Parent emotion socialization and pre-adolescent’s social and emotional adjustment: Moderating effects of autonomic nervous system reactivity

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ABSTRACT

This study examined whether measures of children’s autonomic nervous system (ANS) reactivity to social stress moderated the effect of parent emotion socialization on children’s social and emotional adjustment. Sixty-one children (9–13 years) completed a peer rejection task while their respiratory sinus arrhythmia reactivity (RSA-R) and skin conductance level reactivity (SCL-R) were assessed. Parents’ report of supportive and non-supportive reactions to their child’s negative emotions served as measures of emotion socialization. Measures of children’s social and emotional adjustment included: teacher-rated peer rejection, aggression, and prosocial behavior and emotion regulation skills. Measures of children’s ANS reactivity moderated the effect of parent emotion socialization on children’s adjustment. Supportive responses were more protective for children evidencing RSA augmentation whereas non-supportive responses were more detrimental for children evidencing low SCL-R. Thus, children’s ANS reactivity during social stress may represent a biological vulnerability that influences sensitivity to parent emotion socialization.

1. Introduction

One of the most critical tasks of childhood is the development of social and emotional competence, including the development of healthy peer relationships, the ability to engage in appropriate social behaviors (e.g., Cavell, 1990), and the capacity to regulate the initiation, modulation, and expression of emotions (termed emotion regulation; e.g., Eisenberg & Spinrad, 2004). A large body of research suggests that parent’s reactions to children’s negative emotions serves as a form of emotion socialization that teaches children emotion regulation skills and social sensitivity (e.g., Denham, Bassett, & Wyatt, 2007; Eisenberg, Cumberland, & Spinrad, 1998; Lunkenheimer, Shields, & Cortina, 2007). Supportive reactions to children’s negative emotions (e.g., comforting, validating, and teaching constructive coping or problem solving) are argued to enhance children’s emotional understanding, ability to respond adaptively in emotion-eliciting situations, and empathy. In contrast, non-supportive reactions (e.g., minimizing or punishing children’s negative emotions) are proposed to undermine children’s ability to process and regulate their own emotions and respond sensitively to others (e.g., Denham et al., 2007; Eisenberg et al., 1998). Indeed, evidence suggests that when parents frequently respond to their child’s negative emotions in supportive ways and infrequently respond in non-supportive ways, children are better able to regulate their own emotions, are less aggressive, are more prosocial, and have more positive peer relationships (e.g., Blair et al., 2014; Eisenberg et al., 1996; Katz & Windecker-Nelson, 2004; Shewark & Blandon, 2015).

Yet, growing evidence suggests that children may respond differently to emotion socialization behaviors depending upon their underlying biological vulnerabilities, as indexed by measures of autonomic nervous system (ANS) reactivity during challenging experiences (Hastings, Sullivan et al., 2008; Hastings, Klimes-Dougan, Kendziora, Brand, & Zahn-Waxler, 2014; Perry, Calkins, Nelson, Leerkes, & Marcovitch, 2012; Scrimgeour, Davis, & Buss, 2016). Research examining the moderating role of ANS reactivity has primarily focused on preschoolers. However, increasing research suggests that parent emotion socialization may continue to have implications for adjustment into adolescence (e.g., Hastings et al., 2014; Schwartz, Sheeber, Dudgeon, & Allen, 2012). In addition, researchers have typically measured physiological vulnerability based on measures of children’s parasympathetic nervous system (PNS) reactivity and few have considered whether sympathetic nervous system (SNS) reactivity also moderates effects. Consequently, the present study sought to address these gaps in the literature and is the first to use a pre-adolescent at-risk sample to examine whether indicators of PNS and SNS reactivity to a social stressor moderate the association between parent emotion socialization and children’s social and emotional adjustment.
1.1. Autonomic nervous system reactivity and social and emotional impairments

Research suggests that children’s ANS reactivity to stress or challenge has important implications for understanding vulnerabilities for social and emotional impairments (Murray-Close, 2013). The ANS has two branches: the SNS, implicated in the fight or flight response, and the PNS, implicated in rest and digest functions. Activation of the SNS increases heart rate and oxygen flow, which serves to mobilize the body to respond to threat or challenge (Boucsein, 1992). In contrast, increased PNS influence acts like a brake and slows heart-rate and SNS arousal, thereby facilitating a calmer physiological state (Porges, 2001).

Typically, in response to negative or threatening contexts, individuals respond with an increase in SNS arousal and/or PNS withdrawal. This physiological change facilitates the mobilization of biological resources that support effective emotional and behavioral regulation and response to environmental demands (Porges, 2001, 2003). However, even though the SNS and PNS branches can operate in a reciprocal manner, this does not always occur (Bernston, Cacioppo, & Quigley, 1991), highlighting the importance of including measures of reactivity in both branches.

In the present study SNS reactivity was assessed by examining children’s skin conductance reactivity (SC-LR), which is a measure of electrodermal activity caused by activity of the sweat glands (Dawson, Schell, & Filion, 2007). Increases in SCL-R suggest increased SNS activation. PNS reactivity was assessed by examining children’s respiratory sinus arrhythmia reactivity (RSA-R), which is a measure of heart rate variability based on the respiratory cycle and is an indicator of vagal regulation (Bernston, Cacioppo, & Quigley, 1997). Decreases in respiratory sinus arrhythmia (RSA), or RSA withdrawal, correspond to increased heart-rate and arousal; whereas, increases in RSA, or RSA augmentation, correspond to decreased arousal. Although there are a number of indices of SNS and PNS reactivity (Bernston et al., 1991), SCL-R and RSA-R were considered in the present study because of the substantial developmental literature suggesting that low SCL-R and RSA augmentation are associated with vulnerability for social and emotional challenges (see Graziano & Derefinko, 2013; Murray-Close, 2013). Specifically, a lack of SCL-R during negative stressors is proposed to be an indicator of insensitivity to punishment and fearlessness, which may limit children’s moral development and social sensitivity (e.g., Fowles & Kochanska, 2000; Ortiz & Raine, 2004). Indeed, research suggests that children who evidence low SCL-R to stress are more callous and unemotional (Fung et al., 2005) and more aggressive (Fanti, 2016). Polyvagal Theory (Porges, 2001, 2003) proposes that RSA augmentation (or blunted RSA withdrawal) in response to negative stressors also may be problematic, limiting an individual’s ability to focus attention, cope, and flexibly respond, resulting in challenges regulating emotions. Meta-analysis results support this proposal and suggest that children with blunted RSA withdrawal are more likely to be emotionally and behaviorally dysregulated and to have impaired social functioning (Graziano & Derefinko, 2013). Importantly, these patterns of SCL-R and RSA-R may only be maladaptive in an emotionally negative and stressful context; in situations in which the level of threat is unclear (e.g., simply meeting a new peer), low SCL-R and/or RSA augmentation may be adaptive (e.g., El-Sheikh, 2005; Hastings, Nuselovici et al., 2008).

1.2. Interactive effects

A growing body of research suggests that measures of children’s ANS reactivity may moderate the effects of parent emotion socialization on children’s social and emotional adjustment (Hastings, Sullivan et al., 2008; Hastings et al., 2014; Perry et al., 2012; Scrimgeour et al., 2016; Stanger et al., 2016). Children with physiological vulnerabilities for social or emotional problems may require greater parent support in order to develop effective social and emotional skills (Perry et al., 2012); they also may be particularly susceptible to the negative effects of non-supportive parenting (Belsky, Bakermans-Kranenburg, & van Ijzendoorn, 2007). In contrast, children who are physiologically well-regulated may have the internal capacities to respond in socially and emotionally adaptive ways (Porges, 2003) and may therefore be less reliant on, and sensitive to, emotion socialization behaviors (Perry et al., 2012). This proposed interaction between parenting and physiological reactivity is consistent with diathesis-stress models of psychopathology (e.g., Monroe & Simons, 1991) and transactional/dual-risk models (e.g., Sameroff, 2009), which propose that underlying vulnerabilities and negative environmental experiences interact to produce maladjustment. Differential susceptibility theory further argues that individuals with biological vulnerabilities should be more sensitive to positive parenting effects (e.g., Belsky et al., 2007), which may include supportive emotion socialization practices.

Research examining the interaction of parent emotion socialization and RSA-R suggests that, at least in preschoolers, children are more sensitive to the effects of emotion socialization when they display blunted RSA withdrawal (or RSA augmentation) in response to frustrating or mildly distressing tasks. Specifically, for these children, adaptive parent emotion socialization behaviors are more strongly associated with emotion regulation skills (Perry et al., 2012), prosocial behavior (Scrimgeour et al., 2016), and internalizing problems (Hastings, Sullivan et al., 2008). However, in these studies interactive effects were not entirely consistent across all types of emotion socialization responses or measures of social-emotional competence. One study suggests that interactive effects may also exist for adolescents, at least when predicting internalizing problems (Hastings et al., 2014). However, researchers have not considered whether results also extend to emotion regulation and social competencies in older children.

To our knowledge, only one study has tested whether SCL-R also moderates associations between parent socialization behaviors and children’s adjustment. Stanger, Absied, Wagner, & Sanders (2017) found that 8- to 10-year-old children with high SCL-R during a stressor were less likely to demonstrate increases in externalizing problems when their parent frequently made suggestions to cope with the stressor with disengagement; in contrast, children with low SCL-R were high in externalizing problems regardless of parent coping suggestions. This result suggests that children who are highly reactive to stressors (i.e., display high SCL-R) are particularly sensitive to parent socialization behaviors. However, research also suggests that other forms of negative parent behaviors (e.g., harsh parenting) are more strongly associated with externalizing problems in children with low SCL-R (e.g., Erath, El-Sheikh, & Cummings, 2009). It has been hypothesized that children with low SCL-R are under-aroused during stressors and therefore better able to observe and model the negative reactions of their parents (Erath et al., 2009); this may include non-supportive responses to others’ negative emotions. Given the limited work investigating SCL-R as a moderator, additional research is needed to clarify potential differences in effects.

1.3. Present study

Consequently, the goal of the present study was to examine whether children’s SCL-R or RSA-R would moderate associations between parent emotion socialization practices and children’s social and emotional adjustment in a pre-adolescent at-risk sample. Multiple measures of children’s social and emotional competencies were considered, including parent ratings of emotion regulation skills and aggressive/dysregulated behavior and teacher ratings of aggression, prosocial behavior, and peer rejection. To increase variability in social and emotional impairment, participants were recruited from a larger study of children with and without attention-deficit/hyperactivity disorder (ADHD), a disorder frequently associated with both social and emotional challenges (e.g., Bunford, Evans, & Wymb, 2015; McQuade & Hoza, 2014). However, because there is substantial
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