

THE MODERATING ROLE OF PARENT SUPPORT ON THE RELATIONS BETWEEN
PRESCHOOLERS' NEGATIVE AFFECTIVITY AND INTERNALIZING,
EXTERNALIZING, AND SLEEP PROBLEMS

by

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(Under the Direction of Cynthia Suveg)

ABSTRACT

Objective: This study examined the moderating role of supportive parenting behaviors on the relations between preschoolers' negative affectivity and internalizing, externalizing, and sleep problems in a diverse population. *Method:* Child negative affectivity and supportive parenting (i.e., maternal encouragement of self-regulation and supportive reactions) were assessed using questionnaires and observational methods. *Results:* Maternal encouragement of self-regulation significantly moderated the relations between mother report of child negative affectivity and child sleep problems such that, in the context of low levels of maternal encouragement, children with lower levels of negative affectivity exhibited the lowest levels of sleep problems and children with higher levels of negative affectivity had the highest levels of sleep problems. Moreover, children with lower levels of negative affectivity had more sleep problems when maternal encouragement was high than when it was low. *Conclusions:* Supportive parenting behaviors may help buffer sleep problems for children with higher levels of negative affectivity.

INDEX WORDS: Child Temperament, Parenting, Internalization, Externalization, Sleep,
Preschool Age (2-5 years)

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CHAPTER 1

INTRODUCTION

Purpose of the Study

This study aims to examine the moderating role of supportive parenting behaviors on the relations between preschoolers' negative affectivity and internalizing, externalizing, and sleep problems in a diverse population. Given that negative affectivity has been consistently linked to maladjustment, it is particularly important to investigate how parents may be able to buffer the poor outcomes associated with negative affectivity, particularly during the critical preschool period.

How This Study is Original

The present study investigates the relations among preschoolers' negative affectivity, supportive parenting, and child adjustment problems in a diverse population. In addition to internalizing and externalizing problems, this study investigates sleep as an outcome of interest, which has received relatively little research attention. Additionally, prior studies have generally relied on one method of assessment; this study uses both maternal reports and standardized laboratory observations as measures of both child negative affectivity and supportive parenting behaviors. Child negative affectivity is assessed using a measure of mother report and through observations of children participating in a task designed to elicit negative emotions. Supportive parenting is measured by mother report of their responses to their children's expressions of negative emotions and through observations of maternal encouragement of child self-regulation during an Etch-a-Sketch interaction task

Expected Results

It was expected that supportive parenting behaviors would moderate the relations between child negative affectivity and internalizing, externalizing, and sleep problems, such that children with higher levels of negative affectivity would have fewer internalizing, externalizing, and sleep problems in the context of more parent support.

CHAPTER 2

THE MODERATING ROLE OF PARENT SUPPORT ON THE RELATIONS BETWEEN PRESCHOOLERS' NEGATIVE AFFECTIVITY AND INTERNALIZING, EXTERNALIZING, AND SLEEP PROBLEMS

Temperament has been defined as characteristics that drive emotional and regulatory processes (Rothbart & Bates, 1998). Negative affectivity, one aspect of temperament, is the tendency to react to stimuli with high emotionality and discomfort, fear, anger, frustration, and sadness (Rothbart, Ahadi, & Hershey, 1994; Rothbart, Ahadi, Hershey, & Fisher, 2001). Developmentally, negative affectivity is one of the first attributes of temperament to emerge and has been shown to be partially heritable and relatively stable over time (Durbin, Hayden, Klein, & Olino, 2007; Evans & Rothbart, 2007; Goldsmith, Buss, & Lemery, 1997). Negative affectivity is a risk for a host of poor outcomes including internalizing, externalizing, and sleep problems (Bates, 2001; Bates, Maslin, & Frankel, 1985; Brumariu & Kerns, 2012; Campbell, Shaw, & Gilliom, 2000; Muris & Ollendick, 2005) that in turn, place children at risk for poor developmental outcomes in adulthood (Evans & Rothbart, 2007; Lukowski & Milojevich, 2015).

The preschool period in particular, is a key time to identify and intervene on early risk factors for future maladjustment (Poulou, 2015) given that maladjustment during this period can presage problems later in life (Bittner et al., 2007; Karevold et al., 2009; Meager, Arnold, Doctoroff, Dobbs, & Fisher, 2009; Roza et al., 2003). Moreover, Davis et al. (2017) found that the relations between negative affectivity and internalizing and externalizing problems

function consistently within a diathesis-stress model, such that higher levels of negative affectivity are associated with poorer outcomes. Therefore, identification of moderators is key, particularly during this important developmental period. This study will investigate the role that supportive parenting may play in buffering the negative outcomes associated with children's negative affectivity during the critical preschool period.

Negative Affectivity and Links to Internalizing, Externalizing, and Sleep Problems

Negative affectivity has been associated with internalizing and externalizing problems throughout development. Internalizing problems involve experiences of distress that are directed inward, whereas externalizing problems include undercontrolled behaviors such as conduct problems (e.g., noncompliance), hyperactivity, impulsivity, and aggression (Achenback, 1966). Garstein, Putnam, & Rothbart (2012) found relations between high levels of negative affectivity and both internalizing and externalizing problems in toddlers and preschool-aged children.

Additionally, Calkins and Johnson (1998) found that toddlers who showed greater distress in frustrating situations were more likely to show aggressive behavior. Moreover, longitudinal links have been established between early negative affectivity and future problems later in childhood (Clark, Watson, & Mineka, 1994; Lonigan, Phillips, & Hooe; Rende, 1993). When assessed in infancy, negative affectivity has been shown to predict distress in the preschool period (Putnam, Rothbart, & Garstein, 2008). Brumariu and Kerns (2013) investigated relations between negative emotionality at 54 months of age, emotion regulation at early school age, and anxiety symptoms in preadolescence, finding that negative emotionality early in life predicted anxiety in preadolescence. Gartstein, Putnam, and Rothbart (2012) found that children with both lower positive emotionality and higher negative

emotionality at age 3 showed the greatest increase in depressive symptoms at age 10. Taken as a whole, clear links have been established between negative affectivity in early childhood and later adjustment problems.

In addition to internalizing and externalizing problems, negative affectivity has been associated with sleep difficulties in infancy and early childhood (Atkinson, Weter, & Grayson, 1995; Jimmerson, 1991; Owens-Stively, et al., 1997; Schaefer, 1990; Sorondo & Reeb-Sutherland, 2015). For example, Sorondo and Reeb-Sutherland (2015) investigated the effect of temperament on infant sleep behavior longitudinally during the first year of life (i.e., at 5, 9, and 12 months of age) and found that negative temperament was associated with sleep difficulties throughout the first year of life. Compared to research on internalizing and externalizing problems in childhood, sleep problems have received relatively little attention. Difficulties with sleep in the preschool period, however, have been associated with externalizing problems (Bates, Viken, Alexander, Beyers, & Stockton, 2002; Reid, Hong, & Wade, 2009) and have been longitudinally related to difficulties with school adjustment and internalizing problems in later childhood and into adulthood (Ong, Wickramaratne, Tang, & Weissman, 2006; Williams, Nicholson, Walker, & Berthelsen, 2016). Consequently, it is important to include sleep as an outcome of interest and investigate potential moderators that may help to buffer these negative outcomes.

Parent Support as a Moderator

The potential negative outcomes of negative affectivity may be moderated by environmental influences, including supportive parenting behaviors. Parents play a critical role during the preschool period, as preschoolers continue to rely on parents to support their emerging self-regulatory skills (Bernier, Carlson, & Whipple, 2010; Fay-Stammbach, Hawes,

& Meredith, 2014; Posner & Rothbart, 2000; Suveg, Shaffer, & Davis, 2016). As preschoolers negotiate the demands of this developmental period (e.g., increasing independence, social interactions; Denham, 1986), opportunities for experiencing negative affect, particularly for those with a biological tendency to do so, increase. Parents can serve as critical supports during these experiences, providing opportunities for children to learn which emotions are acceptable and which are not in different social contexts, as well as helping children learn strategies to appropriately express and regulate their emotions (Eisenberg, Cumberland, & Spinrad, 1998; Gottman, Katz, & Hooven, 1997). Low levels of supportive parenting behaviors have been identified as a risk factor for child maladjustment. For example, Bayer, Sanson, and Hemphill (2006) investigated the links between parenting practices and children's internalizing problems longitudinally from the age of 2 to 4 years old and found that low levels of warm and engaged parenting behaviors predicted greater internalizing problems. Another study investigated the links between parenting behaviors and internalizing problems in children ages 2 to 6 years old and found that less positive and more critical parenting behaviors were associated with internalizing problems (Mills, et al., 2012). Supportive parenting behaviors (e.g., those that encourage youth's expressions, help the child feel better, help the child find a solution to the problem, encourage self-regulation), however, have also been identified as a protective factor and have generally been associated with positive child indices, including fewer internalizing and externalizing problems (e.g., Denham & Kochanoff, 2002; Eisenberg et al., 1999; Gottman et al., 1997; Shortt, Stoolmiller, Smith-Shine, Eddy & Sheeber, 2010; Silverman & Ragusa, 1990). For example, Denham (1997) found positive relations between supportive parental responses (e.g., comforting, discussion of emotion eliciting events, discussion of feelings) to their children's expressions of negative emotions

and children's social functioning. Moreover, positive parenting behaviors (e.g., encouragement, acceptance) have been associated with fewer internalizing problems, whereas low levels of positive parenting behaviors have been associated with more internalizing problems (Burrous, Crockenberg & Leerkes, 2009; McLeod, Wood, & Weisz, 2007).

Supporting preschoolers' expressions of negative emotions in ways that help them to gain confidence and competence in managing negative emotional experiences is important to the development of children's broader self-regulation skills. The development of self-regulation and the importance of the caregiver-child relationship is particularly important during the preschool years (Calkins & Dedmon, 2000; Calkins & Fox, 2002), as this is the period in which children begin to exert more autonomy as they prepare to face increasing social demands and enter learning environments where appropriate regulatory skills are necessary for adaptive functioning (e.g., raising a hand before speaking, waiting in line, sharing with peers, attending to specific tasks). Moreover, it is during the preschool years that children develop language skills that facilitate communication, making this stage of development a key time in which children can internalize the guidance and scaffolding provided by caregivers and begin to foster autonomy (Cole et al., 2008; Mittal et al., 2013; Russell et al., 2016). Prior research has suggested that scaffolding the development of children's self-regulation by providing positive feedback, respecting children's autonomy, providing emotion coaching, and offering guidance without controlling or intruding is associated with fewer externalizing problems (e.g., Shortt et al., 2010; Silverman & Ragusa, 1990).

Such supportive parenting behaviors may be particularly beneficial for children with temperamental risk for future problems. For example, Gallitto (2015) longitudinally

investigated the relations between difficult child temperament, positive parenting behaviors (e.g., contingent praise, sensitivity), and child internalizing and externalizing problems.

Gallitto (2015) found that positive parenting behaviors (e.g., contingent praise, sensitivity, and enjoyment of activities with their children) moderated the relations between difficult child temperament assessed at 2 to 3 years of age and later child problems at 6 to 7 years of age, such that children with higher levels of difficult temperament showed lower levels of internalizing and externalizing problems when parents engaged in positive parenting behaviors. Additionally, other research has found that preschool-aged children with difficult temperaments showed fewer externalizing problems when parents engaged in sensitive parenting behaviors (e.g., supportiveness, positive regard; Bradley & Corwyn, 2008; Mesman et al., 2009). A more recent study, however, investigated the trajectories of internalizing symptoms from early childhood (i.e., 4.5 years of age) to adolescence (i.e., 15 years of age) and the associations with temperament and parenting, finding that children with higher levels of negative affectivity exhibited elevated levels of internalizing symptoms when mothers showed high levels of warmth and sensitivity (Davis, Votruba-Drzal, & Silk, 2015). These findings are contrary to what would be expected, but the authors hypothesized that higher levels of maternal warmth may be less adaptive for children who are highly emotionally reactive than children who are less prone to showing negative emotions. Instead of learning how to self-soothe and appropriately regulate their own emotions, these children rely on their parents' external regulation, leading children to become overly dependent on their parents to regulate their emotions. Nonetheless, these findings as a whole suggest the need for additional research investigating the role that supportive parenting behaviors may play in the relations between early temperamental risk and different forms of maladjustment.

The Current Study

Given that negative affectivity has been consistently linked to maladjustment, it is particularly important to investigate how parents may be able to buffer the poor outcomes associated with negative affectivity, particularly during the critical preschool period. Prior studies have generally relied on one method of assessment; this study used both maternal reports and standardized laboratory observations as measures of both child negative affectivity and supportive parenting behaviors. In developmental research, observational measures are often considered the “gold standard”, as they allow researchers to gather information about individuals’ body gestures, tones of voice, and facial expressions during tasks (Cummings, Davies, & Campbell, 2000). Moreover, although parents are considered motivated reporters and highly knowledgeable about their children (Funder, 1995; Tackett, 2011), parents are likely to be biased in rating their children (Eisenberg, Fabes, & Spinrad, 2006; Tackett, 2011). As such, the inclusion of laboratory observations counteracts some of the limitations of parent-report questionnaires. Additionally, researchers in the field assert that neither parent-report nor observational measures alone is appropriate as the sole measure for child temperament (Eisenberg, Fabes, & Spinrad, 2006). Children’s negative affectivity, therefore, was assessed via parent-report of child temperament and through observations of children participating in a task designed to elicit negative emotions.

Supportive parenting has been defined and measured a variety of ways; this study investigated the specific role that encouragement of child self-regulation and supportive responses to children’s expressions of negative emotions play in the association between child negative affectivity and internalizing, externalizing, and sleep problems using both observational and self-report measures. The study examined the hypothesis that supportive

parenting behaviors will moderate the relations between child negative affectivity and internalizing, externalizing, and sleep problems, such that children with higher levels of negative affectivity will have fewer internalizing, externalizing, and sleep problems in the context of more parent support.

CHAPTER 3

METHOD

Participants

Participants included 102 mothers (M age = 30.68; SD age = 6.06) and their preschool- aged children (i.e., ages 3-5 years; M age = 3.50 years; SD age = .51; 61.3% boys). The sample of mother-child dyads was economically and racially diverse: African American (47.2%), Caucasian (42.5%), Hispanic (0.9%), and 4.7% identified as “Other”. The majority (52%) reported a total household income of less than \$30,000; 15% had a total household income between \$30,000 and \$49,999; and 33% had a total household income of \$50,000 or more. Nearly half (46%) of the mothers reported being currently married, 43% indicated that they had never been married, and 12% of the mothers were either separated, divorced, widowed, or engaged. Participants were recruited via flyers that will were posted throughout the community. For participation in the study, both mothers and their children were required to be fluent in English. Exclusionary criteria for participation in this study included children with a developmental disability, presence of psychotic symptoms, and mothers who were currently pregnant or expressing suicidal ideation.

Procedures

The participating institution’s Institutional Review Board approved all study procedures. To determine eligibility to participate in the study, a research assistant completed a phone screening with mothers. Eligible participants received a packet of measures in the mail to complete prior to their visit to the lab. Mothers who did not complete their measures at

home completed them at the lab visit. Mothers provided written consent and permission for their children to participate in the study, and children provided assent. Mothers and children participated in an Etch-a-Sketch interaction task and children viewed emotion-eliciting video clips. For their participation in the study, mothers were compensated \$100 and children received a small prize.

Measures

Demographics. Mothers completed a brief demographic questionnaire to provide basic information about themselves and their child, such as age, sex, race/ethnicity, parental marital status, parental employment, and family income.

Child negative affectivity. Children's negative affectivity was assessed via parent-report of child temperament and observations of children participating in a task designed to elicit negative emotions. Though the former measure reflects trait negative affectivity while the latter reflects state negative affectivity, it is important to include measures of both trait and state temperament. State measure can reflect important temperamental differences, as children's state reactions to a stimulus will likely be influenced by their underlying traits.

Parent-report. Parents completed the Children's Behavior Questionnaire, a 195-item measure assessing temperament in children ages three to seven years old (CBQ; Rothbart et al., 2001). The CBQ is scored on a 7-point Likert scale from 1 (extremely untrue) to 7 (extremely true) and asks caregivers to determine whether each listed statement is like or unlike a behavior their children has displayed during the previous 6 months. The CBQ assesses 15 dimensions of temperament with three broad dimensions of temperament: Extraversion/Surgency, Negative Affectivity, and Effortful Control. This study will use the Negative Affectivity subscale, which includes the aggregation of scores from the Discomfort,

Fear, Anger/Frustration, Sadness, and Soothability (reverse scored) scales. Higher scores indicate higher levels of negative affectivity. The CBQ has acceptable internal consistency (Rothbart et al., 2001) and in this study $\alpha = .92$.

Observational measure. Children viewed separate video clips designed to elicit fear, sad, happy, and neutral emotions. All children viewed all four clips, with the sadness and fear clips being counterbalanced as the first and third video viewed. Every child ended with the happiness clip in an effort to remedy the effects from the fear and sadness clips. Prior to each video, the children received an explanation of the narrative content of the video, with the goal of helping the children to focus on the emotional content of the videos when viewing the clips. Both the fear and sadness video clips were from the movie *Poltergeist*, a movie used in the extant literature to induce emotions in preschool-aged children (e.g., Eisenberg et al., 1988). The video designed to elicit fear was a 93-second clip depicting a child enduring a severe thunderstorm and the sadness video was a 74-second clip depicting the death and burial of a child's pet bird. The happy video was a 65-second clip from a video called "Puppy Town", in which puppies play with upbeat music in the background. Finally, the neutral clip was a 91-second clip displaying a floating geometric shape.

The videos designed to elicit fear, sad, happy, and neutral emotions were coded by trained observers, blind to film condition, for indicators of children's experience of each emotion through facial expressions. Coders were trained to identify micro facial expressions using a 7-point Likert scale to rate the level of each emotion displayed by the participants. The Observer XT 7.0 (Noldus Information Technologies, Wageningen, Netherlands) was used for coding and reliability was computed for 20% of the videos. For each child, a composite score for negative affectivity was created across all video conditions, totaling the ratings for

level of expressions of fear and sadness displayed in all four video conditions for each child. For example, the ratings for displays of fear in the fear, sad, happy, and neutral conditions were added together for Child 1. Additionally, the ratings for displays of sadness in the fear, sad, happy, and neutral conditions were also added together for Child 1. Finally, the overall ratings for displays of fear and sadness for Child 1 were combined to create a negative affectivity composite, with higher scores indicating higher levels of negative affectivity.

Child adjustment.

Parents completed the Child Behavior Checklist (CBCL/1.5-5; Achenbach & Rescorla, 2000). The CBCL is a 100-item measure rated on a 3-point Likert scale (0 *not true*, 1 *somewhat or sometimes true*, and 2 *very true or often true*), providing a measure of a child's psychosocial functioning within the past 6 months. The CBCL yields seven syndrome scales (e.g., Sleep Problems) and two broadband scales: Internalizing Problems and Externalizing Problems. The current study used the Internalizing, Externalizing, and Sleep Problems ($\alpha = 0.68$; 7 items) scales. The Internalizing Problems scale ($\alpha = 0.90$; 36 items) measures children's anxious, depressed, and withdrawn behaviors whereas the Externalizing Problems ($\alpha = 0.87$; 24 items) measures children's aggressive and destructive behaviors. The CBCL has strong psychometric properties (Achenbach & Rescorla, 2000). For the Internalizing and Externalizing Problems scales, *T*-scores ranging from 60-63 are considered "borderline" and *T*-scores greater than 63 are considered "clinical". For the Sleep Problems scale, *T*-scores ranging from 65-69 are considered "borderline" and *t*-scores greater than 70 are considered "clinical". On the Internalizing, Externalizing, and Sleep Problems scales 12%, 11%, and 7% of the children were in the borderline or clinical ranges, respectively.

Parent Support

Supportive responses to children's expressions of negative emotions and encouragement of self-regulation were assessed using self-report and observational measures, respectively. Although these constructs are not entirely the same, they assess key components of regulatory behaviors that are important to adaptive functioning in the preschool period.

Parent-report. The Coping with Children's Negative Emotions Scale (CCNES; Fabes, Eisenberg, & Bernzweig, 1990) is a parent-report measure of parental reactions to children's negative emotions. On a 7-point Likert scale ranging from 1 (*very unlikely*) to 7 (*very likely*), parents indicated the degree to which they would use each of six types of emotion parenting reactions in 12 distressing hypothetical situations as a response to their child's expressions of negative emotions. The six emotion parenting reactions are collapsed into two subscales: Supportive (Problem-focused Reactions, Emotion-focused Reactions, and Expressive Encouragement) and Unsupportive (Punitive Reactions, Minimization Reactions, and Distress Reactions) Reactions (Fabes et al., 2002). This study utilized the Supportive Reactions subscale ($\alpha = 0.90$), which consists of reactions such as "help my child figure out how to get the bike fixed", "distract my child by talking about a fun activity we could do later that day", and "tell my child it is OK to cry." The CCNES has demonstrated good psychometric properties (Fabes et al., 2002).

Observational measure. The Etch-a-Sketch interaction task requires the dyad to work together to draw a house on an Etch-a-Sketch in the designated timeframe of 4 minutes. A research assistant instructed the mother and child to work together to draw the house as quickly as possible, each using a separate knob of the Etch-a-Sketch. Moreover, the research

assistant informed the dyad that that they will earn a prize if they finish before the allotted time is up. The Etch-a-Sketch task was coded by trained observers for indicators of maternal encouragement of child self-regulation. Coders coded each time mothers encouraged self-regulation in the child. Examples of maternal encouragement of self-regulation include offering guidance when the child becomes upset, helping to generate strategies for problem-solving, and providing appropriate structure during the task. The Observer XT 7.0 (Noldus Information Technologies, Wageningen, Netherlands) was used for coding and reliability was computed for 20% of the Etch-a-Sketch videos, and inter-rater reliability was good (ICC = 0.75). A total score was obtained for frequency of maternal encouragement of self-regulation, with higher scores indicating greater frequency of maternal encouragement.

Statistical Analyses

All statistical analyses were conducted using IBM Statistical Package for the Social Sciences, Version 24 (SPSS). Data was plotted and visually examined to show that the data met the assumptions of homoscedasticity, linearity, and normality. Additionally, the data met assumptions for independence of observations (Durbin-Watson value = 1.77) and multicollinearity (tolerance = .93 VIF = 1.08). In the total sample ($N = 108$), 96 mother-preschooler dyads had sufficient data to be included in the moderation models involving observational measures and 102 dyads had sufficient data to be included in the models using mother-report measures. Missing data for the behavioral observation codes was due to technological difficulties resulting in a lack of video data for the task or footage that obscured the participants for coding. Little's MCAR test determined that data was missing completely at random ($p > .05$; Little, 1998), therefore, listwise deletion was used.

Pearson bivariate correlations were conducted between the independent (mother-report and observations of child negative affectivity), dependent (child internalizing, externalizing, and sleep problems), and moderator variables (mother-report and observations of parent support). Single moderation models were run separately for each of the independent, dependent, and moderator variables using the publicly-available PROCESS SPSS macro plug-in (<http://processmacro.org/index.html>; Hayes, 2013), resulting in a total of 12 moderation models. Moderation was evident when the interaction term between the predictor and moderator variables was significant and the 95% confidence interval did not include zero. Interactions were probed by examining conditional effects at low and high levels of maternal support (i.e., 1 *SD* below and above the mean). Participant race and family income were entered as covariates but were not significant in any analyses; therefore, the results are presented without the covariates.

Power

The sample size needed to detect statistically significant effects was determined a priori using G*Power (Faul, Erdfelder, Lang, & Buchner, 2009). In order to detect a medium effect ($f^2 = .015$) with alpha of $p = .05$ and power of 0.80 with three predictors, it was determined that the necessary total sample size to detect effects for moderation analyses is 68.

CHAPTER 4

RESULTS

Pearson bivariate correlations were conducted to examine relations among the independent, dependent, and moderator variables (see Table 1 for overall correlations and descriptive statistics). Correlations were analyzed for low and high levels of each moderator variable (see Table 2 for correlations by level of supportive reactions and Table 3 for correlations by level of maternal encouragement).

Moderation Analyses

Mother report of supportive reactions to negative emotions.

Mother report of child negative affectivity

Mothers' supportive reactions to their children's expressions of negative emotions did not moderate the association between mother report of child negative affectivity and child internalizing ($b = -1.08, t = -.78, p = .44, 95\% \text{ CI} [-3.79, 1.66]$), externalizing ($b = -1.46, t = -1.03, p = .31, 95\% \text{ CI} [-4.29, 1.37]$), or sleep problems ($b = -.02, t = -.05, p = .96, 95\% \text{ CI} [-.98, .93]$). See Table 4 for full model results.

Observed child negative affectivity

Additionally, relations between observed child negative affectivity and child internalizing ($b = .75, t = 1.20, p = .23, 95\% \text{ CI} [-.49, 1.98]$), externalizing ($b = 1.57, t = 2.11, p = .04, 95\% \text{ CI} [.08, 3.06]$), and sleep problems ($b = .20, t = 1.17, p = .25, 95\% \text{ CI} [-.14, .54]$) were not moderated by levels of mothers' supportive reactions to their children's expressions of negative emotions (see Table 5).

Observations of maternal encouragement of self-regulation.

Mother report of child negative affectivity

Relations between mother report of child negative affectivity and child internalizing problems, $b = -.40$, $t = -1.81$, $p = .07$, 95% CI [-.84, .04], and externalizing problems, $b = -.39$, $t = -1.77$, $p = .08$, 95% CI [-.84, .04], did not vary based on levels of maternal encouragement (see Table 6).

Maternal encouragement of self-regulation significantly moderated the association between mother report of child negative affectivity and child sleep problems, $b = -.15$, $t = -2.08$, $p < .05$, 95% CI [-.30, -.01]. Significant simple slopes were found at lower levels of maternal encouragement such that children with lower levels of negative affectivity exhibited the lowest levels of sleep problems when maternal encouragement was low and the highest levels of sleep problems when maternal encouragement was high (see Table 6 and Figure 1). The R^2 change due to interaction term was .04. There was a significant main effect for mother report of child negative affectivity, $b = 1.31$, $t = 3.69$, $p < .001$, 95% CI [.61, 2.02], but not for maternal encouragement, $b = -.03$, $t = -.58$, $p = .56$, 95% CI [-.14, .07] (see Table 6).

Observed child negative affectivity

Lastly, maternal encouragement of self-regulation was not a significant moderator of the association between observed child negative affectivity and child internalizing ($b = -.25$, $t = -1.19$, $p = .24$, 95% CI [-.67, .17]), externalizing ($b = -.24$, $t = -1.36$, $p = .18$, 95% CI [-.60, .12]), or sleep problems ($b = -.01$, $t = -.17$, $p = .86$, 95% CI [-.11, .09]). Results are shown in Table 7.

CHAPTER 5

DISCUSSION

Prior research has suggested that supportive parenting, as opposed to unsupportive parenting, is related to more adaptive outcomes for children with high levels of negative affectivity (Denham & Kochanoff, 2002; Eisenberg et al., 1999; Gottman et al., 1997; Shortt, Stoolmiller, Smith-Shine, Eddy & Sheeber, 2010; Silverman & Ragusa, 1990). The present study expanded upon the extant literature by investigating these relations using both behavioral observations and mother report measures for both preschoolers' negative affectivity and mothers' supportive parenting behaviors. Additionally, this study investigated child sleep problems as well as internalizing and externalizing problems as key outcomes of interest. Findings from the current study provide some support for the moderating role of maternal encouragement of self-regulation on the relations between mother-report of child negative affectivity and sleep problems. No other statistically significant moderations were found.

The current study builds upon prior work documenting the buffering role of supportive parenting practices for children with high levels of negative affectivity by demonstrating how supportive parenting behaviors, in the context of child negative affectivity, relate to preschoolers' functioning (Bayer et al., 2006; Bradley & Corwyn, 2008; Gallitto, 2015; Mesman et al., 2009; Mills, et al., 2012; Denham & Kochanoff, 2002; Eisenberg et al., 1999; Gottman et al., 1997; Shortt et al., 2010; Silverman & Ragusa, 1990). As expected, there were main effects of negative affectivity such that greater negative affectivity was linked to more

internalizing, externalizing, and sleep problems. Prior research has linked negative affectivity to a host of poor outcomes including internalizing, externalizing, and sleep problems (Bates, 2001; Bates, Maslin, & Frankel, 1985; Brumariu & Kerns, 2012; Campbell, Shaw, & Gilliom, 2000; Kelin et al., 2011; Muris & Ollendick, 2005; Sanson et al., 2004). Relations between negative affectivity and adjustment problems early in development have also been linked to negative outcomes later in development (e.g., Dougherty et al., 2010; Engle & McElwain, 2011; Gartstein et al., 2012). As such, it is important to identify factors that may buffer these negative effects.

Prior research suggests that the effects of temperament, and negative affectivity in particular, on child adjustment are moderated by context, particularly different factors in the family environment (Bates, Pettit, Dodge, & Ridge, 1998; Lewis, 2000; Morris et al., 2002; Stoolmiller, 2001). As such, we investigated supportive parenting (i.e., maternal encouragement of self regulation, supportive responses to children's expressions of negative emotions) as a moderator of the relations between child negative affectivity and adjustment problems. We found that maternal encouragement of self-regulation significantly moderated the association between mother report of child negative affectivity and child sleep problems. In the context of low maternal encouragement, children with lower levels of negative affectivity exhibited the lowest levels of sleep problems and children with higher levels of negative affectivity exhibited the highest levels of sleep problems. These results suggest that sensitive parenting is a protective factor for children with higher levels of negative affectivity. Children with higher levels of negative affectivity not only experience more negative emotions than their peers, but they also experience these emotions to a greater intensity (Rothbart et al., 1994; Rothbart

et al., 2001). Without the necessary skills to appropriately manage these intense emotions, the emotions likely do not remit by the time children go to bed, thereby contributing to difficulty sleeping. Moreover, given that sleep problems have been associated with internalizing and externalizing problems (Bates et al., 2002; Ong et al., 2006; Reid et al., 2009; Williams et al., 2016), sleep difficulties likely contribute to children's behavior and emotional problems during the day, thereby perpetuating the cycle. Appropriate support from parents that scaffolds children's regulation, however, appears to buffer these negative outcomes.

Of interest, children had the fewest sleep problems when both negative affectivity and maternal encouragement were low and the most sleep problems when child negative affectivity was high and maternal encouragement was low. Further, youth with lower levels of negative affectivity had more sleep problems when maternal encouragement was high than when it was low. Thomas and Chett (1977) proposed the goodness-of-fit model, suggesting that children's optimal development derives from "goodness of fit" between a child's temperament and parental attitudes, expectations, and demands. An inconsistency in match between temperament and parenting, on the other hand, lends way to maladaptive development. The goodness-of-fit model suggests that all children do not benefit equally from a specific type of parenting behavior and, in the context of the present results, supportive parenting is not necessarily universally beneficial for all children. Prior research has associated controlling or harsh parenting behavior with a host of adjustment problems for children (Calkins, 2002; Rubin, Hastings, Chen, Stewart, & McNichol, 1998; Rubin, Burgess, Dwyer, & Hastings, 2003; Shaw et al., 1998). Although maternal encouragement of self-regulation is certainly not considered controlling or harsh parenting behavior, it may be construed as

intruding or controlling by children who generally demonstrate regulation skills. Following the goodness of fit model, these children do not need the extra support from their parents. As such, a better fit might be parenting that grants greater independence and autonomy for the child.

Although the results investigating whether maternal encouragement of self regulation moderated the relations between child negative affectivity and internalizing and externalizing problems were not significant, it is important to note that both models were very close to significance (i.e., $p = .07$ for internalizing problems and $p = .08$ for externalizing problems) and followed the expected patterns. We cannot interpret nonsignificant results, yet the relatively small group sizes once the moderators were broken down likely precluded the opportunity to detect interaction effects. Following a similar pattern to what was found when sleep problems was the dependent variable, in the context of lower maternal encouragement, children with lower levels of negative affectivity exhibited the lowest levels of internalizing and externalizing problems whereas children with higher levels of negative affectivity showed the highest levels of internalizing and externalizing problems. Children with higher levels of negative affectivity are more likely to experience emotions such as anger, frustration, sadness, and fear, which may confer risk for internalizing and externalizing problems (Muris & Ollendick, 2005; Rothbart et al., 2001). Moreover, these children often have difficulty regulating their own emotions and behaviors (Muris & Ollendick, 2005; Vitaro, Brendgen, & Tremblay, 2002). To be sure, prior research has suggested that externalizing problems are predicted by higher negative emotionality and lower regulation skills (Diener & Kim, 2004; Eisenberg, et al., 2000; Stifter, Spinrad, & Braungart-Rieker, 1999). As such, children with higher levels of negative affectivity likely

are unable to adaptively cope with aversive stimuli or situations on their own and may need to rely on external sources of regulation, such as parents, to a greater extent than children with lower levels of negative affectivity, particularly during the preschool period (Derryberry, Reed, & Pilkenton-Taylor, 2003; Eisenberg et al., 2005; Roelofs, Messters, Hurrne, Bamelis, & Muris, 2006). Children whose parents do not provide the support needed to cultivate such skills are left to manage the emotions themselves. Nonetheless, given that the interaction was not significant, research with larger samples is needed.

This study focused on two specific aspects of supportive parenting behavior: maternal encouragement of self-regulation and supportive responses to children's expressions of negative emotions. Notably, significant results were only found when maternal encouragement of self-regulation was the moderator. Maternal encouragement of self-regulation was measured through observations whereas mothers provided self-report on their responses to their children's expressions of negative emotions. Prior research suggests that the method of assessment of parenting may reflect the reliability of the data collected (Bornstein et al., 2015; Schwarz, 1999). In their meta-analysis investigating differences in sensitivity to parenting depending on temperament, Slagt and colleagues (2016) found that observations, as opposed to questionnaires, assessing parenting resulted in more pronounced interactions between parenting and temperament. Although self-report measures allow for the gathering of information about parenting behaviors across contexts and over time, Rabinowitz and Drabick (2017) suggest that the accuracy of parents' reports of their own parenting behavior may be compromised by biases such as social desirability, current mood, or parent characteristics. As such, discrepancies may exist between what parents report and the behaviors they actually engage in. Observational data, however, is not as prone to these particular biases and,

therefore, may provide a more objective and accurate measure of parenting behavior.

A lack of findings with the CCNES scales may also reflect the fact that the Supportive Reactions scale of the CNNES is composed of three subscales (i.e., Problem-focused Reactions, Emotion-focused Reactions, and Expressive Encouragement) that reflect different kinds of specific supportive reactions (Fabes et al., 1990). For instance, problem-focused reactions involve helping the child to solve the problem that caused the distress or cope with the stressor, emotion-focused reactions involve responding in a manner that helps the child feel better, and expressive encouragement involves validation of the child's emotional experience or encouragement of the expression of negative affect. Encouraging more expression of negative emotions might not be helpful for children who are experiencing high levels of negative affectivity and who already demonstrate difficulties regulating such emotions (Eisenberg et al., 1998). Instead, children with higher levels of negative affectivity may be more likely to develop adaptive regulation skills through parent reactions involving active coping efforts that focus on relieving the experience of the negative emotions or identifying solutions to the problem (Calkins & Johnson, 1998; Dunsmore, Booker, & Ollendick, 2013; Scaramella & Leve, 2004).

Additionally, significant results were not found when temperament, the independent variable, was measured through observations. Proponents of the use of observation measures generally assert that observations allow for a reduction in bias. Opponents of the use of observational procedures to assess for temperament, however, have identified drawbacks to their use as compared to questionnaires (Saudino & Cherny, 2001). First, observations only assess the child's behaviors in that moment, whereas questionnaires allow parents to report on their child's typical temperament and behavior across time. Additionally, questionnaires allow

for an ease of administration and have established psychometric properties. Moreover, observational measures of temperament are more likely to measure state, rather than trait, temperament. As such, one isolated laboratory observation does not necessarily capture a child's general temperamental style and may not provide an accurate picture of trait level temperament.

The present analyses provide evidence of the moderating role of supportive parenting on the relations between child negative affectivity and child sleep problems, but limitations are noted. First, the design was cross-sectional, thereby only allowing for correlational rather than causal conclusions to be drawn. Given that parent-child relations are reciprocal, future research would benefit from examining these relations over time. Additionally, this study focuses on the relations between maternal parenting behaviors and child adjustment, but future research should also include fathers. Finally, as previously noted, the sample size is relatively small and future research would be bolstered by greater power with a larger sample.

Despite these limitations, this study contributes to the extant literature by documenting interactions between preschoolers' negative affectivity and supportive parenting behaviors in a racially and economically diverse sample. This study supports the notion that the relations between temperamental predisposition and maladaptive outcomes depend on a number of influences, namely parenting behaviors (Eisenberg & Morris, 2002). Parent can serve to model, coach, and support their children's developing ability to regulate and appropriately express their emotions, thereby mitigating the negative outcomes often associated with negative affectivity. Moreover, this study examines preschoolers' sleep adjustment, and suggests that supportive parenting behaviors may help buffer sleep problems for children who

experience higher levels of negative affectivity. No prior work to our knowledge has examined preschoolers' sleep problems as an outcome of interest in the context of child negative affectivity and supportive parenting, despite the literature relating sleep problems to a number of adjustment difficulties (Gregory et al., 2005; Hiscock et al., 2007). As such, the present results highlight the need to continue to contribute to the extant literature investigating sleep problems as an outcome of interest.

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Table 1

Intercorrelations and Descriptive Statistics for Main Study Variables

Variable	1	2	3	4	5	6	7	M (SD)	Range
1. Mother report of child NA	-	-.02	-.14	-.27**	.51**	.46**	.34**	4.01 (.67)	1-6
2. Observations of child NA		-	.15	.09	-.04	.02	-.01	13.21 (2.04)	9-22
3. Reaction to negative emotions			-	-.02	-.07	-.08	-.08	5.51 (.84)	2-7
4. Maternal encouragement				-	-.12	-.10	-.12	4.86 (4.63)	0-19
5. Internalizing problems					-	.64**	.51**	7.71 (7.56)	0-50
6. Externalizing problems						-	.49**	10.33 (7.74)	0-36
7. Sleep problems							-	3.34 (2.55)	0-11

Note. NA = negative affectivity

** $p < .01$. * $p < .05$.

Table 2

*Intercorrelations for Main Study Variables for Low and High Levels of Supportive Reactions to Negative Emotions*Low Supportive Reactions ($N = 15$)

Variable	1	2	3	4	5	6
1. Mother report of child NA	-	-.21	-.50	.50	.45	.23
2. Observation of child NA		-	-.37	-.35	-.55	-.52
3. Maternal encouragement			-	-.38	-.21	-.13
4. Internalizing problems				-	.77**	.63*
5. Externalizing problems					-	.35
6. Sleep problems						-

High Supportive Reactions ($N = 19$)

Variable	1	2	3	4	5	6
1. Mother report of child NA	-	-.11	-.06	.63**	.56*	.35
2. Observation of child NA		-	-.03	-.03	-.07	-.02
3. Maternal encouragement			-	-.21	-.25	-.16
4. Internalizing problems				-	.71**	.67**
5. Externalizing problems					-	.59*
6. Sleep problems						-

Note. NA = negative affectivity.

** $p < .01$. * $p < .05$

Table 3

Intercorrelations for Main Study Variables for Low and High Levels Maternal Encouragement

Low Maternal Encouragement (N = 16)

Variable	1	2	3	4	5	6
1. Mother report of child NA	-	.19	.10	.77**	.58**	.67**
2. Observation of child NA		-	-.17	.18	.09	.09
3. Reactions to negative emotions			-	.31	.40	.29
4. Internalizing Problems				-	.80**	.69**
5. Externalizing Problems					-	.69**
6. Sleep Problems						-

High Maternal Encouragement (N = 15)

	1	2	3	4	5	6
1. Mother report of child NA	-	-.67	.13	.65*	.13	-.01
2. Observation of child NA		-	.25	-.28	-.38	-.18
3. Reactions to negative emotions			-	.28	-.15	-.17
4. Internalizing Problems				-	.19	.003
5. Externalizing Problems					-	.19
6. Sleep Problems						-

Note. NA = negative affectivity.

** $p < .01$. * $p < .05$.

Table 4

Simple Slopes of Mother Report of Child Negative Affectivity on Child Internalizing, Externalizing, and Sleep Problems at Low and High Levels of Maternal Supportive Reactions to Children's Expressions of Negative Emotions

Supportive Reactions to Negative Emotions						
Outcome Variable	b (SE)	t	R ²	ΔR ²	F	95% CI
Internalizing Problems			0.27	.01	10.42**	
Low Support	6.78 (1.72)	3.94**				3.36, 10.21
High Support	4.98 (1.40)	3.55**				2.19, 7.77
Externalizing Problems			0.22	.01	8.32**	
Low Support	6.62 (1.79)	3.70**				3.07, 10.18
High Support	4.19 (1.43)	2.93**				1.35, 7.03
Sleep Problems			0.13	.000	4.72**	
Low Support	1.35 (.60)	2.24*				.15, 2.54
High Support	1.31 (.49)	2.67**				.34, 2.28

Note. ΔR² = change in R² due to interaction term. F = F value for the overall model.

** $p < .01$. * $p < .05$

Table 5

Simple Slopes of Observed Child Negative Affectivity on Child Internalizing, Externalizing, and Sleep Problems at Low and High Levels of Maternal Supportive Reactions to Children's Expressions of Negative Emotions

Supportive Reactions to Negative Emotions						
Outcome Variable	b (SE)	t	R ²	ΔR ²	F	95% CI
Internalizing Problems			0.04	0.02	0.77	
Low Support	-.97 (1.00)	-.97				-2.98, 1.04
High Support	.30 (.65)	.47				-.99, 1.59
Externalizing Problems			0.11	.07	2.45	
Low Support	-1.04 (.86)	-1.22				-2.76, .67
High Support	1.57 (.89)	1.82				-.15, 3.29
Sleep Problems			0.07	.02	1.58	
Low Support	-.14 (.25)	-.55				-.65, .37
High Support	.19 (.18)	1.09				-.16, .55

Note. ΔR² = change in R² due to interaction term. F = F value for the overall model.

** $p < .01$. * $p < .05$

Table 6

Simple Slopes of Mother Report of Child Negative Affectivity on Child Internalizing, Externalizing, and Sleep Problems at Low and High Levels of Maternal Encouragement

Outcome Variable	Maternal Encouragement		R ²	ΔR^2	F	95% CI
	b (SE)	t				
Internalizing Problems			0.30	.03	12.22**	
Low Support	7.90 (1.52)	5.20**				4.88, 10.92
High Support	4.19 (1.43)	2.93**				1.34, 7.03
Externalizing Problems			0.24	.03	9.09**	
Low Support	7.04 (1.53)	4.61**				4.00, 10.08
High Support	3.36 (1.45)	2.31*				.47, 6.25
Sleep Problems			0.17	.04	6.31**	
Low Support	2.04 (.51)	3.99**				1.02, 3.05
High Support	.59 (.48)	1.23				-.37, 1.56

Note. ΔR^2 = change in R² due to interaction term. F = F value for the overall model.

** $p < .01$. * $p < .05$

Table 7

Simple Slopes of Observed Child Negative Affectivity on Child Internalizing, Externalizing, and Sleep Problems at Low and High Levels of Maternal Encouragement

Outcome Variable	Maternal Encouragement		R ²	ΔR^2	F	95% CI
	b (SE)	t				
Internalizing Problems			0.03	.02	0.66	
Low Support	.90 (1.04)	.86				-1.19, 2.99
High Support	-1.02 (.95)	-1.08				-2.93, .88
Externalizing Problems			0.04	.03	0.79	
Low Support	1.23 (.95)	1.30				-.66, 3.13
High Support	-.68 (.88)	-.77				-2.44, 1.09
Sleep Problems			0.003	.0005	0.06	
Low Support	.06 (.28)	.23				-.49, .62
High Support	-.01 (.24)	-.03				-.48, .46

Note. ΔR^2 = change in R² due to interaction term. F = F value for the overall model.

** $p < .01$. * $p < .05$

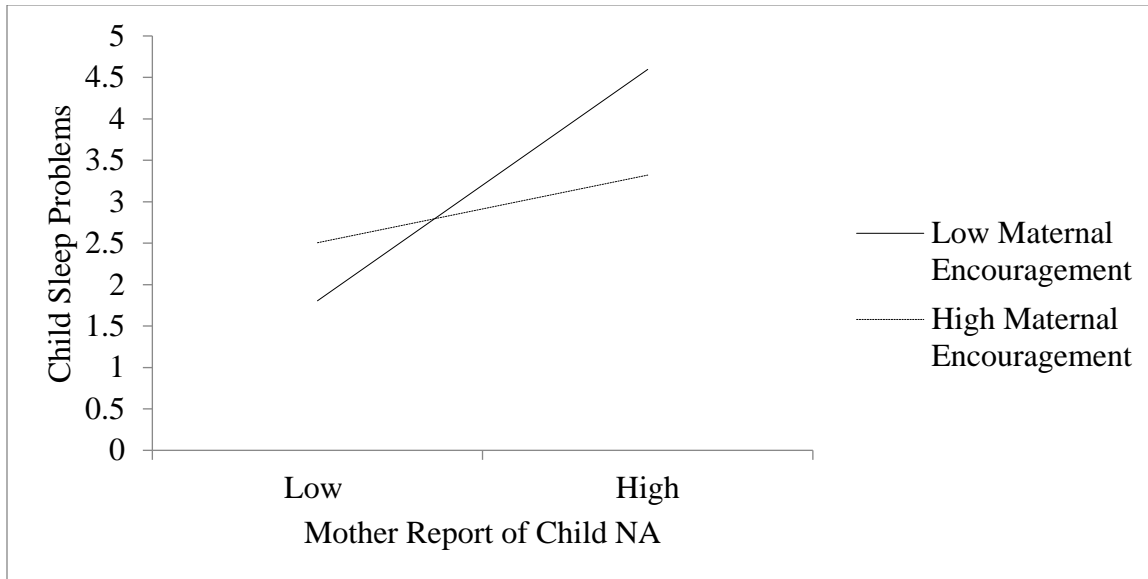


Figure 1. In the context of low maternal encouragement, children with lower levels of negative affectivity exhibited the lowest levels of sleep problems and children with higher levels of negative affectivity exhibited the highest levels of sleep problems.