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Prediction of toddlers' expressive language from maternal sensitivity and toddlers' anger expressions: A developmental perspective

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ABSTRACT

Despite evidence for the importance of individual differences in expressive language during toddlerhood in predicting later literacy skills, few researchers have examined individual and contextual factors related to language abilities across the toddler years. Furthermore, a gap remains in the literature about the extent to which the relations of negative emotions and parenting to language skills may differ for girls and boys. The purpose of this longitudinal study was to investigate the associations among maternal sensitivity, children's observed anger reactivity, and expressive language when children were 18 (T1; $n = 247$) and 30 (T2; $n = 216$) months. At each age, mothers reported on their toddlers' expressive language, and mothers' sensitive parenting behavior was observed during an unstructured free-play task. Toddlers' anger expressions were observed during *an* emotion-eliciting task. Using path modeling, results showed few relations at T1. At T2, maternal sensitivity was negatively related to anger, and in turn, anger was associated with lower language skills. However, moderation analyses showed that these findings were significant for boys but not for girls. In addition, T1 maternal sensitivity and anger positively predicted expressive language longitudinally for both sexes. Findings suggest that the relations between maternal sensitivity, anger reactivity and expressive language may vary depending on the child's developmental stage and sex.

1. Introduction

The first 3 years of life have been identified as a period of significant growth in language and cognitive abilities (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Wetherby, Allen, Cleary, Kublin, & Goldstein, 2002). In addition, there are substantial individual differences in expressive language, and the rate of language growth during these early years has been shown to predict later language/reading skills (Bates, Dale, & Thal, 1995). Thus, understanding the early predictors of individual differences in language skills has clear importance. The purpose of this study was to investigate the relations of child characteristics (i.e., anger reactivity, child sex) and family-level characteristics (i.e., mothers' sensitivity) to children's expressive language at 18 and 30 months of age.

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1.1. The relation of emotional reactivity to children's language development

According to the Yerkes–Dodson Law (Yerkes & Dodson, 1908), high levels of arousal may hinder attentional processes and overload the cognitive resources that are needed for learning and performance on cognitive tasks (e.g., problem solving tasks). The negative relation between high levels of arousal (e.g., negative emotional expressions) and cognitive processes, suggested by Yerkes and Dodson (1908), has been supported by previous research in both adults and children (Anderson, 2000; Blair & Dennis, 2010; Burbridge, Larsen, & Barch, 2005; van der Staay, Schuurman, van Reenen, & Korte, 2009). For instance, there is compelling empirical evidence that shows children's experience and expressions of negative emotions, particularly anger, may be detrimental for learning (e.g., free recall, working memory tasks; Burbridge et al., 2005; Furnham & Stephenson, 2007), academic functioning, performance on IQ tests, mental and arithmetic reasoning, and literacy skills (Graziano, Reavis, Keane, & Calkins, 2007; Gumora & Arsenio, 2002; Valiente, Lemery-Chalfant, & Swanson, 2010).

Despite the aforementioned evidence, few researchers have attempted to examine how children's negative emotionality during early childhood relates to emergent language skills (e.g., oral/expressive language), which have obvious implications for later literacy skills (e.g., Kubicek & Emde, 2012; Spira, Bracken, & Fischel, 2005; Storch & Whitehurst, 2001). The results of the few studies that do exist generally agree that children's negative emotionality relates to relatively low language skills (Fish & Pinkerman, 2002; Friend, 2001; Kubicek & Emde, 2012; Moreno & Robinson, 2005). For example, Salley and Dixon (2007) found that mothers' ratings of children's dispositional negative affectivity were negatively related to measures of language development (e.g., total vocabulary and mean length of utterance) at 21 months of age, which supports the argument that negative emotional reactivity taxes the cognitive attention essential for learning language (Bloom & Capatides, 1987). In one recent investigation, Kubicek and Emde (2012) found that, compared to early talkers, late talkers had higher levels of maternal-reported dispositional anger as toddlers.

In the current study, we focused on the prediction of language from situational measures of anger reactivity during the toddler years. Focusing on situational measures of anger reactivity is important for two reasons. First, anger reactivity that occurs in response to a given situation may involve some cognitive processes (e.g., interpretation of situation; Eisenberg et al., 1994), which may result in taxing and subsuming cognitive resources that are needed for learning. Thus, children who are reactive in response to a situation may be particularly at high risk for learning difficulties. Second, parents' reports of children's emotionality often do not correlate with what is observed in laboratories (Seifer, Samaeroff, Barrette, & Krafchuk, 1994) perhaps because parents often do not have a comparison level when reporting about their children's reactivity (e.g., what may be considered reactivity to one parent may not be considered reactivity to another parent; Siegler, DeLoache, & Eisenberg, 2003). Given that temperamental characteristics (e.g., negative emotionality) have shown to be stable across different contexts/situations (Rothbart & Bates, 1998), assessing children's patterns of responses in specific situations may provide researchers with a relatively objective measure of reactivity.

The specific emotion of anger was considered because anger has been related to activation in the amygdale (brain region responsible for processing emotional information), and hence, triggering a fight-or-flight response and creating high levels of arousal (as indicated by increase in the blood pressure and pulse as well as subjective experiences of bodily conditions; Bodenhausen, Sheppard, & Kramer, 1994). As a result, compared to other negative emotions, such as fear and sadness, anger has been found to be more strongly related to individuals' poor performance on cognitive tasks and attentional processes (Litvak, Lerner, Tiedens, & Shonk, 2010). Indeed, the findings of several studies indicate that infants' irritability and proneness to anger may hinder their ability to attend to environmental stimuli (Lemelin, Tarabulsy, & Provost, 2002;Lemelin, Tarabulsy, & Provost, 2006), which is found to hamper the learning processes (Salley & Dixon, 2007; Usai, Garello, & Viterbori, 2009). Thus, in the current study, we expected anger reactivity to be negatively related to children's expressive language ability.

Examining the relations between children's negative reactivity and cognitive abilities during toddlerhood is particularly important due to the rapid developmental changes in regulatory and cognitive abilities that occur during the first 3 years of life (Calkins, 2007). For example, around the second year, children start to learn how to regulate their negative emotions, communicate through expressive language, and to control their attention to maintain engagement with the features of environment (Abe & Izard, 1999; Ruff & Rothbart, 1996). Thus, anger expressions during late toddlerhood may be viewed as more problematic than in early toddlerhood because older toddlers are expected to have the ability to regulate their negative emotions/overarousal and show improvements in attentional control (Gaertner, Spinrad, & Eisenberg, 2008). Thus, although we expected a negative relation between children's anger reactivity and expressive language at both ages, we predicted the relation between aforementioned variables to be particularly strong for older toddlers.

1.2. The relations of parenting to children's emotional reactivity and language

According to the intentionality model of Bloom and Tinker (2001), much of children's language ability is achieved through interpersonal interactions. Thus, parent–child interactions may provide a crucial foundation for children's language production. Among parenting factors that have been associated with children's language production are joint attention (Baldwin, 1995; Charman et al., 2000) and mothers' sensitivity/responsiveness (Landry, Smith, Swank, Assel, & Vellet, 2001; Leigh, Nievar, & Nathans, 2011; Paavola, Kempinen, Kumpulainen, Molianen, & Ebeling, 2006). Sensitivity, which includes a range of mothers' affective and behavioral characteristics (i.e., warmth, contingent responsiveness to the child's needs,