Parental Positive Affect, Child Negative Affect and Resiliency in Preschool: Investigating whether some children develop "for-better"

by

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Abstract

Using the vantage sensitivity model as a guiding framework, I examined the interactions among child negative affect, parental positive affect, and resiliency in preschoolers. The study sample consisted of 100, two-parent families and their children (50 boys, 50 girls, 2 – 5 years old, mean age = 3.8 years). Parental positive affect and child negative affect were measured at Time 1, and child resiliency was measured at Time 2 (one year later). To assess parental positive affect, video-tapes of parent-child interactions during a clean-up task were coded. Child resiliency and negative affect were measured through parent-report. Results indicated that only child negative affect significantly predicted resiliency one year later. Children with lower levels of negative affect demonstrated the highest levels of resiliency in the study. Though the interactions between parental positive affect, child negative affect, and resiliency were not significant, there was a slight trend towards a moderation relationship. Children with high levels of negative affect demonstrated somewhat higher resiliency one year later when parents exhibited greater amounts of positive affect and lower resiliency when parents demonstrated fewer amounts of positive affect. Findings are presented in the context of research on the parenting and temperament interaction and environmental sensitivity models. Future directions, implications, and limitations are also discussed.

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Introduction

Overview

Researchers of human development have established that individuals differ in the extent to which they are influenced by environmental factors, including parenting (Belsky & Pluess, 2009). Evidence for individual traits moderating environmental experiences is found in literature on the temperament and parenting interaction (Rothbart & Bates, 2006). Traditionally, research on temperament and parenting has been based on the dual-risk model (Sameroff, 1983) and the diathesis-stress model (Monroe & Simons, 1991; Zuckerman, 1999). These models suggest that due to a genetic *vulnerability* (e.g., a highly negative emotional temperament), certain children are more, or even *exclusively*, likely to be negatively affected by stressors, such as harsh parenting (Belsky & Pluess, 2009; Slagt, Dubas, Deković, & van Aken, 2016). However, evolutionary-based models of environmental sensitivity offer a different perspective (Belsky & Pluess, 2009; Pluess & Belsky, 2013; Slagt et al., 2016). Tenants of these theories suggest that the children who are most *vulnerable* to their environment also reap the most benefits from environmental nurturance, such as high-quality parenting (Slagt et al., 2016). Hence, the *vulnerability* trait of negative emotional temperament, for instance, may actually mirror a broader *sensitivity* to both positive and negative environments (Slagt et al., 2016).

Among models of environmental sensitivity, the differential susceptibility theory stands out for its empirical support (Slagt et al., 2016). According to this model, children with a negative emotional temperament develop *for better and for worse* (Belsky, Bakersman-Kranenburg, & van IJzendoorn, 2007). Thus, with positive parenting, these children are said to have the most optimal outcomes, whereas with negative parenting, they are observed to have the poorest outcomes. The differential susceptibility model has also been combined with another theory, biological sensitivity to context, to form a broader evolutionary-neurodevelopmental

theory of differential susceptibility (Ellis, Boyce, Belsky, Bakermans-Kranenburg, & Van Ijzendoorn, 2011). Boyce and Ellis suggest that the sensitivity to the environment is based on the amount of stress versus nurturance children experience during childhood (Boyce & Ellis, 2005; Ellis, Essex, & Boyce, 2005). In other words, children with high reactivity in their stress response systems are noted to be more sensitive (Ellis et al., 2005). Thus, this evolutionary-neurodevelopmental theory emphasizes the variability in children's sensitivity across both, low- and high-quality care environments (de Villiers, Lionetti, & Pluess, 2018).

A more recent development in the area of environmental sensitivity models is the emergence of vantage sensitivity (de Villiers et al., 2018; Pluess, 2017; Pluess & Belsky, 2013). Vantage sensitivity refers to the tendency of certain children to benefit more from positive care environments than other children (de Villiers et al., 2018). Though similar to differential susceptibility, vantage sensitivity has some important differences. Researchers using the differential susceptibility model as a framework must include both negative and positive features of the environment (e.g., high- and poor-quality parenting) in their studies to fully account for individual differences in susceptibility to context (de Villiers et al., 2018). Vantage sensitivity models however, focus exclusively on individual variability in response to positive features of the environment and do not aim to hypothesize about individuals' responses to negative features (de Villiers et al., 2018). Several researchers refer to vantage sensitivity as noting the *bright side* or *for-better* aspect of differential susceptibility, rather than the traditional *dark side* which has been studied extensively through the diathesis–stress model (Bakermans-Kranenburg & Van Ijzendoorn, 2011; de Villiers et al., 2018; Pluess, 2017; Pluess & Belsky, 2013). Children characterized by vantage-sensitivity are hypothesized to be more responsive to and positively shaped by features of the environment and they are observed to have certain genetic,

physiological and psychological traits that reflect their responsivity to positive experiences (de Villiers et al., 2018). Among the psychological traits, negative affect in infancy has been identified as a characteristic of sensitivity by several researchers (Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011; Kim & Kochanska, 2012; Pluess & Belsky, 2013; Ramchandani, van IJzendoorn, & Bakermans-Kranenburg, 2010; Stupica, Sherman, & Cassidy, 2011).

Despite some preliminary work, additional research is needed to expand our current understanding of the way negative affect, as a characteristic of vantage-sensitivity, interacts with positive features of the environment to shape child development. Researchers have primarily studied infant negative affect and fewer studies have investigated the potential role of child negative affect. In addition, most studies have focused on mothers' parenting quality and not considered fathers. Therefore, the objective of the current study is to examine whether child negative affect moderates the relationship between mothers' and fathers' positive affect and resiliency in preschool. More specifically, I examine whether: (1) child negative affect (as reported by mothers) moderates the relationship between mothers' positive affect and child resiliency one year later (as reported by mothers), and (2) child negative affect (as reported by fathers) moderates the relationship between fathers' positive affect and child resiliency one year later (as reported by fathers).

Literature Review

The following section is a review of the literature on the interactions between parental positive affect, child negative affect, and positive outcomes. The theoretical frameworks that guide the current study's research questions and hypotheses are presented first, along with their empirical evidence. Next, definitions of parental positive affect and child negative affect are provided along with discussions of their respective and combined influences on positive outcomes.

Theoretical Framework

Goodness of fit. Thomas and Chess (1977) noted that temperament, and particularly the *match* between temperament and parenting determines how parenting influences child development. Through clinical and factor analysis, they identified three temperament styles: easy, difficult, and slow-to-warm-up temperament (Chess & Thomas, 1991). Children with easy temperament were characterized as displaying slightly or moderately intense affect that was generally positive, whereas children with difficult temperaments were noted to exhibit intense affect that was often negative (Chess & Thomas, 1991). Finally, children with slow-to-warm-up temperaments tended to display negative affect that was slightly intense (Chess & Thomas, 1991). Parenting behaviours, attitudes and cognitions that match the temperament of the child (i.e., goodness of fit) set the precedence for more optimal development (Slagt et al., 2016). On the other hand, a mismatch between temperament and parenting (i.e., poorness of fit) becomes the basis for poor adjustment (Slagt et al., 2016). In the context of the current study, a goodness-of-fit would occur if a child, who displays high negative affect and has a caregiver who demonstrates high positive affect, demonstrates strong resiliency skills in preschool. However, because there have been difficulties with defining the goodness-of-fit concept in previous

research, among other methodological limitations (Campos, Barrett, Lamb, Goldsmith, & Stenberg, 1983; Plomin & Daniels, 1984), the primary theoretical framework for the current study is the vantage sensitivity model.

Vantage sensitivity. Manuck and colleagues (Manuck, 2011; Pluess & Belsky, 2013; Sweitzer et al. 2012) coined the term vantage sensitivity to describe the differences in individuals' reactions to positive experiences. Pluess and Belsky (2013) extended that concept further to specify that some children are more sensitive and positively reactive to the advantageous features of their environments. Some advantages that have been outlined, for instance, include: attachment security via sensitive parenting, academic achievement via high-quality child care, and prosocial behaviour via supportive friendships. They also proposed that (1) vantage sensitivity reflects the tendency of a child to benefit from positive, promoting aspects of the environment, (2) the extent of vantage sensitivity is a cumulative effect of vantage-sensitivity factors (i.e., promotive factors), (3) vantage resistance refers to the tendency of a child to not benefit from positive features of the environment, and (4) the extent of vantage resistance is a cumulative effect of vantage- resistance factors or lack of vantage-sensitivity ones (Pluess & Belsky, 2013). In short, vantage-sensitivity factors give rise to a sensitivity to the beneficial effects of positive experiences and vantage-resistance factors reduce or even eliminate positive reactions to beneficial experiences (Pluess & Belsky, 2013).

Researchers have provided extensive empirical evidence for individual differences in vantage-sensitivity as a result of behavioural, psychological, physiological, and genetic factors (Belsky & Pluess, 2009; de Villiers et al., 2018; Pluess, 2017; Pluess & Belsky, 2013). Given the focus of the current study is on the psychological factors of vantage-sensitivity, evidence of physiological and genetic markers will only be presented in brief. Across studies, physiological

vantage-sensitivity factors identified by researchers include: high cortisol or high Respiratory Sinus Arrhythmia (RSA; a cardiac measure for the activity of the parasympathetic nervous system) activity and reactivity. Researchers found that individuals with high cortisol or RSA reactivity responded better to interventions targeting aggressive and oppositional behaviours, demonstrated more prosocial behaviours in a supportive family environment, and demonstrated the highest school engagement with supportive caregiving (Eisenberg et al., 2012; Obradović, Bush, Stamperdahl, Adler, & Boyce, 2010; van de Wiel, van Goozen, Matthys, Snoek, & van Engeland, 2004). In terms of genetic vantage-sensitivity factors, two genes have consistently been identified in studies on vantage sensitivity, the dopamine receptor D4 gene and the serotonin transporter gene polymorphism (Bakermans-Kranenburg & Van Ijzendoorn, 2011; Kegel, Bus, & Ijzendoorn, 2011; Lesch et al., 1996; Tung, Morgan, Noroña, & Lee, 2017). These genes have been noted to moderate treatment effects across several interventions, such as a program aimed at promoting secure attachment in children (Morgan et al., 2017). Other genetic vantage-sensitivity factors that influence treatment effects include: the brain-derived neurotrophic factor, the glucocorticoid receptor, and the FK506-binding protein (Albert et al., 2015; Felmingham, Dobson-Stone, Schofield, Quirk, & Bryant, 2012; Wilker et al., 2014).

In addition to genetic and physiological factors, personality and temperament traits have also shown to reflect vantage-sensitivity (de Villiers et al., 2018; Pluess, 2017; Pluess & Belsky, 2013). Within the literature on children and youth, these psychological and behavioural characteristics have moderated intervention effects and predicted treatment response (Asscher et al., 2016; Pluess & Boniwell, 2015; Stoltz, Deković, van Londen, Orobio de Castro, & Prinzie, 2013; Tanofsky-Kraff et al., 2017). For example, in a randomized controlled trial with 256 adolescents, higher conscientiousness and agreeableness were significant predictors of positive

response to treatment for severe and persistent antisocial concerns (Asscher et al., 2016). In a different randomized controlled trial study with 159 female adolescents, three years after completion of interpersonal psychotherapy, only those with high trait anxiety demonstrated continued improvements (Tanofsky-Kraff et al., 2017). Another group of researchers found that among 264 school-aged (i.e., 10-year-old) children with externalizing behavioural issues, children with lower scores of conscientiousness did not respond to a school-based intervention while those low in extraversion benefited the most (Stoltz et al., 2013). In a different study with 166 school-aged (i.e., 11-year-old) girls living in lower SES neighbourhoods, a school-based resilience-promoting program led to a significant decrease in depression scores 12-months following the intervention. However, only those children with high sensitivity scores (as per the Highly Sensitive Person scale) demonstrated these improvements (Aron & Aron, 1997; Pluess & Boniwell, 2015). Three years later, the researchers followed up with these participants, in a two-cohort treatment/control design and found similar results in which only the girls who scored high in sensory-processing sensitivity had reduced depression scores (Pluess & Boniwell, 2015). Taken together, these results suggest that vantage-sensitivity is a function of personality traits and trait anxiety for school-aged and adolescent populations.

Regarding the psychological vantage-sensitivity characteristics of younger children, researchers have often studied the role of temperament traits (Belsky & Pluess, 2009). Among infants, those with negative emotional temperaments, who received high-quality non-maternal child care and more sensitive maternal care, demonstrated greater social competence, academic competence, and social skills in preschool in comparison to infants with less negative emotional temperaments (Belsky & Pluess, 2009; Stright, Gallagher, & Kelley, 2008). Additionally, infants rated by their mothers as having a difficult temperament at 6 and 12 months of age had

significantly better social and academic skills at 11-years-old in the context of high-quality parenting in early childhood (Roisman et al., 2012). Children with less difficult temperament however, did not reap the benefits from sensitive caregiving to that same degree (Roisman et al., 2012). In another study, of 102 children, those who demonstrated high negative affect at 7 months demonstrated the strongest self-regulation at 25 months (as measured by effortful control) when the mother-child relationship was of high-quality (Kim & Kochanska, 2012). Regarding the father-child relationship, one group of researchers conducted a study with 5064 children, and they found that girls rated as highly reactive at 6 months had significantly more prosocial behaviour at 6.5 years of age if fathers were highly involved in their care during early childhood. Infants rated as non-reactive however, were not found to significantly benefit from father involvement (Ramchandani et al., 2010). In an effort to make a causal connection between infant temperament, parenting, and outcomes in the context of vantage sensitivity, one group of researchers investigated whether infant irritability moderated the outcomes of a brief parenting intervention on attachment security at 12 months (Cassidy et al., 2011). The results of their randomized controlled trial, involving 169 families, demonstrated that the intervention was only effective in promoting attachment security for infants high in irritability (Cassidy et al., 2011). Upon following up with the 84 children in the control group, the researchers also found that infants high in irritability, who had established secure attachments with their caregivers, were the most sociable of all the children in their sample (Stupica et al., 2011). Thus, overall, there is empirical evidence in support of infant temperament as a factor of vantage-sensitivity.

Far less research has been conducted to investigate the potential role of preschool children's temperament as a psychological characteristic of vantage-sensitivity. In a recent longitudinal study of 232 children (ages 5 to 10) with and without attention deficit hyperactivity

disorder, one group of researchers used a mediation model to examine the contributions of genetic factors, temperament, and environmental factors on externalizing behaviour problems (Tung et al., 2017). Child negative affect was assessed using the *Child and Adolescent Dispositions Scale*, a parent interview that measures temperament traits that relate to psychopathology (Lahey et al., 2008). Positive parenting behaviours (e.g., praise; intraclass correlation = .88) and negative parenting behaviours (e.g., hostile or critical comments; intraclass correlation = .75) were coded during a parent-child interaction task via the *Dyadic Parent Child Interaction Coding System* (Eyberg, Nelson, Duke, & Boggs, 2005). Unlike in the other aforementioned studies on negative affect as a factor of vantage-sensitivity, the researchers found that the interaction between positive parenting and child negative affect was not significant. Rather, consistent with the diathesis-stress model, only child negative affect had a significant direct effect on child externalizing behaviours. The researchers noted however, the results of their study should be considered exploratory and additional studies are needed to confirm their findings (Tung et al., 2017). Given that the vantage sensitivity model is based on the 'bright side' of susceptibility, perhaps positive outcomes should be examined as well.

Considering the aforementioned notes, the dearth of studies on the role of child negative affect as a characteristic of vantage-sensitivity, and the fact that fathers have mostly not been studied, it is apparent additional research is needed. The following section will review evidence of the links between parental positive affect, child negative affect, and positive child outcomes. Given that the following studies are not exclusively based on the vantage sensitivity model, hypotheses and research questions of the current study are based on the combination of the theoretical and empirical work that has been done in this area.

Parental Positive Affect

Though a bulk of the research on parenting is based on a deficits approach (e.g., focused on parent stress and/or psychopathology), Smith and Stevens (2018) noted that using a strengths-based perspective can help to identify ways of improving parenting quality even in the context of high parent stress. Previously, researchers suggested that emotions play a central role in parenting and mirror the quality of the parent-child relationship (Dix, 1991; C. L. Smith & Stephens, 2018). Additionally, some have argued that positive affect in particular, can help to increase resources to support overall well-being through expanding possible reactions to situations and creating resources that are long-lasting (Fredrickson, 1998). In the context of parenting, this notion suggests that those parents who have created more resources, due to experiencing positive affect, may be able to draw on those resource reserves to demonstrate more sensitive behaviours during interactions with their child (Smith & Stephens, 2018).

For the purposes of the current study, parental positive affect was conceptualized as both, expressed positive emotions and parental warmth (Deater-Deckard, 2000). Importantly, the roles of parental warmth (e.g., listening and trying to understand feelings) and positive affect (e.g., smiling and laughing) have been related to several positive child outcomes (Daniel, Madigan, & Jenkins, 2016; Eisenberg et al., 2001; Knafo & Plomin, 2006). For example, one group of researchers found that among 381 families, mothers' and fathers' warmth during toddlerhood (i.e., at 18 and 36 months of age) was related to prosocial behaviours in preschool (Daniel et al., 2016). The researchers noted that developmental plasticity may have accounted for the unique role of parental warmth in the development of children. Indeed, other researchers have noted that in early childhood, environmental factors contribute to long-term biological changes in children (Shonkoff et al., 2012). In addition to predicting pro-social behaviours, maternal warmth has also

been related to young children's adjustment and social competence (Eisenberg et al., 2001). In the context of parental warmth, children feel that their parents care about their interests, and as a result, become driven by feelings of trust and reciprocity (Eisenberg et al., 2001). Parent affect may also help develop children's abilities to interpret others' emotional expressions and their understanding of the types of reactions that are appropriate and effective in social situations, and this in turn may contribute to self-regulation and social skills (Denham, Zoller, & Couchoud, 1994; Dunn & Brown, 1994; Eisenberg et al., 2001; Eisenberg, Cumberland, & Spinrad, 1998).

Eisenberg and colleagues (2001) suggest that children whose parents display more positive affect around them and do not communicate hurtful emotions (e.g., disappointment in children) are more likely to be well regulated. In a longitudinal study with 100 toddlers and their mothers, researchers found that children with mothers who demonstrated warmth in interactions had greater self-regulation more than a year later (Jennings et al., 2008). Jennings and colleagues (2008) noted that parental warmth improves the development of child self-regulation as children start to take on their parents' goals for their behaviour as their own and therefore experience more motivation to achieve these goals. Children who are well regulated are able to successfully focus and shift their attention and inhibit or initiate behaviour in an effort to control their emotional and behavioural responses to events (Derryberry & Rothbart, 1997; Eisenberg, Fabes, Guthrie, & Reiser, 2000; Rothbart, Ahadi, & Hershey, 1994). Parental warmth may therefore help children manage their distress better and develop their coping skills in stressful situations (Skinner & Wellborn, 1994). When parents are encouraging of their children in stressful moments, their children may be less likely to become overwhelmed and therefore, more able to process parents' instructions and other relevant information to modulate their reactivity (Eisenberg et al., 2001). Researchers have noted that parents who are warm act as resources by

giving information (e.g., suggest ways of coping with stress), emotional care (e.g., provide comfort and listen), or active support (e.g., problem-solve with their child), and as a result, their children are more likely to use healthy coping techniques during stress (Thompson & Meyer, 2007; Watson et al., 2014).

Resilience in children. Resilience has been conceptualized in many different ways. Most recently, it is referred to as "the capacity of a system to adapt successfully to significant challenges that threaten the function, viability, or development of the system" (Masten, 2018, p.16). Given that resilience is often defined in relation to a measure, researchers have noted the difficulty of aggregating knowledge on it (Masten, 2018). Additionally, the majority of the research on resilience in children has been conducted with clinical samples or samples that are considered to be at-risk. Fewer researchers have examined children's resilience in high-functioning samples and in relation to every-day stressors and challenges.

In the current study, children's ability to overcome every day stress and adversity is the operational definition of resilience, as per the measure employed (BASC-2; Reynolds & Kamphaus, 2004). Given that this conceptualization of resilience is more in line with the literature on child coping, studies that have assessed children's responses to every-day life stressors will be discussed in the following sections.

Parental positive affect and child coping. Several researchers have found significant cross-sectional relationships between children's coping and positive parenting behaviours (Hardy, Power, & Jaedicke, 1993; Herman & McHale, 1993; Watson et al., 2014). For example, high levels of maternal support have been associated with children's coping responses to every-day life stressors (Hardy et al., 1993). Hardy and colleagues (1993) carried out a study with a sample of 60 nine- and ten-year old children and their mothers, and they found that mothers who

were supportive had children who used a greater number of coping strategies in response to every day stress. Similarly, children of mothers who exhibited warmth were more likely to use positive coping strategies and demonstrated more problem-solving skills to deal with everyday stressors (Gaylord-Harden, 2008; Jaffe, Gullone, & Hughes, 2010; Meesters & Muris, 2004). In another study, Herman and McHale (1993) examined whether parental warmth, as reported by parents and children, was associated with the use of more adaptive coping strategies among children. Their study consisted of 152 children (mean age: 10-years-old), and their data came from the first wave of a longitudinal study. The researchers found that parental warmth consistently correlated with children's use of coping strategies (Herman & McHale, 1993). Specifically, parental warmth was positively associated with problem-solving abilities in children. Additionally, the use of problem-solving coping strategies was positively related to child adjustment (Herman & McHale, 1993). Shulman and colleagues noted that the family environment supports the use of child coping (Shulman, Seiffge-Krenke, & Samet, 1987). An environment where a parent is warm reflects an open, non-judgemental and encouraging caregiving context (Herman & McHale, 1993). Children may be more likely to talk to their parents about a specific source of stress as well as engage in active problem-solving if they feel their parent cares for them (Herman & McHale, 1993). On the other hand, parents who are less warm may create a caregiving context in which their children may feel discouraged from taking on a coping style that requires their parent to be involved (Herman & McHale, 1993).

More recently, observed parental warmth and child coping were analyzed in a longitudinal study with 180 families (Watson et al., 2014). Children were between the ages of 9 and 15, and assessment of parental warmth focused on the frequency, intensity, and duration of parental verbal and nonverbal behaviours, emotions, and tone of voice (Watson et al., 2014). The

researchers found that observed parental warmth positively associated with children's coping (Watson et al., 2014). Although the authors did not examine potential underlying mechanisms that explained this relationship, they proposed a few hypotheses. For example, given that observable parenting behaviours significantly related to parent's suggestions of coping techniques, the researchers noted that parents who exhibit warmth may communicate more with their children about stressors (Watson et al., 2014). Considering that the techniques parents use to cope with stress are significantly related to the way they parent, parents' use of emotion-regulation strategies and warmth can model adaptive ways of coping (Rodenburg, Meijer, Deković, & Aldenkamp, 2007; Watson et al., 2014). As well, parents who are warm may be more open and receptive to accepting emotions and they may convey that emotions are normal responses (Thompson & Meyer, 2007).

Conversely, it is possible that the outcome of child coping may be more influenced by certain child characteristics. In earlier work, researchers found that in addition to parental warmth, child temperament was also a strong predictor of children's coping in stressful situations (Smith & Prior, 1995). Given that temperament is biologically based, observed as early as in infancy, and is consistent across contexts, it is no surprise that it has been associated with several outcomes (Bates, 1989; Coplan, Barber, & Lagacé-Séguin, 1999; Smith & Prior, 1995).

Child Temperament

Temperament has been conceptualized in several different ways (Rothbart & Bates, 1998; Wachs & Kohnstamm, 2001). Generally, it can be thought of as the biological basis of emotional arousal, reactivity, and regulation (Goldsmith et al., 1987). Variability in the aforementioned aspects leads to differences in personality traits (Coplan, Bowker, & Cooper, 2003). *Adverse* temperament has been broken down into three dimensions: negative affect, resistance to control,

and shyness/inhibition (Bates, 2001; Capsi, Henry, McGee, Moffit, & Silva, 1995; Lengua, 2003; Rothbart & Bates, 1998). Negative affect refers to heightened negative emotional reactivity and poor regulation (Coplan et al., 2003). Resistance to control refers to a lack of attentiveness, low agreeableness, and a focus on rewards, and shyness/inhibition refers to cautious reactions to new circumstances and individuals (Coplan et al., 2003). In the current study, the operationalization of *adverse* temperament is based on the first aforementioned category and includes negative emotional reactivity and difficulty with regulation (Coplan et al., 2003; Lengua, 2003). The relationship between the temperament dimension of negative affect and child outcomes has been well-studied in developmental literature (Lengua, 2003).

Rothbart and Bates (1998) reported that negative affect, for example, was positively associated with internalizing and externalizing problems. Additionally, in one study with 122 children between the ages of 3 and 4 years old, greater levels of child negative affect were associated with lower social competence as reported by teachers (Coplan et al., 2003). Their results are consistent with the notion that children with more difficult temperaments are less likely to cope with environmental stressors (Smith & Prior, 1995). For instance, children who exhibited negative affect performed lower on measures of early literacy, counting, and numeracy skills (Coplan et al., 1999).

Researchers have also found positive associations between negative affect and depressive symptoms (Enns & Cox, 1997; Klein, Durbin, Shankman, & Santiago, 2002). For example, individuals who exhibited high levels of negative affect during toddlerhood were more likely to have depressive symptoms and disorders as adults (Caspi, Moffitt, Newman, & Silva, 1996; Gjerde, 1995). In a sample of 290 youth, one group of researchers analyzed the relationship between negative affect, depression and anxiety (Anthony, Lonigan, Hooe, & Phillips, 2002).

Although their results somewhat differed depending on the informant (i.e., parents or youth) the researchers found that negative affect positively related to symptoms of anxiety and depression among youth. Similarly, in a different study with 104 children, researchers also found that negative affect positively correlated to both anxiety and depression among children (Phillips, Lonigan, Driscoll, & Hooe, 2002). Taken together, the results of the aforementioned studies are in line with the diathesis-stress model described previously.

The practical importance of negative affect may be strongest in its role in coping responses (Strelau, 2001). Several researchers hypothesize that individuals response to stress is impacted by their temperament characteristics (Gomez, Holmberg, Bounds, Fullarton, & Gomez, 1999; Lengua, Sandler, West, Wolchik, & Curran, 1999). For instance, children with higher levels of negative affect may have a harder time coping in situations that require emotion regulation (Compas, Connor-Smith, & Jaser, 2004)

Negative affect and child coping. It has been suggested that temperament is an integral factor of the coping process (Lerner & East, 1984). In particular, high levels of negative affect are said to limit a child's cognitive search for appraisals of stressors (Davies & Cummings, 1995; Lengua & Long, 2002). Although the arousal of negative affect may lead to an increase in coping in general, researchers note that higher levels of negative emotions results in a decreased use of healthy coping strategies (Bolger, 1990; Carver & Scheier, 1994; Lengua et al., 1999). Hence, negative affect has been hypothesized to lead to maladjustment to stress via maladaptive coping (Lengua & Long, 2002).

One group of researchers investigated the relationship between negative affect and coping in a sample of 101 children (mean age: 9 years old). Their results demonstrated that the temperament trait of negative affect increased in response to negative life events, which led to a

decrease in healthy and adaptive coping (Lengua & Long, 2002). The researchers noted that children who were high in negative affect likely perceived stressors as threatening which in turn increased their negative emotional arousal (Lengua & Long, 2002) In discussing the implications of their findings, the authors suggested that children high in negative affect appear to be at increased risk for developing poor coping abilities to manage stress (Lengua & Long, 2002). This notion is in line with previous empirical and theoretical literature noting that children with difficult temperament may be more vulnerable to stressors (Carson & Bittner, 1994). Some researchers point out however, that early identification of difficult temperament allows parents and teachers to improve the match between children and their environments (Carson & Bittner, 1994)

Negative affect, parental positive affect, and child coping. It is often hypothesized that there is a link between adverse temperament and parenting (Paulussen-Hoogeboom, Stams, Hermanns, & Peetsma, 2007). Chess and Thomas (1991) for example, noted that negative affect is a temperament trait that makes it difficult to parent certain children. In one of the first reviews on the relationship between negative affect and parenting, researchers examined 16 studies to assess whether negative affect in infancy predicted maternal sensitive responsiveness (Crockenberg, 1986). Though some of the researchers found that infants with high negative emotional temperaments experienced less supportive caregiving, several others found that mothers tended to be more responsive with these particular babies. Crockenberg (1986) noted the discrepancy may have been due to interactions between child negative affect and features of the caregiving context. One of those caregiving features is supportive parenting, conceptualized to include parent characteristics such as, warmth, sensitivity, responsiveness, and acceptance (Paulussen-Hoogeboom et al., 2007).

The combined contributions of maternal warmth and child negative affect on child outcomes have been reported on in earlier work. In one study conducted with 81 school-aged children, temperament predicted children's adjustment at home and school, and a second crucial factor that emerged as a correlate was maternal warmth (Smith & Prior, 1995). The researchers emphasized that a warm and positive relationship with a parent contributes to resilience in the face of stress (Smith & Prior, 1995). Overall, they found that children with an easy temperament, whose relationship with their mothers was warm, were most able to withstand adversity at home and school (Smith & Prior, 1995).

While several researchers, such as those in the aforementioned study, examined the link between maternal warmth, dimensions of child temperament, and development through the diathesis-stress lens, more recent research has emerged in favour of environmental sensitivity models (Slagt et al., 2016; Stright et al., 2008). For example, one group of researchers examined data from the National Institute of Child Health and Human Development Study of Early Child Care and they found that temperament moderated relationships between parenting during early childhood and adjustment in first grade (Stright et al., 2008). Associations between parenting quality and first-grade outcomes were stronger among infants with difficult temperaments (Stright et al., 2008). Specifically, infants with difficult temperaments demonstrated better adjustment than infants with less difficult temperaments when their parent demonstrated more sensitivity and poorer adjustment when sensitivity was lower (Stright et al., 2008). In outlining directions for future research, the authors noted that the interaction between difficult (i.e., negative emotional) temperament and parenting for older children is relatively unknown. Additionally, majority of the research on the interactions of negative affect and parental positive affect have focused on negative developmental outcomes. The few studies that have examined

the contributions of the parenting and temperament interaction on child resiliency were based on the diathesis-stress model, and consequently, researchers have often conceptualized child negative affect as a vulnerability.

The Current Study

In this study, I examined the interactions among child negative affect, parental positive affect, and child resiliency. Negative affect was assessed in preschool, and relatively little is known about the role of child negative affect as a psychological characteristic of vantage-sensitivity. Most researchers to date have only identified negative affect during infancy as a vantage-sensitivity factor (Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011; Kim & Kochanska, 2012; Pluess & Belsky, 2013; Ramchandani, van IJzendoorn, & Bakermans-Kranenburg, 2010; Stupica, Sherman, & Cassidy, 2011). Furthermore, though child negative affect has been linked to both parental positive affect and resiliency in preschool (e.g., Smith & Prior, 1995), researchers have only examined this relationship through the diathesis-stress model. Thus, I aimed to further the parenting literature by exploring the aformenetioned relationship using the vantage sensitivity framework.

Finally, considering that most researchers have investigated the negative affect and parenting interaction with mothers, I aimed to also examine father-child interactions. Cabrera, Volling, and Barr (2018) noted that observational measures of father-child interactions offer insight into parenting behaviours that have been understudied. For instance, fathers are more likely than mothers to playfully tease their children, support them in taking risks, and partake in *rough and tumble* play (Fletcher, StGeorge, & Freeman, 2013). Researchers have also found that fathers who are sensitive and supportive are more likely to have children who are socially competent and demonstrate greater language development (Cabrera, Cook, McFadden, &

Bradley, 2011; Malin, Cabrera, & Rowe, 2014; McDowell & Parke, 2009; Roggman, Boyce, Cook, Christiansen, & Jones, 2004).

Examining the specific and unique contributions of maternal and paternal behaviours to children's development provides insight into each caregiver's individual influences (Cabrera, Volling, & Barr, 2018). For example, using a national probability sample, one group of researchers found that positive father involvement was associated with fewer child behavioural problems - a finding that held when maternal positive involvement was controlled for (Amarto, Paul & Rivera, 1999). Although studies on the individual contributions of mothers' and fathers' parenting behaviours are beginning to emerge (Cabrera et al., 2018), fewer researchers have investigated the relationships between child negative affect and fathers' positive affect in the context of vantage sensitivity.

Research Questions and Hypotheses

In the current study, I investigated the following research questions: (1) does child negative affect (as reported by mothers) moderate the relationship between mothers' positive affect and child resiliency one year later (as reported by mothers), and (2) does child negative affect (as reported by fathers) moderate the relationship between fathers' positive affect and child resiliency one year later (as reported by fathers)?

In accordance with the vantage sensitivity model and previous research on infant negative affect and parenting, I hypothesized that child negative affect would moderate the relationship between parental positive affect and child resiliency. I also hypothesized that children who exhibit high levels of negative affect and whose parents demonstrate high levels of positive affect, would demonstrate higher levels of resiliency one year later.

Method

Participants

One hundred, two-parent families and their preschool aged children participated in the current study. Information was collected from Phases 1 and 2 of a longitudinal study on parenting in early childhood. The larger study was supported by a Social Sciences and Humanities Research Council (SSHRC) grant to my supervisor (Grant #435-2014-0794: *Early childhood parent-child interactions: An examination of the stability of parenting across tasks and overtime*). Although families recruited for the larger SSHRC study were from across Canada, those involved in this study were recruited from Edmonton and surrounding areas.

The current study sample included 50 boys and 50 girls, all were between the ages of 26 and 68 months old (M = 51.66, SD = 7.46). The age range of parents were 26 to 35 years old (mothers 40%, fathers 28%), 36 to 45 years old (mothers 58%, fathers 62%), or over the age of 45 years old (mothers 2%, fathers, 10%). Parents identified their ethnicity as a combination of Canadian (mothers 62%, fathers 62%), White/Caucasian/Western European (mothers 38%, fathers 38%), Eastern European (mothers 14%, fathers 11%), Chinese (mothers 10%, fathers 10%), South Asian (mothers 7%, fathers 7%), Filipino (mothers 7%, fathers 5%), Aboriginal (mothers 5%, fathers 2%), Black/African (mothers 2%, fathers 2%), Korean (mothers 1%, fathers 2%), Portuguese (fathers 2%), Latin American (mothers 1%, fathers 1%), or other (mothers 3%, father 1%). The majority of parents had a college or university degree (mothers 46%, fathers 40%); the remaining parents were divided between high school diploma or GED (mothers 3%, fathers 4%), partial college or university (mothers 3%, fathers 5%), a certificate in trade/technology (mothers 5%, fathers 17%), graduate or professional education (mothers 37%, fathers 30%), partial high school training (mothers 2%, fathers 2%), junior high (mothers 2%), or

eight years of schooling or less (mothers 1%, fathers 2%). Information on the highest level of schooling was missing for one mother.

Procedure

Ethics approval for the larger longitudinal SSHRC study was obtained from the University of Alberta. Preschools and daycare centers were requested to distribute study information to interested two-parent families who had preschool-aged children. In Phase 1, parents independently completed several questionnaires, including a demographics questionnaire and measures of child temperament (e.g., negative affect) and behaviours (e.g., resiliency). Following the completion of questionnaires, a graduate research assistant contacted participating families to gage interest in partaking in home visits. Interested families were provided with additional information to obtain the appropriate informed consent. Each home visit was filmed and lasted for approximately 45 to 60 minutes. Parent-child interactions during the clean-up task were the focus of the current study, though as part of the larger study, the home visit included additional parent-child tasks (e.g., free play with Lego, puzzle building, and an emotions task). The home visits occurred on two separate occasions and were purposefully counterbalanced; once with children and their mothers and once with children and their fathers. After the home visit was completed, each parent was given a $30 gift card to a bookstore as a thank you for their time. As well, parents who requested were mailed or e-mailed a copy of their video. One year later, in Phase 2, families were asked to partake in the same procedures as outlined in Phase 1 (i.e., completion of questionnaires), with the exception of the home visit.

Measures

Demographics questionnaire. Mothers and fathers completed a questionnaire about family and child information. The questionnaire included child age, date of birth, gender, and parents' ethnicity, age, and level of education.

Parental positive affect. Mothers' and fathers' positive affect were assessed through video-tapes of their separate interactions with their child during a clean-up task in Phase 1. Following a 15-minute Lego play task, parents and their children were instructed to clean-up. Positive affect (i.e., warmth) was measured via the Parent-Child Interaction System (PARCHISY; Deater-Deckard, Pylas, & Petrill, 1997; Deater-Deckard, 2000). Instances of parental positive affect were coded on a 7-point scale, with a score of '1' indicating *no positive affect was displayed* and a score of '7' indicating *constant positive affect was observed* (e.g., parent was smiling and laughing throughout the task). Higher scores indicated greater amounts of parental positive affect.

Two research assistants independently coded the video interactions, and a third coder (who had established reliability in previous PARCHISY coding and led the training) carried out random reliability checks. All three coders established reliability for the training videos, and at least 20% of all video interactions were checked for reliability. The clean-up task was coded in its entirety for a maximum of five minutes. Any discrepancies between reliability codes were managed through consensus coding. Krippendorff's *Alphas* ranged from .95 to .96, indicating high inter-rater agreement among coders.

Aspland and Gardner (2003) noted that observations of parent-child interactions in the home are a closer representation of the typical interactions that commonly occur and hence, demonstrate greater ecological validity (Jacob, Tennenbaum, Bargiel, & Seilhamer, 1995). Using short, structured observational tasks increases the chances of certain behaviours occurring, allowing for comparisons to be made across individuals (Aspland & Gardner, 2003). Additionally, employing an everyday slightly stressful task, such as a clean-up activity, offers a glimpse into how parents may support their children during conflicting situations. Given that

supportive parenting in stressful situations may enable children to process instructions more effectively (Skinner & Wellborn, 1994), assessing the relationship between parental positive affect during a clean-up task and child coping (i.e., resiliency) may further enhance construct validity.

Child negative affect. The *very short form* of the *Children's Behavior Questionnaire (CBQ)* was used to assess the temperament dimension of negative affect in Phase 1 (Putnam & Rothbart, 2006; Rothbart, Ahadi, Hershey, & Fisher, 2001). The *very short form* consists of 36 items and it assess three broad dimensions of child temperament (i.e., surgency, negative affect and effortful control) in children ages 3 to 7, which have consistently emerged from scale-level factor analysis of the standard form of the CBQ. Additionally, CBQ very short forms have demonstrated adequate internal consistency, criterion validity, longitudinal stability and cross-informant agreement comparable to the standard CBQ (Putnam & Rothbart, 2006).

Mothers and fathers independently completed the very short form of the CBQ. Upon reading a set of 36 statements that described children's responses to a number of situations, parents were asked to report what their child's reaction would likely be in those situations. Specifically, they were asked to rate whether the statements were a *true* or *untrue* description of their child's reaction in the past six months. Responses were given on a 7-point scale, where a score of '1' indicated the statement was *extremely untrue* of the child, a score of '4' indicated the statement was *neither true nor untrue* of the child, and a score of '7' indicated the statement was *extremely true* of the child.

Negative affect was conceptualized as children's anger/frustration (i.e., related to interruption of ongoing tasks), discomfort (i.e., related to sensory qualities of stimulation), fear (i.e., ease, worry, or nervousness related to distress/and or potentially threatening situations), and

sadness (i.e., lowered mood and energy related to exposure to suffering and disappointment). A mean for negative affect was obtained through summing the scores of items that constituted the negative affect subscale and dividing it by the number of items. Higher scores indicated higher levels of child negative affect. Tests of convergent and discriminant validity provided support for the assessment of negative affect in particular, as the subscale correlated well with other measures of temperamental negative affect (r =.52, $p \leq .001$; Allan, Lonigan, & Wilson, 2013). The negative affect subscale also demonstrated adequate reliability (12 items; $\alpha = .74$).

Child resiliency. The *Behaviour Assessment System for Children, Second Edition* (BASC-II; Reynolds & Kamphaus, 2004) was used to assess child resiliency in Phase 2. Mothers and fathers independently completed the *Parent Rating Scale-Preschool Form* (PRS-P), valid for caregivers of children ages 2-5. Parents were asked to indicate the frequency of child behaviours on a four-point scale (i.e., 0 = Never, 1 = Sometimes, 2 = Often, and 3 = Almost Always). Item raw scores were totalled and converted into standardized T-scores. On adaptive scales, such as the *Resiliency* subscale included in the current study, lower scores indicated lower levels of resiliency. The BASC-II demonstrated high internal consistency (i.e., 0.90s for the composite scales, and 0.80s for individual scales) and test-retest reliability (i.e., average correlations in 0.80s for composite scores and between 0.70s and 0.80s for individual scales across all age groups). Though the BASC-II included 16 primary scales, 7 optional scales, and 5 composite scales, only the *Resiliency* subscale, an adaptive content scale of the PRS-P, was used in the current study.

The *Resiliency* subscale consisted of 11 items that captured how often children accessed internal (e.g., *recovers quickly after a setback*) and external support systems (e.g., *makes friends easily*) to deal with stress and *overcome adversity* (Reynolds & Kamphaus, 2004, p. 88). High

scores on *Resiliency* have positively correlated to general positive mental health (Reynolds & Kamphaus, 2004).

Data Analyses

Descriptive analyses were carried out to assess the demographic information and to examine the distribution of the data for subsequent analyses. Correlations between the three variables of interest were also conducted to gain an initial understanding of the relationships. Following these analyses, moderated regressions were conducted to investigate the two research questions. Relevant statistical assumptions for regression were also examined and adjustments were made as necessary. All analyses were carried out via *IBM SPSS Statistics* program (version 24), with a significance level of $\alpha = .05$.

Results

In this section, the results of this study are described in detail. Descriptive statistics are presented, followed by preliminary analyses, and the statistical assumptions pertaining to each analysis. Finally, the results for both of the research questions are presented.

Descriptive Statistics

Measures. Means, standard deviations and ranges for children's negative affect (as measured by the CBQ) and parental positive affect (as measured by PARCHISY) in Phase 1 and child resiliency (as measured by BASC-II) in Phase 2 are all reported in Table 1. The CBQ and PARCHISY measures are unstandardized and presented as raw scores. The possible range of scores for the *Positive Affec*t subscale of the PARCHISY and for the *Negative Affect* subscale of the CBQ is 1 to 7. As reported previously, the BASC-II is a standardized measure that presents T-scores. On adaptive scales (e.g., the resiliency subscale), a score below 40 falls into the *at-risk*

or *clinical* range and suggests difficulties in this area. T-scores on the BASC-II can range from 20 to 120.

Table 1. Descriptive Statistics for Measures

Variable	*N*	Range	*M*	*SD*
Phase 1 PARCHISY Parent Positive Affect				
Mothers' Positive Affect	100	1 to 7	3.37	1.56
Fathers' Positive Affect	100	1 to 7	2.95	1.48
Phase 1 CBQ Child Negative Affect				
Child Negative Affect as reported by Mothers	100	1.67 to 5.89	3.82	.95
Child Negative Affect as reported by Fathers	100	1.58 to 5.50	3.89	.83
Phase 2 BASC-II Child Resiliency				
Child Resiliency as reported by Mothers	94	29 to 69	49.87	9.43
Child Resiliency as reported by Fathers	93	31 to 71	47.82	9.4

Correlations. Table 2 includes the correlations between child negative affect, parental positive affect, and child resiliency. Specifically, the associations among mothers' positive affect and mothers' reports of child negative affect and resiliency were explored, and the associations among fathers' positive affect and fathers' reports of child negative affect and resiliency were explored. For both, mothers and fathers, positive affect did not significantly correlate with child negative affect nor child resiliency. However, there was a moderate association between child negative affect and child resiliency. Specifically, mothers' reports of child negative affect were negatively correlated with mothers' reports of child resiliency (r = -.438, p = .000) and fathers' reports of child negative affect were negatively correlated with fathers' reports of child resiliency (r = -.532, p = .000).

Table 2. Pearson Correlations for Children's Negative Affect, Parental Positive Affect and Children's Resiliency

	Phase 1 CBQ Child Negative Affect	**Phase 2** BASC-II Child Resiliency
Phase 1 PARCHISY Parent Positive Affect		
Mothers' Positive Affect	-.020	.086
Fathers' Positive Affect	.068	-.071
Phase 1 CBQ Child Negative Affect		
Child Negative Affect as reported by Mothers	--	-.438**
Child Negative Affect as reported by Fathers	--	-.532**

Note. N = 100. Six mothers and seven fathers had missing data for BASC-II in Phase 2. PARCHISY = Parent Child Interaction System; CBQ = Childhood Behavior Questionnaire; BASC-II = Behavior Assessment System of Children. ** = $p < .01$

Moderated Regression Analyses

The assumptions of linear regression, as identified by Field (2013) were assessed for both moderation models. Linearity of data was assessed via scatter plots, and normality and variance of residuals were examined via histograms and plots of residuals. Mahalanobis and Cook's distance tests revealed there were no outliers in the data, and the Durban-Watson test of independence of errors demonstrated all values were within acceptable parameters (Field, 2013). Finally, the sample sizes for both regression analyses were adequate, using the equation $50 + 8k$, where k is the number of predictors (Green, 1991).

Table 3. Summary of Moderated Regression Analyses Predicting Child Resiliency as reported by Mothers

Dependent Variable: Phase 2 BASC-II Child Resiliency				
Predictor Variable	*b*	*SE B*	*t*	*p*
Mothers' Positive Affect	.444	.559	.794	.429
Child Negative Affect	-4.438	.925	-4.798	.000
Mothers' Positive Affect x Child Negative Affect	.627	.742	.845	.400

Note. N = 94. $R^2 = .207$ *(p =.000).*

Two moderated regression analyses were conducted to investigate the research questions. In the first regression model, mothers' positive affect in Phase 1 was the predictor variable, child negative affect in Phase 1 (as reported by mothers) was the moderator, and child resiliency in Phase 2 (as reported by mothers one year later) was the dependent variable. In the second regression model, fathers' positive affect in Phase 1 was the predictor variable, child negative affect in Phase 1 (as reported by fathers) was the moderator, and child resiliency in Phase 2 (as reported by fathers one year later) was the dependent variable. Moderations were carried out via Hayes's (2012) *PROCESS* computational tool, available for use with *IBM SPSS Statistics* programs.

Question 1: Does child negative affect (as reported by mothers) moderate the relationship between mothers' positive affect and resiliency one year later (as reported by mothers)? Overall, the moderated regression model explained a small but significant portion of the variance in children's resiliency scores (20.7%) with $R^2 = 0.207$, $F\ (3, 90) = 9.755$, $p = .000$ (See Table 3). Children's negative affect significantly predicted resiliency ($b = -4.438$, $p = .000$). Specifically, children with lower levels of negative affect were more likely to have higher levels of resiliency as reported by their mothers. Neither mothers' positive affect, nor the interaction of mothers' positive affect and child negative affect significantly predicted child resiliency. Thus, child negative affect was not a significant moderator of the relationship between mothers' positive affect and child resiliency.

To examine the general trends visually, child negative affect was categorized into one of three categories: high negative affect (CBQ scores from 5 to 7), neither high nor low negative affect (CBQ scores of 4), and low negative affect (CBQ scores from 1 to 3). This categorical version of negative affect was then examined in a scatterplot in relation to mothers' positive affect and child resiliency scores (see Figure 1). Based on the scatterplot, a few observations may be noted. First, it appeared that overall, children with lower levels of negative affect had the highest levels of resiliency one year later, followed by children with neither high nor low levels of negative affect. Second, though the moderation was not significant, it appears that for children with high negative affect, those whose mothers demonstrated greater levels of positive affect had higher levels of resiliency one year later as compared to those children whose mothers demonstrated lower levels of positive affect.

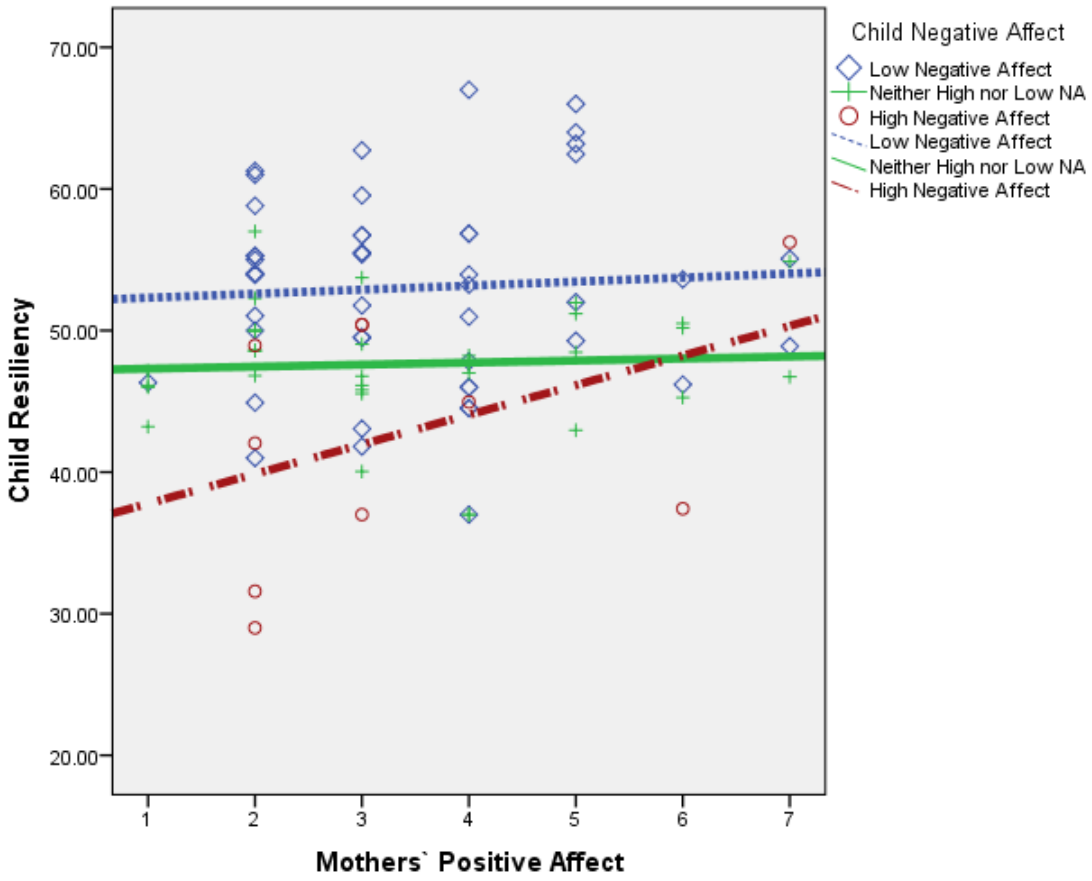

Figure 1. $N = 94$. The interactions among mothers' positive affect, child negative affect, and child resiliency.

Question 2: Does child negative affect (as reported by fathers) moderate the relationship between fathers' positive affect and resiliency in preschool (as reported by fathers)? Overall, the moderated regression model explained a small but significant portion of the variance in children's resiliency scores (28.4%) with $R^2 = 0.284$, $F\,(3, 89) = 8.733$, $p = .000$ (See Table 4). Children's negative affect significantly predicted child resiliency ($b = -6.123$, $p = .000$). Specifically, children with lower levels of negative affect were more likely to have higher levels of resiliency as reported by their fathers. Neither fathers' positive affect, nor the interaction of fathers' positive affect and child negative affect significantly predicted child resiliency. Thus, child negative affect was not a significant moderator of the relationship between fathers' positive affect and child resiliency.

Table 4. Summary of Moderated Regression Analyses Predicting Child Resiliency as reported by Fathers

Dependent Variable: Phase 2 BASC-II Child Resiliency				
Predictor Variable	*b*	*SE B*	*t*	*p*
Fathers' Positive Affect	-.151	.622	-.243	.809
Child Negative Affect	-6.123	1.204	-5.085	.000
Fathers' Positive Affect x Child Negative Affect	-.133	.905	-.147	.884

Note. N = 93. R^2 = .284 (p =.000).

Similar to the first regression model, child negative affect was categorized into one of three categories: high negative affect (CBQ scores from 5 to 7), neither high nor low negative affect (CBQ scores of 4), and low negative affect (CBQ scores from 1 to 3). This categorical version of negative affect was then examined in a scatterplot in relation to fathers' positive affect and child resiliency scores (see Figure 2). Based on the scatterplot, a few observations may be noted. Similar to the first model, it appeared that overall, children with lower levels of negative affect had the highest levels of resiliency in the sample. Second, there was a slightly negative trend towards lower resiliency scores among children who were neither high nor low in negative affect when their fathers demonstrated greater positive affect. Finally, similar to the observation noted with mothers, it appeared that for children with high negative affect, those whose fathers demonstrated greater levels of positive affect had higher levels of resiliency one year later as compared to those children whose fathers demonstrated lower levels of positive affect.

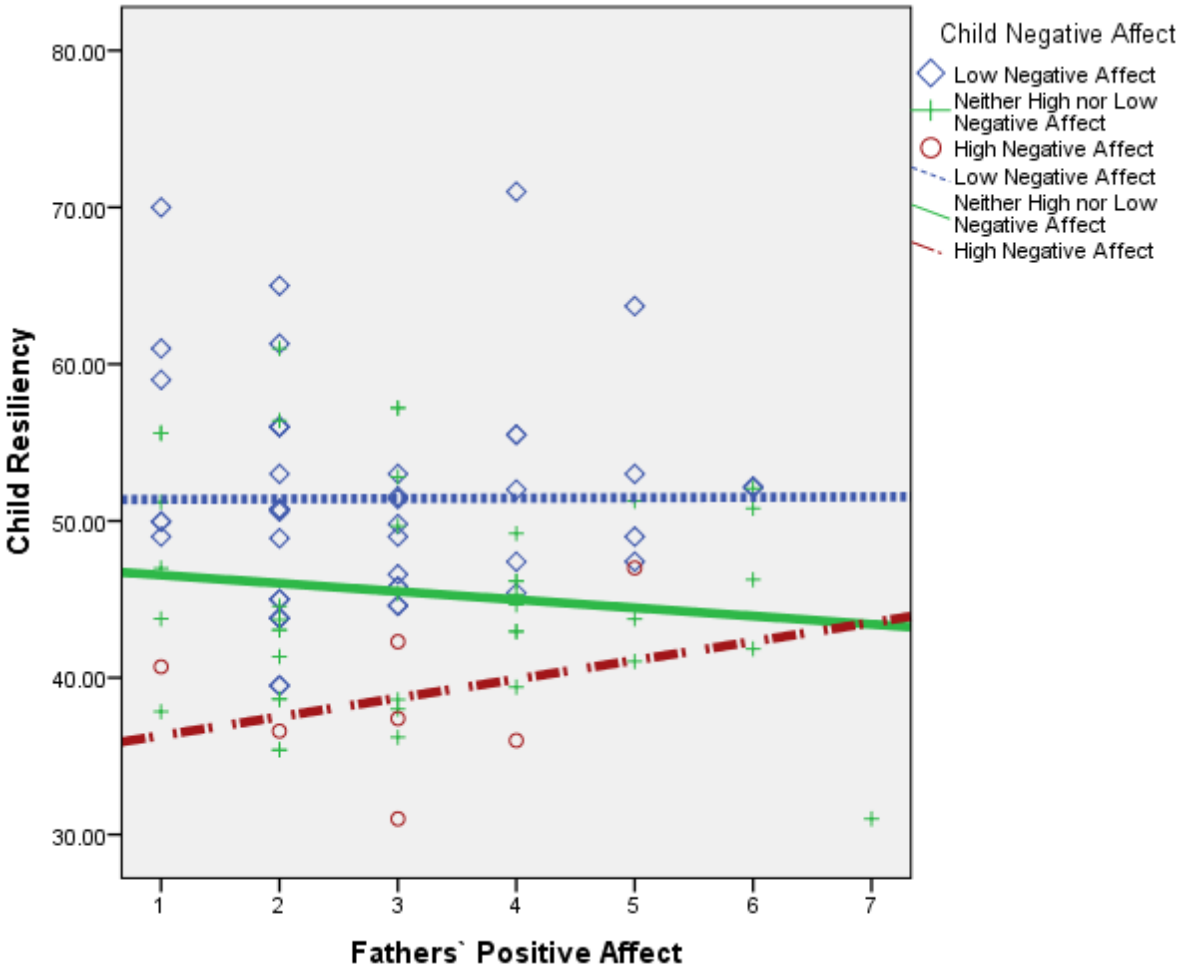

Figure 2. $N = 93$. The interactions among mothers' positive affect, child negative affect, and child resiliency.

Discussion

The objective of this study was to understand the relationships between child negative affect, parental positive affect, and resiliency in preschoolers using the vantage sensitivity model. Though negative affect in infancy has been established as a psychological characteristic of vantage-sensitivity, fewer researchers considered the potential contributions of child negative affect. Additionally, there is less research on fathers' contributions in relation to child negative affect and resiliency. Thus, to address the aforementioned gaps in the literature, I examined whether child negative affect, as a potential characteristic of vantage-sensitivity, moderated the

relationship between mothers' and fathers' positive affect and child resiliency one year later. In this section, results are discussed in reference to child negative affect, parental positive affect, child resiliency, and environmental sensitivity models. Finally, limitations of the current study, future directions, and implications are outlined.

In accordance with the vantage sensitivity model, I hypothesized that child negative affect would moderate the relationship between parental positive affect (i.e., both mothers' and fathers') and child resiliency one year later. Specifically, I hypothesized that children with high levels of negative affect, whose parents exhibited greater amounts of positive affect, would demonstrate the greatest resiliency one year later. Results of the moderated regression analyses however, revealed that this interaction was not significant for mothers or fathers. The only significant predictor of children's resiliency was their negative affect, as reported by mothers and fathers, one year earlier. Children with lower levels of negative affect were more likely to demonstrate higher levels of resilience. This result is consistent with previous findings indicating that children exhibiting high negative affect were more likely to experience difficulty with overcoming stress (Bolger, 1990; Carver & Scheier, 1994; Lengua & Long, 2002; Lengua et al., 1999). An underlying mechanism that may help to explain the relationship between negative affect and the ability to manage stress is emotion regulation (i.e., the ability to manage emotion reactivity). Emotion regulation may account for how and why negative affect can influence or interfere with psychological processes, such as the ability to problem solve or cope (Cole, Martin, & Dennis, 2004). For example, children who experience high levels of negative affect have a harder time looking for appraisals of stressors and therefore, manage their stress (Davies & Cummings, 1995; Lengua & Long, 2002).

The results of the current study also suggest that child negative affect may not be a psychological characteristic of vantage-sensitivity in the same way that infant negative affect is. Some researchers have noted that individuals may be more sensitive to environmental influences during specific developmental stages, such as infancy (Belsky & Pluess, 2013; Windhorst et al., 2015). According to developmental perspectives, the first few years of a child's life are said to be the most influential, and sensitivity to the environment is greatest when biological systems are first developing (Ganzel & Morris, 2011; Slagt et al., 2016). Additionally, researchers have found that temperament can change over time as it is influenced by postnatal factors (Bergman, Sarkar, Glover, & O'Connor, 2008; Blandon, Calkins, Keane, & O'Brien, 2010; Janson & Mathiesen, 2008). For example, as children with negative emotional temperament develop, environmental experiences may impact their temperament in response to parenting (Hall & Perona, 2012). Given that child temperament may differ from infant temperament (Roberts & Del Vecchio, 2000), Slagt and colleagues (2016) noted that negative affect in childhood may not be an accurate psychological characteristic of sensitivity. In their recent meta-analysis of 84 studies, they found that relationships between positive parenting behaviours and positive child adjustment were stronger for children with a more negative emotional temperament when negative affect was assessed before age one (Slagt et al., 2016).

It is also possible that parental positive affect carries more weight in infancy than in preschool. Given that the majority of communication during early infancy is non-verbal, perhaps parents' expressed emotion is more salient and relevant to parent-infant interactions rather than parent-child interactions. For example, some researchers have found that infants possessed a unique sensitivity to the quality of their mothers' emotional response (Cohn & Tronick, 1989). Additionally, infants of mothers who expressed positive affect were more likely to display a

diverse set of emotions and demonstrate self-regulation (Cohn & Tronick, 1989). Alternatively, additional parenting dimensions could be considered in their relation to child resiliency. For example, one group of researchers found that parents who consistently used structure in their homes had children who used a greater number of adaptive coping strategies in response to every day stress (Hardy et al., 1993). Additionally, among parents who exhibited high levels of support, those who relinquished little or no control had children who were more likely to use maladaptive coping strategies (Hardy et al., 1993). However, when parents were supportive and gave some amounts of control to their child, this finding was no longer significant (Hardy et al., 1993). Hence, perhaps the interactions of parenting dimensions, such as parental structure and control, should also be considered in the underpinnings of child resiliency.

Although the results of the current study did not reveal a significant moderation, there was a trend towards an interaction of parental positive affect and child negative affect. Specifically, higher resiliency scores were observed among children with high levels of negative affect when their parents demonstrated greater amounts of positive affect. At the same time, lower resiliency scores were found among children with high levels of negative affect when their parents exhibited fewer amounts of positive affect. Though non-significant, these results are in line with the differential susceptibility model rather than the vantage sensitivity model. That is, the visual results suggest that children exhibiting high levels of negative affect were more susceptible to the influences of parental positive affect *for better and for worse*. Across several studies, researchers found that children higher on negative affect (compared with those lower on negative affect) were shaped by both negative and positive parenting influences as differences were observed in various developmental outcomes, including externalizing behaviours, internalizing behaviours, social competence, and cognitive competence (Slagt et al., 2016).

Whether children's negative affect is a reflection of differential susceptibility (i.e., the two coincidentally co-occur) or a cause (i.e., negative affect directly leads to differential susceptibility) has been speculated on (Slagt et al., 2016). Researchers hypothesized that children with highly sensitive nervous systems may find their surroundings to be overstimulating, contributing to a greater expression of negative affect in infancy (Aron, Aron, & Jagiellowicz, 2012; Slagt et al., 2016). Thus, it may be that the traits related to negative affect in infancy make certain children more susceptible to the influences of their environment (Slagt et al., 2016). Alternatively, it is also possible that negative affect on its own makes children more susceptible to environmental factors. Whether negative affect is indeed a marker, or a cause of susceptibility is an area of research that still needs to be explored (Slagt et al., 2016).

Limitations

Although this study had some notable strengths (e.g., the separate assessment of child negative affect, child resiliency and parent-child interactions), there were some limitations related to the measures employed. First, the measurement of parental positive affect via PARCHISY may have been limited by the scale (i.e., parental positive affect was assessed on a subscale of 0 to 7). As observed in the graphs, it looks as though children with high levels of negative affect may have potentially demonstrated the greatest resiliency scores if higher levels of parental positive affect could have been considered. Thus, perhaps a ceiling effect for parental positive affect influenced the findings. Second, the assessment of child resiliency may have been more reliable if additional measures were considered. Although parent reports provide detailed information on children's behaviour in a wide range of situations, differences in parents' frame of reference, knowledge of specific behaviour, understanding of items, and other biases may affect the accuracy of their responses (Majdandžić & Van Den Boom, 2007; Rothbart &

Goldsmith, 1985). Given that researchers have found children's self-regulatory abilities to be context specific, it is possible that children's abilities to deal with stress may also change in different environments (Grolnick, Bridges, & Connell, 1996; Majdandžić & Van Den Boom, 2007). Thus, perhaps assessing children's resiliency via teachers' report, for instance, would have further enhanced the validity of findings.

Second, the current study sample consisted of high-functioning families who may not be representative of the typical parenting population. For example, regarding their BASC-II scores, over 70% of the children in the sample fell in the average range and less than 30% were in the at-risk or clinical range. Given that majority of the children did not exhibit significant behavioural problems, it is possible that the parent-child interactions were characterized by less conflict and stress overall. This may be reflected in parents' relatively high positive affect scores. Additionally, the sub-sample (i.e., 100 families) involved in the current study may have differed from the rest of the sample as well as population due to some self-selection biases. In order to assess parent-child interactions, parents needed to be open and comfortable to the idea of researchers entering their home and recording their interactions with their child. Also, majority of the families were highly educated and had mid- to high levels of income. Considering SES and parents education have implications for how involved they are, this may be important to keep in mind.

Third, it is possible that my conceptualization of parental warmth (i.e. defined by the PARCHISY as positive affect) may not have been the most robust indicator of parenting quality. For example, parents may have expressed positive emotions (e.g. smiling and laughing) whilst simultaneously verbalizing a negative statement. Given that parents' expressed emotions should be considered in the context of their vocalizations as well as behaviours, perhaps a combined

composite score of several PARCHISY parent variables (e.g. positive control, responsiveness, positive affect, and vocalizations) would have been a more reliable and valid indicator of parenting quality.

Finally, although several ethnicities were represented in the sample, over half of the families identified themselves as White/Caucasian/Western European or Eastern European. This finding may be a reflection of the broader literature as previous researchers have also found that the majority of studies on individual differences in environmental sensitivity have been conducted with participants of a European or American background (Assary & Pluess, 2017). Far less work has been done on environmental sensitivity in minority groups (Brody et al., 2011). Considering that children from minority groups often face more complex cultural and psychosocial factors along with environmental risks and benefits (Assary & Pluess, 2017), they remain an important subpopulation to examine. Nonetheless, Assary and Pluess (2017) noted that findings from environmental sensitivity models can extend to children from minority groups as positive factors (i.e., supportive parenting) and negative factors (i.e., harsh parenting) are considered universal influences of the environment. At the same time, recognizing that cultural differences exist in the way supportive or harsh parenting is defined is also important (Assary & Pluess, 2017) . In the context of the current study, cultural display rules may have played a role in influencing some parents' expressions of emotions - a potential topic to explore for future research.

Future Directions and Implications

Despite the aforementioned limitations, this study provided an introductory look into the relationships between preschoolers' negative affect, parental positive affect, and child resiliency one year later. Given that the interaction between child negative affect and parental positive

affect did not significantly predict child resiliency, these findings suggest that perhaps child negative affect is not an accurate characteristic of vantage-sensitivity. Additional studies however, are needed to support these conclusions. In the current study, negative affect was assessed via the totalling of specific subscales (i.e., anger, discomfort, fear, and sadness). Perhaps evaluating each subscale in relation to parental positive affect and child resiliency would be more appropriate in future work. For example, discomfort, as operationalized by the CBQ, referred to sensory qualities of stimulation. Given the theoretical work and empirical evidence in support of sensory-sensitivity as a marker of vantage-sensitivity, perhaps discomfort on its own would have been a more significant predictor than the sum of negative affect (Aron & Aron, 1997; Aron et al., 2012; Pluess & Boniwell, 2015). One group of researchers noted that while positive affect is more homogeneous, the consistency of negative affect can vary depending on the specific temperament trait (Majdandžić & Van Den Boom, 2007). Sadness, for example, was found to be an inconsistent temperament dimension, though fear and anger were more stable over time (Majdandžić & Van Den Boom, 2007). Thus, assessing the unique contributions of each temperament trait would reduce some measurement error and also enhance the accuracy of the traits as potential factors of vantage-sensitivity.

Understanding the notion that individual differences in environmental sensitivity can lead to different outcomes, in response to both environmental risk and support, may inspire policy makers to allocate more resources and attention to the promotion of well-being and supports instead of only focusing on mitigating risks (Assary & Pluess, 2017). Additionally, applying the framework to school, clinical, and developmental psychology may improve the *person-environment fit* for treatment, increasing cost and clinical effectiveness (de Villiers et al., 2018; Pluess & Belsky, 2013). For instance, children who exhibit high vantage-sensitivity to their

environment may need briefer or lesser intense interventions whereas those who are vantage-resistant (i.e., are less sensitive to their environment) may need longer, more intense, and multiple interventions (de Villiers et al., 2018). De Villiers and colleagues' (2018) noted that for some children who are very resistant to their environment, therapeutic strategies may need to be redesigned altogether. At the same time, being less responsive to a specific kind of intervention does not necessarily reflect a general lack of sensitivity to all types or intensities of treatments, though additional research is needed in this area (de Villiers et al., 2018).

Conclusion

Children with difficult temperaments vary in the degree to which they are impacted by environmental features, such as parenting. One of the most prevailing models in the developmental literature is the dual-risk framework, which suggests that children with a highly negative emotional temperament are more vulnerable to the influences of harsh parenting. Recently however, a new wave of environmental sensitivity models emerged, arguing in favour of a brighter side. Differential susceptibility models suggest that children with negative emotional temperaments are susceptible to both positive and negative influences of their environment, whereas vantage sensitivity models postulate that sensitivity only exists in response to positive influences of the environment (i.e., the opposite of diathesis-stress). Although several studies found infant negative affect to be a psychological characteristic of vantage-sensitivity, fewer researchers investigated the relationships between negative affect in preschool, parenting, and positive development. Even fewer work was reported on fathers' contributions in the aforementioned relationships.

The current study examined whether mothers' and fathers' positive affect moderated the relationship between child negative affect and child resiliency one year later. Results

demonstrated there were no statistically significant interactions and only child negative affect predicted child resiliency. That is, children with higher levels of negative affect demonstrated lower levels of resiliency. Though the moderation was not statistically significant, general trends emerged in favour of the differential susceptibility model over the vantage sensitivity model. Children with high levels of negative affect were somewhat susceptible to both high and low levels of parental positive affect as differences were observed within their resiliency scores. Taken together, these findings highlight the importance of assessing and considering individual differences in environmental sensitivity. On the bright side, the same children who are the most adversely affected by negative experiences may also reap the greatest benefit from positive ones.

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