the influence of children's behaviors on the occurrence of ERSBs would be enlightening. Baker and colleagues (2011) did not study self-regulation, but they did find that children's social problem solving skills predicted mothers' and fathers' ERSBs. In their model testing, though, ERSBs did not predict social competence. These results raise important questions about the kinds of child characteristics and behaviors that might or might not be related to parents' emotion-socialization practices. Moreover, because the relationship between child behaviors and parental emotion-socialization is likely transactional, examining this relationship over time is critical. Finally, examining fathers' use of ERSBs would provide additional insights into the early emotional environments of infants and toddlers. Baker and colleagues (2011) studied emotion-socialization behaviors among mothers and fathers and found that latent ERSB constructs varied slightly between mothers and fathers. In their work, paternal reactions to children's emotions, emotional expressiveness and emotion discourse loaded onto a latent construct of emotion-socialization for fathers. For mothers, reactions to emotions and expressiveness reflected a two-indicator construct. Emotion discourse did not load onto the latent factor. They suggest that the differing roles and perspectives of mothers and fathers may contribute to variations in the content of an ERSB construct.

**Limitations**

Given sample size limitations, we utilized a cross-sectional design in the current study and we did not test potential bidirectional influences of maternal ERSBs and self-regulation on the other. The cross-sectional approach limits the ability to meaningfully discuss ERSBs as predicting self-regulation. Turning again to existing heuristic models, we expect that mothers' engagement in ERSBs over time is likely influenced by children's behaviors. Interestingly, these bidirectional relationships may be more pertinent to certain ERSBs than to others. For example, children who are more likely to exhibit strong emotional displays may elicit more emotion-talk from their mothers (Garner et al., 2008). Moreover, mothers are more likely to engage in emotional discourse if they perceive that their young children are developmentally ready for this type of support (Dunsmore & Karn, 2001). Therefore, measures of child temperament or other individual differences would be informative. The sample in the current study reflected a low-income primarily Caucasian sample; the homogeneity of participants in terms of ethnicity and insufficient power prevented any examination of ERSBs within ethnoracial groups. It is likely, however, that maternal ERSBs are defined differently and appear differently across cultures. Finally, our measure of cumulative risk was limited to some degree. Other risks, such as changes in residential status, homelessness, relationship instability, and child temperament, also likely influence children's social-emotional development.

**Conclusions**

Results from this study demonstrate that ERSBs as measured in multiple ways (maternal self report, observational measure), across multiple contexts (mealtimes, booksharing, teaching task, general family climate), in a low-income population reflect a cohesive construct in low-income mothers' emotion-related parenting and play a role in toddlers' self-regulation. The inclusion of ERSBs as they occur in mealtimes, in play and teaching tasks, and in the general environment of the home represent developmentally salient contexts for children, emphasizing

the ecological validity of the ERSB construct. The model presented provides support for the

development of more complex models in future research that includes other important predictors

of children's self-regulation, including biobehavioral indicators.

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Table 1

*Participant Demographic Characteristics of Mothers at Study Enrollment (T1) and at the Time of the Current Study (T2)*

| Demographic Characteristic | T1 % | *n* | T2% | *n* |
|---|---|---|---|---|
| Household Composition | | | | |
| Single | 59 | 73 | 55 | 68 |
| Married | 41 | 50 | 44 | 54 |
| Missing | 0 | 0 | 1 | 1 |
| Employment | 4 | 48 | | |
| Unemployed | 66 | 81 | 66 | 81 |
| Employed part time | 11 | 13 | 13 | 16 |
| Employed full time | 24 | 29 | 19 | 24 |
| Missing | 0 | 0 | 2 | 2 |
| Education | | | | |
| Less than high school | 21 | 26 | NA | NA |
| High school diploma or GED | 47 | 58 | NA | NA |
| Some college/tech school | 30 | 37 | NA | NA |
| College degree/+ | 2 | 2 | NA | NA |

*Note.* Data are given as number (unweighted percentage). Education was not assessed at T2 given the short time frame of the study.

Table 2

*Descriptive Statistics of Key Model Variables at the Time of the Current Study*

| Measure | Min | Max | Mean | SD | Skewness |
|---|---|---|---|---|---|
| Warmth | .00 | 4.00 | 2.86 | 1.04 | -.761 |
| NCAST Supportiveness | 4.00 | 10.00 | 7.22 | 1.22 | -.204 |
| HOME Emotional Resp | 9.00 | 19.00 | 16.02 | 2.37 | -.830 |
| Mental State Language | .00 | 4.05 | 1.11 | .83 | .877 |
| Mealtime Social Interaction | 1.75 | 5.00 | 4.07 | .65 | -.632 |
| SEFQ Positive Expressivity | 1 | 5 | 4.18 | .48 | -.374 |
| ITSEA Dysregulation | 0 | 2 | .62 | .29 | .269 |
| Delay of Gratification | 0 | 7 | 3.05 | 1.57 | -.070 |
| ECI Effective Coping | 1.60 | 4.90 | 3.80 | .65 | -.875 |

Table 3

*Correlation Matrix of Main Study Variables*

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Warmth | -- | | | | | | | | | | |
| 2. PCI Support | .24** | -- | | | | | | | | | |
| 3. HOME Resp | .29** | .15 | -- | | | | | | | | |
| 4. Mental State Lang | .13 | .09 | .31** | -- | | | | | | | |
| 5. Mealtime Social | .16 | .20* | .23** | .14 | -- | | | | | | |
| 6. SEFQ Positive Expr | .15 | -.03 | .12 | .13 | .32** | -- | | | | | |
| 7. Risk | -.27** | -.25** | -.33** | -.14 | -.18 | -.09 | -- | | | | |
| 8. ITSEA Dysregulation | -.12 | .01 | -.16 | -.30** | -.07 | -.21* | .27** | -- | | | |
| 9. Child Age | -.06 | -.08 | -.07 | .02 | -.00 | .06 | .21* | .25** | -- | | |
| 10. Delay of Grat | .15 | .09 | .17 | .07 | .10 | .14 | -.04 | -.01 | .02 | -- | |
| 11. ECI Effective Coping | .15 | .11 | .35** | .10 | -.08 | .23* | -.01 | -.12 | -.02 | .17 | -- |

*Note.* PCI= Parent-Child Interaction Scale; HOME = Home Observation of the Environment; SEFQ = Self Expressiveness Questionnaire;

ITSEA = Infant-Toddler Social-Emotional Assessment; ECI = Early Coping Inventory. * $p < .05$, two-tailed. ** $p < .01$, two-tailed.
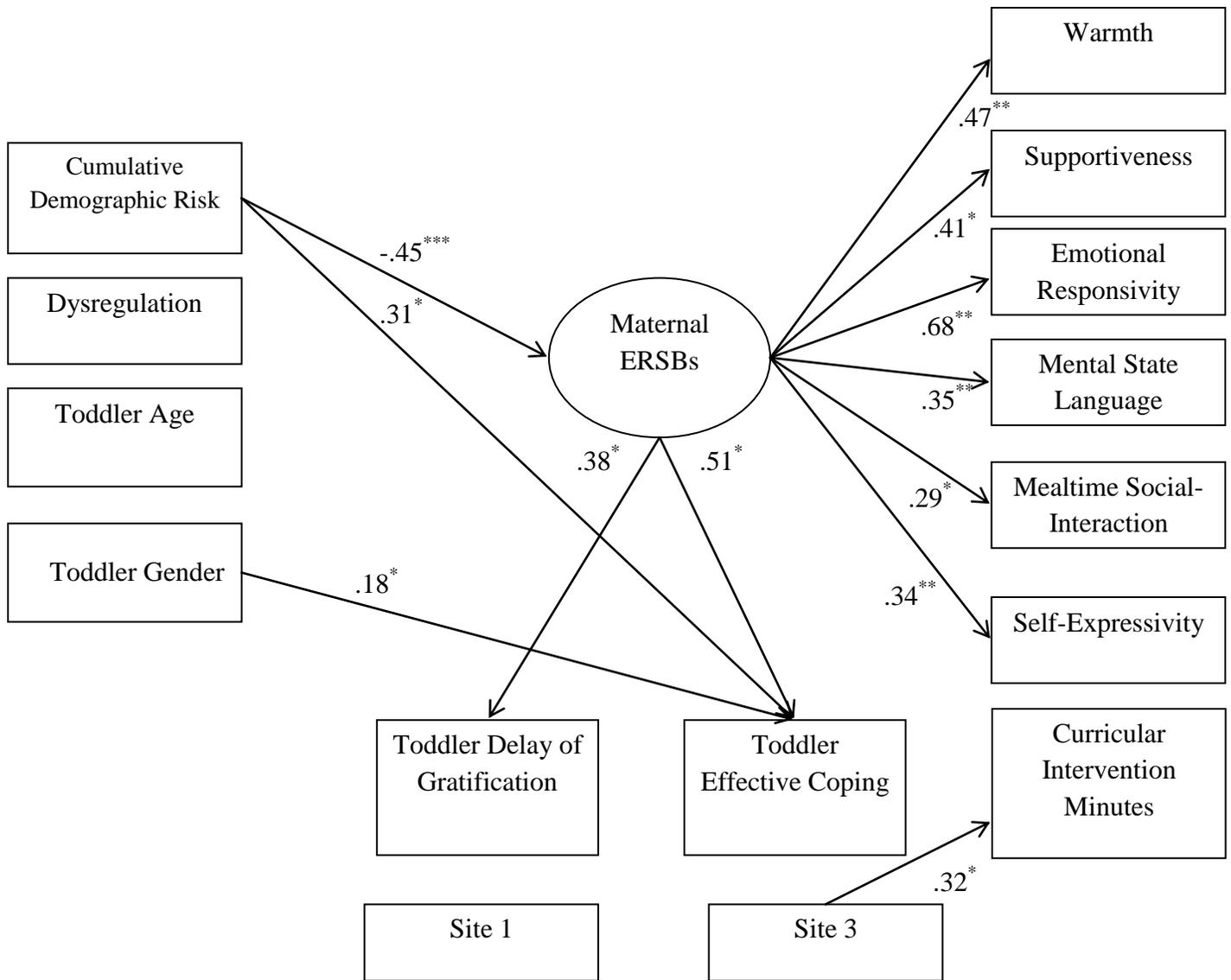
*Figure 1*. Structural equation model demonstrating predictive validity of sensitive parenting on toddlers' self-regulation.

This figure illustrates the results from structural equation modeling of relations between maternal ERSBs and toddlers' delay of gratification and effective coping. $\chi^2$ (62, $N$ = 123) =67.29, $p$ =.36; RMSEA=.03; CFI=.97; SRMR = .06. $^*p$ < .05. $^{**}p$ < .01. Note. To aid in model clarity, insignificant paths are not depicted. Site was freed to predict all model variables. Risk, maternal ratings of dysregulation, toddler age and gender were also freed to predict all model variables (except for site). The intervention minutes variable was freed to predict all model variables (except for site). Error terms were included in the model but are not depicted in the figure to preserve model clarity. As conceptually relevant, toddler gender, toddler age, and risk were allowed to correlate with ITSEA dysregulation. Sites were allowed to correlate. Delay of gratification and effective coping were allowed to correlate.