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Affect representations during infancy have been associated with internalizing behaviors among children. However, few studies have examined the role of parenting practices in early childhood as shaping such associations. The current study used a large, population-stratified, randomly-selected sample of children living in rural areas under conditions of poverty to examine how positive and negative affect at 15 months was associated with internalizing behaviors at 58 months of age. Patterns of interaction between infant affects and positive and negative parenting behaviors at 24 were also examined and probed to determine whether these effects supported a diathesis stress model of early developmental processes related to later internalizing behaviors. Infant affect and parenting behaviors were measured using observational assessments and primary caregivers reported on children's internalizing behaviors. Results indicated that positive parenting predicted lower levels of internalizing behaviors for all children. For European American children, lower levels of negative affect were associated with greater internalizing behaviors in the presence of low positive parenting. For African American children, more negative parenting was associated with higher levels of internalizing behaviors. These findings raise important questions regarding different levels of vulnerability to environmental influences among European American and African American young children and have the potential to inform interventions aimed at preventing and/or reducing internalizing behaviors.

AFFECT PRESENTATION IN INFANCY AND TODDLERHOOD AS A PREDICTOR OF LATER INTERNALIZING BEHAVIORS IN EARLY CHILDHOOD

by

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CHAPTER I

INTRODUCTION

Multiple studies suggest mental health problems often emerge during the first years of life. Several studies have examined social-emotional and behavioral problems in community samples in infancy and toddlerhood. Prevalence of social-emotional problems based on parental reports ranged from approximately 12 to 16% in a representative sample of 2-year old children (Briggs-Gowan et al., 2001). Parental reports indicated that 49.9% of those children with high rates of social-emotional problems continued to present persistent psychopathology approximately one year later (Briggs-Gowan et al., 2006). A study by Carter et al. (2010) indicated that one child out of five at 6-years of age (21.6%) met the criteria to receive a mental disorder diagnostic with impairment. A prevalence of 32% was found for children without impairment. Even though biological predispositions might play a crucial role in the onset of behavioral problems in early childhood, temperamental characteristics might also be involved. For example, different representations of positive and negative affect have been linked with internalizing behavior problems in children (Dougherty, Klein, Durbin, Hayden, & Olino, 2010). In the same manner, environmental factors such as parenting might also be involved (Kok et al., 2013). Empirical work suggests an increased risk of young children developing behavioral problems during infancy as a result of early parent-child interactions (Côté et al., 2009). It is believed that early caregiving experiences play a critical role in the

development of emotional and affective development, and ultimately these influences may affect the onset of internalizing problems in the first years of life.

This thesis examines positive and negative affect in infants 15 months of age as predictors of children's internalizing behavior problems in the preschool years. A secondary goal is to examine patterns of interaction between positive and negative infant affect and positive and negative parenting behaviors in the prediction of children's internalizing problems during the preschool years.

A Diathesis-Stress Model of Developmental Psychopathology

Individuals differ in the ways they are affected by environmental experiences across development, including parenting. The majority of work conducted with this focus has been guided by two well-known models; the transactional/dual-risk model (Sameroff, 1983) and the diathesis-stress model (Monroe & Simons, 1991). Both models acknowledge that some individuals may be more vulnerable to the effects of environmental stressors depending on temperamental, physiological, or genetic characteristics. That is, poor environment experiences are most likely to have negative effects on individuals who score high on indicators of vulnerability (e.g., negative emotionality) and less likely to affect individuals that are considered to be non-vulnerable.

Diathesis stress models emphasize that some individuals have characteristics (diathesis) that make them more vulnerable to stressors in their environment. When the diathesis is activated by a stressor, the predisposition may result into the presence of psychopathology (Monroe & Simons, 1991). In this model, children presenting

vulnerability factors range from vulnerable to resilient in the face of adversity. That is, vulnerable children will be more negatively affected by the presence of negative parenting, and resilient children will be less affected in the presence of the same parenting. For example, it has been hypothesized that children high on negative affect are most likely to demonstrate maladjustment in the presence of environmental stressors (Belsky & Plues, 2009). In the presence of negative parenting, children high on negative affect will present higher levels of maladjustment than resilient children, while in the presence of positive parenting, vulnerable and resilient children will not differ in their adjustment.

In this thesis, I am focusing on infant affect as a vulnerability factor and I will consider whether positive and negative parenting moderate the associations between affect in infancy and toddlerhood and internalizing behaviors in the preschool years. If infants with low positive affect or/and high negative affect are more likely to present later internalizing behavior problems in the presence of negative parenting and/or absence of positive parenting, then those findings will support the diathesis stress model.

Internalizing Problems in Early Childhood

Internalizing problems in childhood have become a mental health concern because of their high prevalence and stability across periods of time (Mäntymaa et al., 2012). As opposed to externalizing problems, which tend to gradually decrease over childhood, internalizing symptomatology tends to increase over time (Gilliom & Shaw, 2004). Longitudinal studies have indicated stability of internalizing symptoms identified as early as in infancy (Tandon, Cardeli, Luby, 2009) and identified increases in depression and

anxiety during the first 5 years of life (Côté et al., 2009). On average, internalizing symptomatology increases from 4 to 8 years (Colden, Mott, & Berman, 2002) and is stable from 5 to 13 years (Keiley, Lofthouse, Bates, Dodge, & Pettit, 2003). Briggs-Gowan et al. (2006) indicated rates of 37.8% internalizing symptomatology persistence during 1-year in a general population birth cohort of children from 1 to 3 years of age. Parental interviews indicated that preschoolers presenting internalizing problems at 2 and 3 years of age were 3 times more likely to present a similar symptomatology 8 years later.

Internalizing behaviors in early childhood represent a large variety of behaviors and are often separated in two different dimensions: anxious/depressed mood and withdrawal. Anxious and depressed mood includes behaviors such as fearfulness and sadness. Withdrawal is characterized by the presence of social inhibition, shyness, and inhibitive behaviors (Campbell, 1995). Such dimensions may be identified as early as between 18 and 30 months of age (Mathiesen & Sanson, 2000), but it is important to remember that representations of internalizing behaviors (such as overregulation of affect and behavioral patterns) in infants and toddlers likely differ from those in middle childhood and adolescence (Wagner, Propper, Gueron-Sela, & Mills-Koonce, 2015). Specifically, the toddler/preschool age might be a highly sensitive period of study. It is during this period that children start shaping emotional regulation processes, developing cognitive competences, and self-other relationships (Sterba, Prinstein, & Cox, 2013).

Parents, teachers, and other caregivers tend to view internalizing problems as less problematic than disruptive behaviors. This may be related to the fact that internalizing

behaviors are often characterized by quiet and internal distress representations which might make these symptoms more challenging to identify at a very young age. Moreover, children at this age present lower verbal skills and a limited capacity to represent and understand internal feelings states (Tandon, Cardeli, Luby, 2009). Parental reports, as opposed to teacher reports, have been found to better predict internalizing behavior in observational play tasks among preschoolers *(*Hinshaw, Han, Erhardt, & Huber, 1992). Despite these impediments, in the last decade there has been a significant advance in the study of internalizing psychopathology in infants, toddlers, and preschoolers.

Infant Emotion, Affect, and Mood: Definitions and Distinctions

Defining and measuring infant affect, emotion, and mood has been a challenge for researchers over a long period of time. Lack of consensus regarding operationalization and conceptualization of these constructs has led to multiple misunderstandings within the social and behavioral sciences (Scherer, 2005). It has been argued that researchers need to reach some form of agreement on the operationalization and conceptualization of affective and emotional phenomena to further advance developmental study. Next, I present brief summaries of the conceptualizations of infant emotion and affect with respect to the specific constructs relevant to the current study.

Infant Emotion and Mood. According to the component process model framework, emotion is defined as "an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems in response to the evaluation of an external or internal stimulus event as relevant to major concerns of the organism" (Scherer, 2005, p. 697). That is, emotions are elicited by stimulus events and perceived

implications of those events for each individual. Emotions are not steady states; rather, emotions are continually changing and adjusting to the environment stimulus. They are high in intensity, and short in duration. Some of the key features that help to differentiate among emotion, affect, and mood are the rapidity of change, the intensity, and the duration. For example, moods tend to be less intense and last for longer periods of time. Moods may arise without the presence of stimulus events and tend to impact the behavior of a person (Scherer, 2005). Some authors have argued that mood and emotion represent the same construct; that is, emotion can be thought of as a continuum on which moods are understood to be emotions with low intensity (Pekrum, 1992). Of particular relevance to the current study is the conceptualization of affect.

Infant Affect. Affect is one of the most basic state presentations observable in humans. It is considered to be a more general construct than are emotion or mood, and does not need the presence of any stimulus to be elicited (Longo, 2015).

Affect in Relation to Temperament. Affect is related to temperament defined as biologically-based individual differences in behavioral and emotional reactivity and self-regulation (Laptook et al., 2008). Affect dispositions are linked to stable personality traits and in that way are related to temperament. Forman et al. (2013) pointed out that positive affect and negative affect are already established over a 3-month period in the first year of life. Individual differences in affect are relatively stable over time and impact the way individuals respond to environmental stimuli (Clark & Watson, 1999). This definition is consistent to what Rosenberg (1998) termed trait-like affect.

Different from temperament, state-like affect represents a response to a stimulus event and is less stable over time. Positive and negative affect are already present in the first month of life (Sallquist et al., 2010). However, they increase in frequency and intensity throughout the preschool period (Bridgett, Laake, Gartstein, & Dorn, 2013). The first two years of life may constitute an optimal period to consider affect as a predictor variable because of the strong associations between cognitive-emotional changes during infancy and toddlerhood. It is also a crucial time to observe without its being confounded with internalizing behavior problems (Caspi, 2000).

Positive Affect and Negative Affect. Clark and Watson (1991) focused on affect in their study of depression and anxiety. These researchers defined positive affect as the extent to which an individual feels active, enthusiastic, and interested. States such as fatigue or tiredness represent absence of positive affect. In contrast, negative affect is defined by expressions such as being upset, angry, sad, worried, or showing discomfort. States such as calm and relaxed represent lack of negative affect. Prior to Clark and Watson's (1991) work, negative affectivity, or trait negative affect, was denoted with labels such as neuroticism, general maladjustment, or negative emotionality, while positive affect has been studied primarily as a component of extroversion in adults. The majority of the studies conducted on affect have focused on its negative dimension and paid less attention to positive experiences (Seligman & Csikszentmihalyi, 2000). Recent studies have used the terms "positive and negative affectivity", and "positive and negative emotionality" as synonyms (Laptook et al., 2008; Laptook, Klein, Olino, Dyson, & Carlson, 2010). It is important to note that positive and negative affect appear to have

different representations in younger children. Positive affect is usually represented by features such as smiling/laughter, level of activity, and intensity of pleasure. Negative affect is characterized by the presence of fear, sadness, discomfort, and anger (Rothbart, Ahadi, & Evans, 2000). However, this does not imply that positive affect is equivalent to low negative affect; rather, these are two distinct dimensions of affect.

Researchers have used different instruments to measure positive and negative affect. The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is one of the most widely used affect scales. The PANAS scales have been successfully used in a variety of studies from different disciplines, translated into different languages, and adapted for children of different ages (Schmukle, Egloff, & Burns, 2002). However, there are many challenges to accurately assessing positive and negative affect in infants and toddlers. Most researchers have measured positive and negative affect using questionnaires. Research focused on the study of affect in children often relies on parental reports which alone may not provide an accurate measure of affect in young children (Kagan, 1998), particularly because affect is internally experienced and it may rely on later maturation processes (Durbin, Hayden, Klein, & Olino, 2007). In recent years, observational measurements, both in laboratory settings and natural environments, have been used to effectively assess affect. However, such an approach is a costly and time-consuming process when conducting large-scale research studies (Van Schagen Johnson et al., 2016). Research on affect that combines different methodologies may offer a better window on positive and negative affect in childhood.

The focus of the present study is on overall dispositions of affect in infants 15 months of age. Affect will be considered as different from temperament. That is, the study examines infants' positive and negative affect representations when interacting with their caregivers during a free play task, rather than how they are reacting to novelty.

Positive and Negative Affect: One Dimension or Two? Yet despite the distinct nature of definitions of positive and negative affect, the dimensional structure of affect has been the subject of some controversy. Some researchers have argued that positive and negative affect represent a two-factor model in which positive and negative affect can be experienced simultaneously. Others have understood positive and negative affect as different ends of a single bipolar continuum. However, due to the use of different approaches to conceptualize and measure positive and negative affect, recent research focused on adult emotionality has moved away from a bipolar conceptualization of this emotionality-based dispositional factor and emphasized these two constructs as distinct (Belsky, Hsieh, & Crnic, 1996; see Figures 1 and 2).

Early studies defined positive and negative affect as "descriptively bipolar but affectively unipolar dimensions" (Zevon & Tellegen, 1982, p. 112). That is, high levels of either positive or negative affect represent high emotional arousal, and low levels represent lack of affective involvement. But positive and negative affect are considered to be different dimensions. Cross-cultural studies have confirmed that positive and negative affect are two different constructs (Watson & Tellegen, 1985). Clark and Watson (1991) also defined positive and negative affect as two distinctive dimensions that show different correlational patterns with other variables. For example, positive affect is associated with

social activity, exercise, and pleasant events. Negative affect is correlated with health conditions, stress, and unpleasant events. Clark and Watson noted that positive and negative affect states were associated with different personality traits; that is, negative affect with neuroticism and positive affect with extroversion.

Factor analyses conducted on self-report measures of negative affect and positive affect in adults have indicated associations between anxiety and the negative affect factor, and between depression and lack of positive affect (Tellegen, 1985). The different contributions of negative and positive affect to the development of anxiety and depression are consistent with the idea that negative and positive affect represent distinct dimensions. Green, Goldman, and Salovey (1993) found the same results in a sample of college students, concluding that a two dimensional model was a better fit. Findings from a recent cross-cultural study supported a two-correlated-factor model in a sample composed of Iranian and American adults (Joshanloo & Bakhshi, 2015).

Studies focused on infant positive and negative emotionality have also examined the independence of these dimensions. Belsky, Hsieh, and Crnic (1996) used parental reports and laboratory assessments of emotionality of boys ages 10 to 13 months. Emotional measurements were conducted at 18 and 20 months of age to validate a two-dimensional conceptualization of infant emotionality. The authors found that a two dimensional model of affect better fit the data than a one dimensional model in early childhood. In another study by Goldsmith and Campos (1990), the internal structure of positive and negative affect in a sample of 9 months old twins was examined. Observational assessments in the laboratory and maternal reports supported a two

dimensional model, replicating previous studies with adults. Some studies have examined whether the structure of affect is the same for younger and older children or changes over time. Bushman and Crowley (2010) found that two factor models were the best fit for both younger and older children and concluded that the structure of affect does not vary across age groups. In contrast, to my knowledge there is just one study that has provided strong evidence supporting a one-factor model in children from third and sixth grades (Cole et al., 1997). However, their results may be explained by the use of different measures and models. For example, Cole and colleagues used general measures to assess anxiety and depression rather than specific measures to assess positive and negative affect.

It should also be noted that some studies suggest that, at least among adult participants, observational measurements may lead to mistaken conclusions regarding the distinction of positive and negative affect factors (Diener et al., 1995). Even though findings support the idea of a two dimensional approach for the study of affect both in children and adults, negative and positive affect manifestations may not be fully distinct constructs. Completely independence is difficult to achieve because positive and negative affect assessments occur in the same situations (Belsky, Hsieh, & Crnic, 1996). Diener and colleagues (1995) concluded that positive and negative affect should be understood as "separable", rather than independent or bipolar. That is, there is a moderate association between positive and negative affect, but they represent two separable dimensions of emotionality. A possible explanation such a structure may be that positive and negative affect are usually assessed in the same emotion-eliciting condition. Overall, infants high

on positive affect do not necessarily show low levels of negative affect, and infants low on positive affect do not necessarily show high negative affect. Further examination of the exact degree of independence between these constructs and changes over time is needed.

Positive Affect, Negative Affect, and Internalizing Behaviors in Early Childhood

Most of the research focused on affect dimensions has focused on negative emotionality and its relationship with social-emotional development and psychopathology (Nigg, 2006). Children with high levels of negative affect have more problems adapting to novelty, stress, and change – problems which play a key role in relation to socio-emotional and psychopathology development in children (Bates & Pettit, 2007).

Main Effects of Affect on Internalizing Behaviors. Multiple studies have consistently shown that infant negative affect or negative emotionality predicts early emergence of internalizing behaviors (Côté et al., 2009; Eisenberg et al., 2009). Infants with high levels of fear, distress to novelty, and anger tend to show higher levels of internalizing problems during childhood (Putnam & Stifter, 2005). For example, Crawford, Schrock, and Woodruff-Borden (2011) found that child negative affect and family functioning had a direct effect in the presence of internalizing behavior during the preschool years. In another study, researchers examined how risks factors during infancy related to internalizing behaviors later in childhood. Findings indicated that infant negative affect was significant associated with the development of internalizing behaviors at age 5 (Shaw, Keenan, Vondra, Delliquadri, & Giovannelli, 1997). Findings indicate

that infants high on negative affect may be at special risk of developing internalizing behaviors during childhood.

In contrast, the impact of positive affect has largely been ignored in the literature, specifically in early childhood (Meritesacker, Bade, Haverkock, & Pauli-Pott, 2004). Past studies have found negative relationships between positive affect and internalizing problems in adolescents (Philips et al., 2002) and adults (Naragon-Gainey, Watson, & Markon, 2009), but studies with children have yielded inconsistent results. Specifically, low levels of positive affect have been identified as an indicator of risk for internalizing problems in children (Hayden, Klein, Durbin, & Olino, 2006; Lonigan, Phillips, & Hooe, 2003). Even though there is evidence that low positive affect in children is important for later adjustment, just a few studies have focused on the effects of positive affect early in life (Bridgett, Laake, Gartstein, & Dorn, 2013). For example, Wang & Saudino (2015) examined the associations between positive affect and internalizing problems in a sample of 300 twin pairs at age 3. Negative correlations between positive affect and internalizing problems were found due to shared and non-shared environmental effects. These results emphasize the importance of taking into account the social contexts in which children are raised. However, other studies have indicated that children's intensity of positive affect was not significantly associated to internalizing behavior in a sample of 2 years old (Putnam & Stifter, 2005) and that higher positive affect was associated with higher levels of internalizing behavior problems in a sample of school-age children in China and the US (Zhou, Lengua, & Wang. 2009).

Others studies have indicated that high levels of positive affect promote positive adjustment and play a protective role in relation to psychopathology (Putnam and Stifter, 2005). The lack of consistency across studies regarding the association between positive affect and internalizing behaviors might be explained based on which aspects of positive affect are measured (e.g. latency, frequency, and intensity). For example, children who present high levels of positive affect more frequently might display fewer internalizing problems, suggesting that this association is based on frequency, rather than intensity (Wang & Saudino, 2015).

Interactive Effects of Affect.

Positive and Negative Affect. Studies of positive and negative affect in early childhood have reported independent and additive effects of both affect dimensions as predictors of internalizing behaviors. However, interaction effects have been less studied and the literature is unclear regarding how these two dimensions in early childhood interact to predict risk. Children high on negative and/or low on positive affect have been hypothesized to be at increased risk for depression (Dougherty, Klein, Durbin, Hayden, & Olino, 2010). Research focused on the interaction of positive and negative affect supports the idea that the combination of these two affect dimensions serves as an additional risk factor for the development of internalizing problems in preschool-aged children (Shankman et al., 2011) and that children low on positive affect and high on negative affect may be especially at risk. For example, in a study by Dougherty et al. (2010) the combination of lower levels of positive affect and high negative affect at age 3 predicted the greatest increase in depressive symptoms in middle childhood than either affect

dimension alone. These interaction effects were not found when using observational measurements of affect. However, several authors have noted that the combination of high negative affect and low positive affect together may not place children at greater risk than just the presence of one of these risk factors alone (Shankman et al., 2011; Shankman & Klein, 2003). Therefore, it is unclear how positive and negative affect interact to predict internalizing behaviors in early childhood.

Positive Affect and Parenting. Studies have suggested that low levels of positive affect may place children at risk (Hayden, Klein, Durbin, & Olino, 2006) and high levels may buffer children against maladaptive outcomes (Putnam and Stifter, 2005). However, only a limited number of studies have examined how parenting practices interact with infant positive affect in predicting later adjustment. For example, Danzig, Dyson, Olino, Laptook, and Klein, (2015) used independent measures of positive and negative affect in preschoolers to examine how positive and negative parenting moderated the effects of affect on children's appropriate behaviors at age 6. No interaction effects for children's positive affect were found in this study. In a study in second-generation Turkish immigrant families, maternal reports indicated that children with easy temperaments at age 2 had lower levels of physical aggression at age 3 in the presence of less observed positive maternal parenting (Yaman, Mesman, van Ijzendoorn, & Bakermans-Kranenburg, 2010). The lack of studies on the manner in which parenting might interact with positive affect in relation to child outcomes makes it difficult to draw conclusions regarding the interaction effects between positive affect and parenting and how it relates to children's internalizing behaviors. However, it is likely that positive affect will be

negatively associated with internalizing behaviors in the presence of more negative parenting, with children low in positive affect showing higher levels of internalizing than those high in positive affect. In the presence of positive parenting, children high in positive affect will likely show the lowest levels of internalizing behaviors.

Negative Affect and Parenting. Children high in negative affect are at risk of developing adjustment problems, such as internalizing and externalizing problems (Bates & Pettit, 2007). However, the extent in which such problems will develop may depend on the quality of parenting children receive. That is, the link between negative affect and internalizing behaviors might be moderated by positive and negative parenting. Diathesis stress models suggest that vulnerable individuals are most affected by negative environments, with difficult emotionality and negative parenting each conferring risk for maladjustment (Kiff, Lengua, & Zalewski, 2011). Research examining the interaction of negative affect with parenting have indicated that children higher in negative affect show more adjustment problems in the presence of more negative parenting (Kiff, Lengua, & Zalewski, 2011; Lahey et al., 2008). For example, Gilliom and Saw (2004) found that the combination of high negative affect and high maternal control was associated with increasing internalizing trajectories in a sample of boys followed from ages 2 to 6 years. Thus, in the presence of more negative parenting, children high on negative affect will show higher levels of internalizing behaviors, while in in the presence of more positive parenting children will differ little in their levels of internalizing behaviors (Slagt, Semon Dubas, & Aken, 2016).

Taken together, these findings would suggest that children high on negative affect and/or low on positive affect may be at particular risk for developing internalizing behaviors in the presence of negative parenting and/or absence of positive parenting early in life, supporting the diathesis stress model. However, it is unclear whether children high on negative affect, low on positive affect, or the combination of both may be at special risk for internalizing behavior problems in the presence of more negative parenting.

Ethnicity as a Moderator

Most studies focused on parenting and child outcomes have involved samples of European American, two-parent, middle-class families, resulting in a lack of attention to family diversity and differences among ethnic groups (Amato & Fowler, 2002). Positive and negative parenting may have different effects on child outcomes within different ethnic groups (Deater-Deckard & Dodge, 1997). For example, spanking has been found to be more culturally normative among African American parents than within any other racial group (MacKenzie et al., 2012). That is, negative parenting practices such as spanking have been shown weaker associations with maladjustment among African American children than among European American children. However, other studies have found associations between negative parenting and maladjustment. In a study by Coley, Kull, and Carrano (2014), maternal spanking at age 3 predicted significant small decreases in children's internalizing problems one year later, but spanking was strongly associated with higher levels of internalizing problems over the long term among African and Hispanic Americans.

The majority of studies focused on optimal parenting have found that there are not race differences in associations between positive parenting and indicators of child adjustment, suggesting that there are not differential effects of positive parenting on children's outcomes across diverse type of families or social contexts (Amato & Fowler, 2002). However, this evidence is mixed, with some studies reporting differential effects of positive parenting across ethnic groups. For example, Propper, Willoughby, Halpern Carbone, and Cox, (2007) found that in the presence of warm-responsive maternal parenting, African American children (18-30 months of age) had lower levels of internalizing behaviors than did European American children exposed to similar parenting. Race and cultural factors may influence the ways in which parents behave, their beliefs regarding those behaviors, and the manner in which such behaviors are associated with indicators of child adjustment.

Racial differences in associations between parenting dimensions and child outcomes have been explained in terms of the dissimilar life experiences of European and African Americans families. For example, African American families experience more poverty and economic stressors that any other group (McLoyd, 1998). Families living under conditions of poverty have been found to demonstrate lower levels of parental warmth and higher levels of emotional unavailability (Bakermans-Kranenbrug et al., 2004). Likely, African American children tend to grow up in higher risk environments than European American children, which ultimately may result in higher rates of maladaptive behaviors among African American children. Therefore, race may play an important role in relation to associations between parenting and internalizing behaviors in

children; however, the study of these associations in early stages of life is limited. In this thesis, I will explore whether the associations between affect and internalizing behaviors in the presence of negative parenting vary by race given the possibility such associations would be stronger among European American children than among African American children.

Current Study

The proposed study examines associations between infant positive and negative affect, maternal parenting behaviors, and internalizing behaviors in early childhood. To reduce same-source biasing of results, observational measures of infant affects and maternal behaviors are used at 15 months of age along with maternal reports of internalizing behaviors at 58 months of age. The primary goal of this study is to examine additive and interactive effects of infant positive and negative affect as predictors of later internalizing problems. Second, interactions between infant affect and maternal positive and negative parenting will be examined and probed to determine whether these effects support a diathesis stress model of early developmental processes related to later internalizing behaviors. In addition, I will examine whether effects differ for African American children versus European American children.

The following hypothesis will be tested (see figure 3 for a summary of interaction effects).

Main Effects:

Hypothesis1. Positive affect at 15 months will predict lower levels of internalizing behaviors at 58 months of age.

Hypothesis 2. Negative affect at 15 months will predict higher levels of internalizing behaviors at 58 months of age.

Hypothesis 3. Positive parenting at 24 months will predict lower levels of internalizing behaviors at 58 months of age.

Hypothesis 4. Negative parenting at 24 months will predict higher levels of internalizing behaviors at 58 months of age.

Interaction effects:

Hypothesis 5. Positive affect will moderate the association between negative affect and internalizing behaviors. Although child negative affect is expected to be positively associated with internalizing for children experiencing high and low levels of child positive affect, the association is expected to be stronger for those with lower levels of positive affect.

Hypothesis 6. Positive parenting will moderate the association between positive affect and internalizing behaviors. A negative correlation between positive affect and internalizing behaviors will be observed for children experiencing low positive parenting. No association between child positive affect and internalizing will be observed for children who experience high levels of positive parenting.

Hypothesis 7. Negative parenting will moderate the associations between positive affect and internalizing behaviors problems. Although positive affect is expected to be negatively associated with internalizing for children experiencing high and low levels of negative parenting, the association is expected to be stronger for those experiencing higher levels of negative parenting. In addition, I will explore whether these associations

vary by race given the possibility that European American children will show higher levels of internalizing behavior problems than African American children in the presence of negative parenting.

Hypothesis 8. Positive parenting will positively moderate the association between negative affect and internalizing behaviors. Negative affect will positive predict internalizing for children experiencing low levels of positive parenting. No association between child negative affect and internalizing will be observed for children who experience high levels of positive parenting.

Hypothesis 9. Negative parenting will moderate the associations between negative affect and internalizing behaviors problems. Although negative affect is expected to be positively associated with internalizing for children experiencing high and low levels of negative parenting, the association is expected to be stronger for those experiencing higher levels of negative parenting. In addition, we will explore whether these associations vary by race given the possibility that European American children will show higher levels of internalizing behavior problems than African American children in the presence of negative parenting.

CHAPTER II

METHODS

Participants

The Participants in the current study were drawn from the Family Life Project, a longitudinal investigation focused on families living in high rural areas under conditions of poverty. Participants were recruited from three counties in central Pennsylvania and three counties in eastern North Carolina. A total of 1,292 families were recruited using a stratified random sampling strategy. Families were recruited when mothers were living in one of these six counties at the time of the target child's birth. Families were recruited from hospitals, as well as through telephone contact information available in birth records. Standardized scripts and screening procedures were used by research assistants who provided mothers information about the study and the monetary incentives for each home visit. Families for whom English was not the primary language spoken in the household, who were planning on moving to a different state in the next 3 years, or whose parental rights had been severed by the state were excluded form the study. Approximately, 70% mothers agreed to be part of the study and about 80% of those mothers were enrolled in the study and provided written informed consent for their own and the target child's participation.

The current study included a total of 1,255 mothers for whom data were available for the key variables in the current study (see table 1 for demographic characteristics and

descriptive statistics for the complete sample). Approximately 38% of families at the 15 months assessment had a family income at or below the poverty line. Data were mostly collected from biological mothers with the exception of two foster parents and eight grandmothers or other relatives. In the present study, these individuals are referred as "primary caregivers" and the sample was restricted to 544 African American and 711 European American children.

Procedures

Families were part of an ongoing longitudinal study that started when children were 2 months old and involved home visits at multiple points in time. The current analyses focus on data collected when the target child was 15, 24, and 58 moths of age. Home visits consisted of interviews, questionnaire completion, child assessments, and observational tasks of mother-child interactions. The duration of the home visit at each of the timepoints was 2-3 hours. Interviewers and respondents entered interview and questionnaire data into a laptop computer during the home visits. The Kaufman Functional Academic Skills Test literacy screener (Kaufman & Kaufman, 1994) was used to determine if participants could complete questionnaires independently. Mothers with eight-grade reading levels or higher were able to complete the questionnaires individually.

At the 15 month home visit, mothers' and children's interactions were videotaped while they played together with a standard set of toys provided by a research assistant and instructed to play as they would normally do for 10 minutes. At the 24 month home visit, mothers and children were videotaped while working on a puzzle for 10 minutes.

During the puzzle task, child and mother dyads worked on three puzzles increasing in difficulty and mothers were instructed to assist their children on the task as they normally would do.

Measures

Infant Positive and Negative Affect. At the 15 month home visit, infant facial expressions and vocalizations during mother-child interactions were coded by two independent coders for positive and negative affect. Positive affect was defined in terms of the extent to which the child appeared as satisfied and happy. A rating on 1 was given to children who exhibit almost no positive affect during the 5-second interval. Ratings of 2 were given to children who showed infrequent or weak signs of positive affect, 3 if they exhibited mild levels of positive affect, 4 if they predominately displayed positive affect, and 5 to children who were exceptionally positive in terms of physical and vocal expression. Negative affect scale was defined in terms of the extent to which the child cried, fussed, frowned, and tensed the body while crying, as well as other behaviors. A rating of 1 was given to children displaying little to no negative affect during the 5-second interval. Ratings of 2 were given to children who showed infrequent or weak signs of negative affect, 3 if they exhibited mild levels of negative affects or if it was inconsistent, 4 if they predominately displayed negative affect, and 5 to children who showed high levels of negativity and were crying or angry during most of the interaction. Coder pairs randomly double coded a minimum of 20% of the sample for reliability. Each pair of coders maintained intraclass correlations of >.80 during the entirety of the coding process. These measures of positive and negative affect have been successfully

used in previous studies using the same coding system (Mills-Koonce, Propper, & Barnett, 2012).

Positive and Negative Parenting. At the 24 month home visit, mother-child interactions were coded to assess levels of maternal sensitivity, detachment, intrusiveness, positive regard, negative regard, stimulation of development and animation. All interactions were 10 minutes of duration, and were videotaped for later coding by trained and reliable coders. Coders rated interactions in a 5-point sale, with 1 being *not at all characteristic* and 5 being *highly characteristic*. Factor analyses conducted in previous studies using the same variables and data, suggested two different factors that guided the creation of two positive and negative parenting variables (Mills-Koonce, Propper, & Barnett, 2012). Maternal positive parenting was based on the mean of sensitivity, detachment (reversed score), positive regard, animation, and stimulation of development. Maternal negative parenting was based on the mean of intrusiveness and negative regard. Intraclass correlations were used to determined inter-rater reliability for each pair of coders on each construct with the criterion codes. Intraclass correlations across each pair of coders was .91 for positive parenting, and .86 for harsh-intrusive parenting for the 24 month assessment. Coders' inter-rater reliability remained above .80 on each construct and 53.21% of the cases in this timepoint were double coded.

Internalizing Behaviors. Internalizing behaviors at 58 months were measured using the Strengths and Difficulties Questionnaire (SDQ; Dadds, Fraser, Frost, & Hawes, 2005). The SDQ is a standardized assessment based on parental report of children's emotional and behavioral difficulties. It provides an overall behavioral index and includes

the following subscales: emotional symptoms, conduct problems, hyperactivity/inattention, and prosocial behavior. Mothers rate their child on each item that describes the child's behaviors during the past 6 months. The emotional symptoms subscale was used in the current study. The following 6 items are included in this subscale: often complain of headaches, stomach-aches or sickness, many worries or often seems worried, often unhappy, depressed or tearful, nervous or clingy in new situations, and many fears and easily scared. Each item is rated from 0 to 2, with 0 being *not true,* 1 being *somewhat true,* and 2 being *certainly true*. Because this was the only assessment of emotional symptoms at this point in time, the mean score of this scale was used as an indicator of internalizing behavior problems, with adequate inter-item reliability (α = 0.68) and well-stablished levels of discriminant and criterion validity.

Analytic Strategy

First descriptive statistics will be calculated for each of the key variables. Next, correlations will be generated to examine the associations among variables at different time points. Finally, a series of hierarchical multiple regression models will be computed to identify significant predictors of internalizing behaviors. Two sets of hierarchical regression models will be conducted to predict internalizing behaviors at 58 months of age. One will examine positive parenting and the other negative parenting. A standard set of covariates consisting of child gender, race, maternal income ratio, and state at 15 months will be included in all models in the first step. The second step will include positive and negative affect at 15 months and parenting (positive or negative) at 24 months of age as predictors. The third step will include two-way interaction terms of race

x positive affect, race x negative affect, positive affect x negative affect, positive affect x positive parenting, and negative affect x positive parenting. The last step will involve entering the three-way interaction terms of positive affect x negative affect x race, positive affect x positive parenting x race, and negative affect x positive parenting x race. The second regression model will be identical to the first model but will involve negative parenting instead of positive parenting.

CHAPTER III

RESULTS

Intercorrelations among Model Variables and Differences by Race

Descriptive statistics and bivariate correlation coefficients for all variables included in the regression models are presented in Table 2 separately by race. Among European Americans, higher levels of positive affect were associated with lower levels of negative affect, $r(589) = -.13$, $p < .01$, and higher levels of negative affect were associated with lower internalizing behavior problems $r(565) = -.09$, $p < .05$. Among African American children, higher levels of positive parenting were associated with lower levels of internalizing behavior problems, $r(450) = -.10$, $p < .05$, and higher levels of negative parenting with higher internalizing, $r(450) = .14$, $p < .01$. Negative and positive parenting were negatively correlated for both European American children, $r(567) = -.55$, $p < .01$ and African American children, $r(450) = -.47$, $p < .01$.

T-tests were conducted to determine if mean levels of model variables differed for European American versus African American children. Results indicated that European American children experienced higher levels of negative affect $t(1071) = 2.41$, $p = .01$, Cohen's $d = .14$, and positive parenting $t(1019) = -5.82$, $p = .00$ than did African American children, Cohen's $d = .36$. African American children had higher levels of negative parenting than did European American children $t(1019) = 5.55$, $p = .00$, Cohen's $d = .34$.

Predicting Child Internalizing Behaviors from Affect and Parenting

Positive Parenting. A series of hierarchical regression analyses were conducted to predict children's internalizing behavior at 58 months of age from state, income, gender, and race (Block 1); positive affect, negative affect, and positive parenting (Block 2); the interactions between positive affect and race, negative affect and race, positive parenting and race, positive affect and negative affect, positive affect and positive parenting, and negative affect and positive parenting (Block 3), and the interaction between positive and negative affect and race, positive affect and positive parenting and race, and negative affect and positive parenting and race (Block 4). Results of these analyses are presented in Table 3.

Among the control variables, there was a marginal significant effect for state (North Carolina and Pennsylvania), b = -.05, β = -.08, t(708) = -1.86 p = .06. For positive and negative affect there were no statistical significant main effects. However, positive parenting significantly predicted internalizing behaviors in children, b = -.03, β = -.07, t(708) = -2.08 p = .03. None of the two-way interactions were significant. Two of the three-way interactions were statistically significant. There was a statistically significant interaction term for positive affect, positive parenting, and race, b = .06, β = .10, t(708) = 1.83 p = .06. There was a statistically significant interaction term for negative affect, positive parenting, and race, b = -.06, β = -.09, t(708) = -1.90 p = .05.

Negative Parenting. This hierarchical regression analysis was repeated, but using negative parenting instead of positive parenting for main effects and within interactions. Results of these analyses are presented in Table 3.

For positive affect, negative affect, and negative parenting there were no statistically significant main effects. There was a statistically significant interaction term for negative parenting and race $b = .08$, $\beta = .14$, $t(708) = 2.76$ $p = .00$. The rest of the two-way and three-way interactions did not reach statistical significance.

Race as a Moderator

Positive Parenting. Based on the presence of significant interaction terms involving race, we repeated analyses focusing on positive parenting separately for African American versus European American children. Hierarchical regression analyses were conducted to predict children's internalizing behavior from state, income, and gender (Block 1); positive affect and negative affect (Block 2); positive parenting (Block 3); and the interactions between positive affect and positive parenting, and between negative affect and positive parenting (Block 4). Regressions were repeated two times, once for European American children and once for African American children. Results of these analyses are presented in Table 4.

For European American, there were no significant main effects of positive affect, negative affect, or positive parenting. The interaction term for positive affect and positive parenting was not significant. The interaction of negative affect and positive parenting was marginally significant $b = .03$, $\beta = .09$, $t(386) = 1.75$ $p = .08$. To gain a better understanding of the meaning of this interaction effect, I probed it using the simple slopes procedure suggested by Aiken and West (1991). Figure 3 shows the associations between negative affect and internalizing behaviors graphed one standard deviation above and one standard deviation below the mean of positive parenting for European American children

only. For European American children who experienced high levels of positive parenting, negative affect was not associated with internalizing behaviors, b = .00, β = .02, t(386) = .32 p = .74, The same was true for children who experienced mean levels of positive parenting, b = -.02, β = -.07, t(386) = -1.39 p = .16. For European American children who experienced low levels of positive parenting, negative affect was negatively associated with internalizing behaviors b = -.05, β = -.16, t(386) = -2.13 p = .03 (see Figure 4).

For African American children, there were no main effects of positive and negative affect. There was a marginal main effect of positive parenting, b = -.04, β = -.09, t(323) = -1.67 p = .09. In other words, for African American children, positive parenting was associated with lower levels of internalizing behaviors, consistent with my hypothesis. None of the interaction terms were statistically significant for African American children.

Maternal Negative Parenting. The same series of hierarchical regression analyses were conducted to predict children's internalizing behavior, but including negative parenting rather than positive parenting. Again, analyses were conducted separately for European American and African American children. Results of these analyses are presented in Table 3.

For European American children, state, b = -.06, β = -.09, t(386) = -1.77 p = .07 and income, b = .01, β = .09, t(386) = 1.78 p = .07 were marginally statistically significant. There were no significant main effects of positive affect, negative affect, or negative parenting. Nor were there any effects for the interactions between positive or negative affect and negative parenting.

For African American children, none of the control variables were statistically significant. There was a main effect for negative parenting, $b = .05$, $\beta = -.13$, $t(323) = 2.37$ $p = .01$. In other words, for African American children, negative parenting was associated with higher levels of internalizing behaviors, consistent with my hypothesis. None of the interaction terms were statistically significant for African American children.

CHAPTER IV

DISCUSSION

The current study extends research focused on positive and negative affect in infants as predictors of internalizing behaviors in preschoolers. A secondary goal was to examine the moderator role of positive and negative parenting in relation to the associations between affect and internalizing behaviors. Although it was hypothesized that these associations would be found among all children, results indicated that the nature of associations among affect and parenting dimensions were moderated by race. Positive parenting predicted lower levels of internalizing behaviors for the whole sample. However, positive parenting moderated the associations between negative affect and internalizing behaviors only among European American children. Specifically, among European American children, lower levels of negative affect were associated with greater internalizing behaviors in the presence of low positive parenting. In addition, negative parenting was associated with higher levels of internalizing behaviors among African American children only.

Even though, findings were not consistent with the diathesis stress model, they raise important questions regarding racial differences in the associations between child affect, parenting behaviors, and children's internalizing behaviors. This was evidenced by differing main effects of parenting across European American and African American children as well as different interactions between child affect and parenting. Finally, it

suggests the important role played by early parent-child relationships in the development of internalizing psychopathology during the preschool years.

Positive Parenting and Internalizing Behaviors in Young Children

Early caregiving experiences play a critical role in shaping children's later adjustment. Children respond to environmental influences in different ways; however, an extended body of research has indicated that children living under optimal environments are more likely to have better outcomes. Yet, there are not a lot of studies that have examined the impact of parenting on the development of internalizing behaviors in early childhood in particular. Even though there is minimal, and mixed, empirical evidence, some studies have indicated that positive parenting is associated with lower levels of internalizing behaviors early in life (Wagner et al., 2016).

Consistent with our hypothesis, in this study early positive parenting was associated with lower levels of internalizing behaviors among both European American and African American children during the preschool years. During the first years of life, children develop regulatory patterns due to early parent-child relationships. These relationships shape children’s expressions of emotions and behaviors, and how they interpret the environment around them (Groh, Roisman, van Ijzendoorn, Bakermans-Kranenburg & Fearon, 2012). Some studies have found that emotional regulation can mediate the association between parenting and children’s behavioral and emotional outcomes (Ducombe, Havighurst, Holland, & Frankling, 2012). Through parental reinforcement of emotional expression, modeling of emotional regulation, and guidance on how to identify and cope with emotion, maternal positive parenting may assist

children in developing the skills necessary to understand and learn how to regulate emotion regulation strategies (Denham, 2007). It is possible that maternal positive parenting might lead to children developing effective emotional regulation skills that allow them to face stressful situations in a more adaptive way, which in turn leads to lower levels of internalizing behaviors (Ducombe et al., 2012).

Associations between Affect and Parenting Differ by Race

European American Children. Infants presenting higher levels of negative affect are often characterized by the presence of sadness, anger, and fear. In contrast, infants low in negative affect tend to be calm and minimize the expression of negative emotions (Watson & Clark, 1984). There is some literature suggesting an interplay between negative affect and parenting; however, most of this research has focused on the moderator role of negative parenting rather than positive parenting. Thus, only a limited number of studies have examined the interactive effects of negative affect and positive parenting. Interestingly, in the current study negative affect interacted with positive parenting in predicting internalizing behaviors in early childhood - although not in the expected direction. Children with lower levels of negative affect showed higher levels of internalizing behaviors in the presence of low positive parenting.

The first explanation relies on infants' use of negative affect as a form of communication during the first years of life. Even though high levels of negative affect have been consistently associated with later maladjustment, it is expected that infants will display some negative affect during infancy. According to Bowlby (1969), negative affect is the most powerful instrument of communication for infants because of its

saliency for caregivers in any given situation. Thus, some level of negative affect may be normative during this period. This finding suggests that some degree of negative affect during infancy might not be associated with later emotional problems for children who have sensitive parents. However, complete absence of negative affect might be associated with higher levels of internalizing behaviors for children who have insensitive parents. Children who do not show normative levels of negative affect are not expressing strong signals indicating a need for comfort that can be easily identified by caregivers. It is possible that under such circumstances parents might be less likely to sensitively respond to their infants' needs which will ultimately result in higher levels of internalizing behaviors. In contrast, children with sensitive parents who do not display negative affect may be less likely to develop adaptive emotion regulation strategies than in the presence of low positive parenting.

A second explanation (but not mutually exclusive) for this finding may be grounded in attachment theory. Bowlby (1969) emphasized the importance of behaviors associated with positive and negative affect as the main forms of communication for infants. Studies focused on mother-child attachment relationships, have indicated that low levels of negative affect might be particularly characteristic of avoidant children (Cassidy, 1994). Insensitive parenting behaviors have been consistently associated with the development of insecure/avoidant attachments (Madigan, 2006). Children with avoidant attachments tend to adopt restrained expressions of need for comfort to deal with insensitive parenting (Madigan, 2013). Thus, these children may learn to inhibit the expression of negative emotions in order to cope with unresponsive and inadequate

caregiving. Additionally, previous studies have found that children with avoidant attachments are more likely to show later emotional problems than children with secure attachments. For example, a meta-analyses focused on the associations between attachment classifications and internalizing behaviors in early childhood found that children with insecure attachments, particularly avoidant attachments, showed more internalizing behaviors than did their securely attached counterparts (Madigan, 2013). It is possible that children with avoidant attachment experiences may learn to expect rejection and perceive their caregivers as unsupportive, leading them to engage in withdrawn behaviors and to minimize the display of negative affect. This may in turn lead to avoidant children being more likely to develop internalizing problems.

African American Children. Negative parenting has been associated with negative outcomes across childhood (Amato & Fowler, 2002). For example, several studies have found positive associations between harsh parenting and internalizing and externalizing behaviors in early and middle age children, with some studies indicating stronger negative effects among European American children than African American children (Coley, Kull, & Carrano, 2014; and Landsford et al., 2004). In the current study, negative parenting predicted internalizing behaviors at 58 months in African American children but not in European American children. We had expected to find stronger [negative] effects of negative parenting for European American children based on the dissimilar life experiences within these two racial groups. However, our hypothesis was not supported. Our results are consistent with other studies that have found positive associations between negative parenting and internalizing behaviors in early childhood.

For example, Coley, Kull, and Carrano (2014) found that spanking at age 4 predicted higher levels of internalizing problems by age 9 in African American low-income urban families.

Some researchers have noted that children experiencing high levels of economic disadvantage may benefit less from authoritative parenting than from authoritarian parenting (Amato & Fowler, 2002). However, most of these studies have been conducted with adolescents living in urban areas. It is possible that the associations between negative parenting and maladjustment differ during early childhood compared to the adolescent years. Negative parenting might be more detrimental in the first years of life but more adaptive during the adolescent period once children spend more time outside the home and within neighborhoods where they may encounter risk and negative peer influences (Friedlander, Connolly, Pepler, & Craig, 2007; Furstenberg, 1993). Under such circumstances, negative parenting may serve to communicate parental disapproval and consequences of risky behavior. Additionally, participants from the present study were recruited from rural areas. It might be that the effects of negative parenting differ in rural areas as opposed to urban areas. This may be because urban communities present greater risk (Morenoff, Sampson, & Raudenbush, 2001) from which children need to be protected. Negative parenting may be protective under conditions of risk. Overall, young children who experience negative parenting may perceive that these relationships do not provide support and safety, and ultimately such parenting evokes distress (Madigan, Moran, & Pederson, 2006), less emotional security, and greater presence of anxiety and sadness (Davies, Harold, Goeke-Moerey, & Cummings, 2002). Additionally, these

children may perceive their parenting environments as threatening which may impair emotional regulation skills that allow young children to successfully cope with stress, which will ultimately lead to higher levels of internalizing behaviors (Bayer, Sanson, & Hemphill, 2006).

Testing the Diathesis-Stress Model

The findings from this study were not consistent with the diathesis stress model in that high levels of negative affect would serve as a child-level risk factor for later internalizing behaviors in the presence of non-optimal caregiving. Children high in negative affect were not found to exhibit greater internalizing behaviors in the contexts of high negative parenting or low positive parenting. It is possible that complete absence of negative affect during infancy may itself be a risk factor for children, especially when they have insensitive parents. Although this pattern of findings is not consistent with the proposed diathesis stress model, if the model is reframed with low levels of negative affect being viewed as a developmental risk factor, then the diathesis stress model may still be applicable.

Recent models have suggested that negative affect may moderate the associations between parenting and children's adjustment. Focusing specifically on parental influences, differential susceptibility models hypothesize that those individuals that may be most affected by environmental stressors may be the same ones who most benefit from the presence of environmental support and the absence of adversity. Therefore, some individuals may be more affected by both positive and negative contextual conditions making them differentially affected by environmental influences (Belsky & Pluess,

2009). This model offers an alternative to the diathesis-stress/dual-risk model for the study of environmental influences on child development and several studies have aimed to distinguish susceptibility from vulnerability effects. For example, a recent meta-analysis by Kiff, Lengua and Zalewski (2011) indicated that most of the studies focused on interactions between negative affect and parenting practices in early childhood did not adhere to differential susceptibility criteria by including both measurements of both positive and negative parenting. Instead, they found that children high in negative affect were more influenced by negative parenting practices, findings consistent with a diathesis-stress model. For example, Stoltz, Beijers, Smeekens, & Deković (2017) examined whether the associations between children's negative affect, parenting, and internalizing and externalizing behaviors confirmed the diathesis-stress model or differential susceptibility theory by including more stringent tests for moderation effects. Findings indicated that the interaction between early negative affect and parenting in predicting externalizing behaviors at 7 years of age, was consistent with the diathesis stress model rather than the differential susceptibility hypothesis. Regarding internalizing behaviors, no interactions effects were found between negative affect and parenting. Inconsistencies in interaction findings across studies might indicate that additional variables are moderating these associations, such as additional temperament characteristics or parenting behaviors. Additionally, the use of different interaction tests and measurement approaches may account for different results as well (Kiff, Lengua, & Zalewski, 2011). Future studies should continue to test interaction effects between

negative affect and parenting in early childhood to distinguish between differential susceptibility hypothesis from a diathesis-stress models.

Strengths and Limitations

The current study has a number of strengths. First, the study included a longitudinal design with assessments at 15, 24, and 58 months of age, which provided a higher understanding of the effects of parenting and affect in relation to internalizing behaviors. Second, it used observational measurement of both infant affect and parenting behaviors. Third, the sample was diverse with approximately equal number of European American and African American mothers and children. This is important because such a sample allowed us to consider racial and cultural differences in the associations among affect expression, parental influences, and children's maladjustment.

However, the findings from this study should be interpreted with some limitations in mind. First, levels of internalizing behaviors differ across development, and the stability and maintenance of these behaviors might change (Wiggins et al., 2015). Future studies should consider internalizing behaviors that emerge early in life and persist throughout childhood. Second, it is important to acknowledge the high degree of co-occurrence among internalizing and externalizing behaviors in childhood. The present study only included assessments of internalizing behaviors. Thus, findings might be confounded by the presence of externalizing behaviors. Future studies should consider the co-occurrence of these behaviors and how both relate to parenting and representations of affect. Third, infant affect and maternal parenting were measured in the same laboratory task based on observations of mother-infant interactions; multi-informant

reports were not available. Fourth, infant affect was assessed within the context of a mother-infant interaction (Crockenberg, 1986). Therefore, representations of positive and negative affect can not be attributed solely to infants' characteristics, but rather as influenced by maternal behaviors during the mother-child interaction task. Moreover, infant affect was measured as a general construct, rather than broken down into assessments of anger, fear, and sadness. It is possible that more specific aspects of negative affect may have indicated different patterns of associations (Leerkes, Blankson, & O'Brien, 2009). Despite these limitations, the present study contributes to understanding of the mechanisms through which internalizing problems emerge in early childhood and how infants' and toddlers' vulnerability to parental influences may varied depending on the environment (positive vs. negative parenting) and the predictor of interest (positive vs. negative affect).

Conclusion

The present study informs the role played by early parent-child relationships in the development of internalizing psychopathology during the preschool years in three ways. First, it extends the general finding that positive parenting plays a protective role with respect to the early emergence of internalizing problems across diverse ethnic groups. This finding is consistent with previous work suggesting that maternal positive parenting leads to effective emotional regulation skills (Ducombe et al., 2012). Second, it provides evidence that negative parenting predicts internalizing behaviors during the preschool period among African American children. Finally, it suggests that children low in negative effect may be at risk of developing internalizing behaviors in the presence of

insensitive parenting. These findings raise important questions regarding different levels of vulnerability to environmental influences among European American and African American young children. Understanding racial differences in infant affect representations and the role of parenting practices in early childhood as shaping such representations has the potential to inform interventions aimed at preventing and/or reducing internalizing behaviors.

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APPENDIX A

DATA TABLES

Table 1

Demographic Characteristics and Descriptive Statistics for the Complete Sample

	Observed		
Descriptor	*N*	*M*	*SD*
TC observed affect			
Positive affect	1073	2.87	.87
Negative affect	1073	1.92	1.06
Observed parenting			
Positive parenting	1021	2.9	.80
Negative parenting	1021	2.42	.87
TC internalizing			
SDQ score	1061	.33	.35
Poverty			
Maternal income	1026	1.88	1.7
State of residence			
NC	708		
PA	483		
Race			
TC (AA)	544		
TC (non-AA)	711		
Gender			
TC (male)	615		
TC (female)	640		

Note: N = 1292; TC = target child; NC = North Carolina; PA = Pennsylvania; AA = African American; non-AA = European American

Table 2

Descriptive Statistics and Intercorrelations

Variable		1	2	3	4	5
1. Positive Affect		-	-.13**	.04	-.06	.01
2. Negative Affect		-.07	-	-.01	-.04	-.09*
3. Positive Parenting		.00	-.06	-	-.55**	-.06
4. Negative Parenting		-.02	-.00	-.47**	-	-.04
5. Internalizing Behavior Problems		.01	.03	-.10*	-.14**	-
Mean:	European Americans	2.84	1.99	3.02	2.29	.32
	African Americans	2.90	1.84	2.73	2.59	.34
SD:	European Americans	.85	1.10	.79	.84	.34
	African Americans	.89	.99	.78	.87	.36
N:	European Americans	591	591	569	569	567
	African Americans	482	482	452	452	494

Note: Correlations for European American children are above the diagonal; Correlations for African American children are below the diagonal.
$^{t}p < .10$; $*p < .05$; $**p < .01$

Table 3

Regression Analyses Predicting Children's Internalizing Behaviors from Positive Affect, Negative Affect, Parenting and Interaction Terms

Step	Predictor	β	ΔR^2
1	Gender	.027	.008
	State	-.083†	
	Race	-.006	
	Income	.053	
2	Positive Affect	.008	.006
	Negative Affect	-.011	
	Positive Parenting	-.079*	
3	Positive Affect x Race	.013	.005
	Negative Affect x Race	.080	
	Positive Parenting x Race	-.021	
	Positive Affect x Negative Affect	.016	
	Positive Affect x Positive Parenting	.014	
	Negative Affect x Positive Parenting	.029	
4	Positive Affect x Negative Affect x Race	.008	.011†
	Positive Affect x Positive Parenting x Race	.101†	
	Negative Affect x Positive Parenting x Race	-.099†	
2	Positive Affect	.007	.001
	Negative Affect	-.007	
	Negative Parenting	.029	
3	Positive Affect x Race	.026	.015†
	Negative Affect x Race	.068	
	Negative Parenting x Race	.144**	
	Positive Affect x Negative Affect	.019	
	Positive Affect x Negative Parenting	-.031	
	Negative Affect x Negative Parenting	.022	
4	Positive Affect x Negative Affect x Race	-.008	.004
	Positive Affect x Negative Parenting x Race	.061	
	Negative Affect x Negative Parenting x Race	-.052	

Note. The first step is the same for all dimensions of parenting.
*†p < .10. *p < .05. **p < .01.*

Table 4

Regression Analyses Predicting Children's Internalizing Behaviors from Positive Affect, Negative Affect, Parenting and Interaction Terms

		Race			
		European American		African American	
Step	Predictor	B	ΔR^2	β	ΔR^2
1	Gender	.055	.017†	-.007	.002
	State	-.091†		-.045	
	Income	.092†		-.008	
2	Positive Affect	-.008	.004	.009	.003
	Negative Affect	-.063		.058	
3	Positive Parenting	-.064	.004	-.094†	.009†
4	Positive Affect x Positive Parenting	-.055	.012†	.086	.010
	Negative Affect x Positive Parenting	.090†		-.054	
3	Negative Parenting	-.071	.005	.132*	.017*
4	Positive Affect x Negative Parenting	-.006	.000	-.077	.012
	Negative Affect x Negative Parenting	-.012		.077	

Note. The first and second steps are the same for all dimensions of parenting.
*†p < .10. *p < .05. **p < .01.*

APPENDIX B

FIGURES

Figure 1. Positive and Negative Affect as a Single Bipolar Continuum

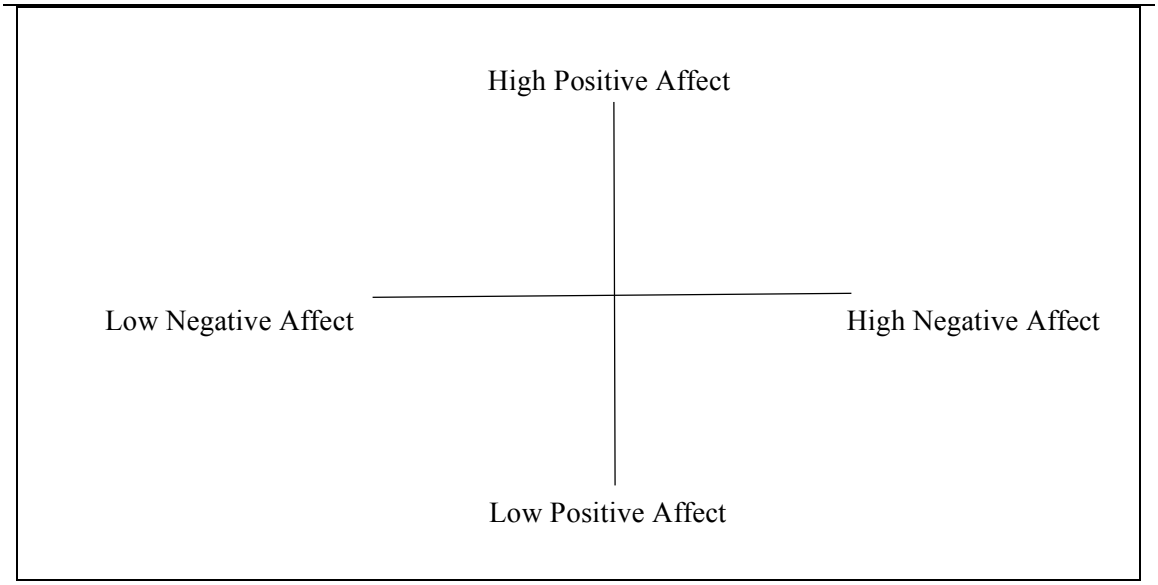

Figure 2. Positive and Negative Affect as a Two Factor Model

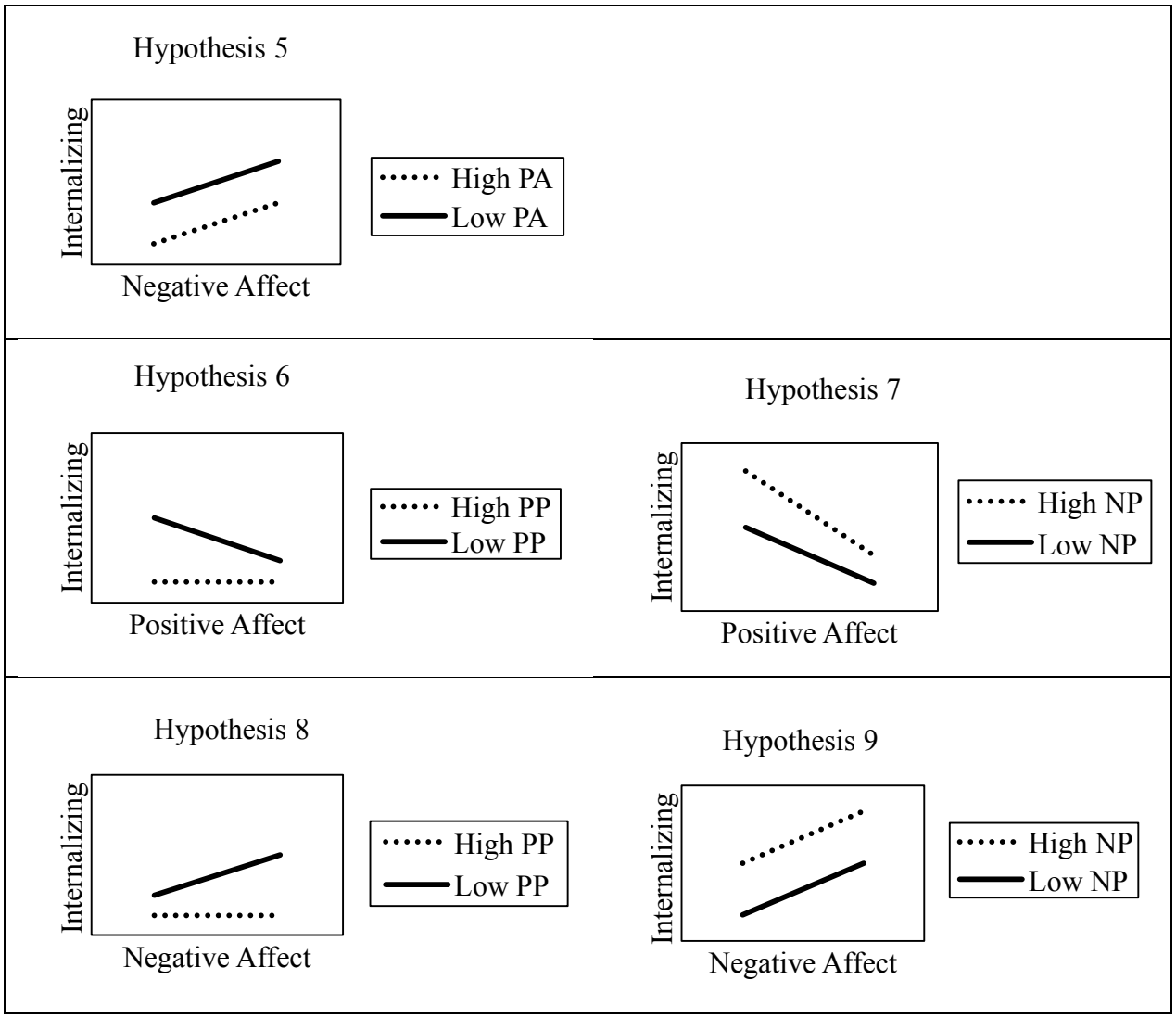

Figure 3. Summary of Moderator Effects of Parenting in the Associations between Affect and Internalizing Behaviors. PP = Positive Parenting; NP = Negative Parenting

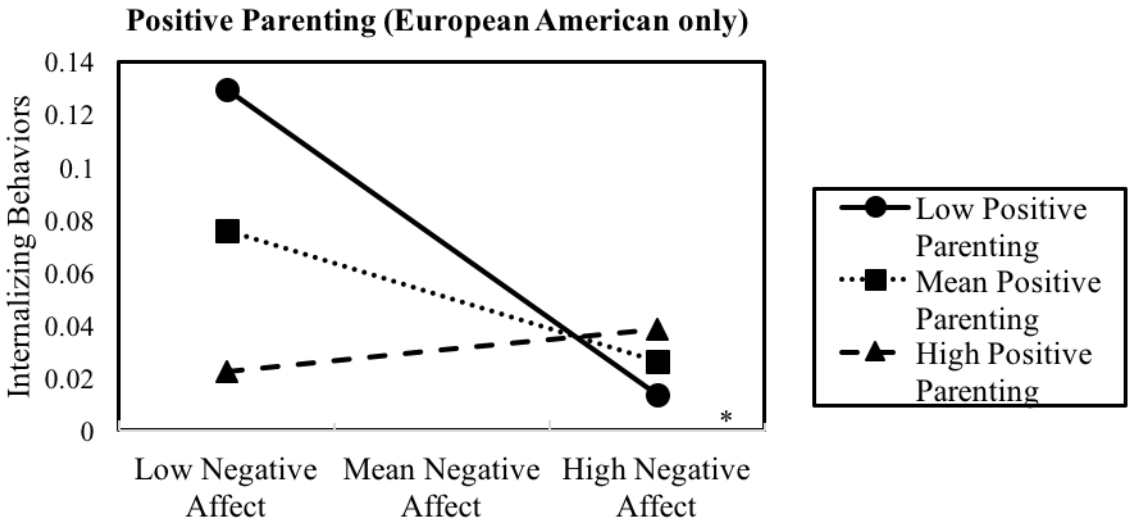

Figure 4. Associations between Negative Affect and Internalizing Behaviors.
**Slope Significantly Different from 0; p = .03*