



Intended sensitive and harsh caregiving responses to infant crying: The role of cry pitch and perceived urgency in an adult twin sample[☆]

Dorothee Out^a, Suzanne Pieper^a, Marian J. Bakermans-Kranenburg^{a,*}, Philip Sanford Zeskind^b, Marinus H. van IJzendoorn^a

^a Centre for Child and Family Studies, Leiden University, The Netherlands

^b Department of Pediatrics, Levine Children's Hospital at Carolinas Medical Center, NC, USA

ARTICLE INFO

Article history:

Received 14 July 2009

Received in revised form 19 May 2010

Accepted 31 May 2010

Keywords:

Infant

Crying

Perception

Harsh parenting

Twins

Behavioral genetics

Child abuse

ABSTRACT

Objective: To examine the underlying mechanisms of adults' intended caregiving responses to cry sounds in a behavioral genetic design and to investigate the role of cry pitch and perceived urgency in sensitive and harsh caregiving responses.

Methods: The sample consisted of 184 adult twin pairs (18–69 years), including males and females, parents and nonparents. In an experimental design we presented cry sounds varying in pitch and measured adults' perception and their intended caregiving responses. Cry stimuli were based on a 10-second cry sample of a 2-day-old infant with a fundamental frequency averaging 500 Hz. Two additional cry sounds were created by digitally increasing the fundamental frequency to 700 and 900 Hz.

Results: Individual differences in the perceived urgency of infant crying and intended sensitive caregiving responses were explained by genetic factors (38% and 39%, respectively), while the variance in harsh caregiving responses was due to shared (31%) and unique (69%) environmental influences. Adults were more likely to indicate sensitive caregiving responses to higher-pitched cry sounds and when they perceived the cries as more urgent, while high-pitched cry sounds were also directly associated with harsh caregiving responses.

Conclusions: The influence of genetic factors on intended caregiving responses to infant crying is substantial for normal variations in sensitive caregiving, but absent for harsh caregiving responses. The findings suggest that the perception of infant crying as urgent paves the way for more immediate and affectionate caregiving responses, while an extreme increase in cry pitch may present a direct risk factor for more irritated, negative and even harsh parenting.

Practice implications: Infants who display abnormal cry acoustics such as extreme increases in pitch may be at risk for harsh parenting. Interventions should promote parental sensitive response to distress vocalizations to prevent harsh parenting in case of at-risk infants.

© 2010 Published by Elsevier Ltd.

[☆] MJBK and MHVJ were supported by awards from the Netherlands Organization for Scientific Research (MJBK: VIDI grant no. 452-04-306; MHVJ: SPINOZA prize).

* Corresponding author address: Centre for Child and Family Studies, Leiden University, Wassenaarseweg 52, PO Box 9555, 2300 RB Leiden, The Netherlands.

Introduction

Crying is one of the most salient behaviors during infancy: crying elicits care and nurturance, promotes parental proximity, and conveys information to the parent about the health of the infant (Bell & Ainsworth, 1972; Murray, 1979; Zeifman, 2001; Zeskind & Lester, 1978). However, excessive as well as high-pitched crying may also be a proximal cause of abuse, neglect, and even infanticide (Barr, Trent, & Cross, 2006; Frodi, 1985). Little is known about the underlying mechanisms of sensitive versus harsh responses to infant crying. Although the acoustic structure of the cry sound has a profound influence (LaGasse, Neal, & Lester, 2005), some adults are more negatively affected by infant crying than others, as manifested in more hostile attributions and heightened physiological reactivity (Bauer & Twentyman, 1985; McCanne & Hagstrom, 1996).

In the current twin study, we investigate the underlying mechanisms of adults' intended caregiving responses to cry sounds varying in pitch. First, we explore to what extent genetic and environmental factors contribute to the variance in sensitive and harsh caregiving responses. Second, we examine the influence of cry pitch and perception as more specific predictors of intended caregiving response.

Infant crying can be considered as a "biological siren" (Ostwald, 1972), evolved to elicit parental proximity and caregiving (Bowlby, 1969; Murray, 1979; Zeifman, 2001). Given the limited evidence for qualitatively distinct cry types, crying can be viewed as a graded signal (Gustafson, Wood, & Green, 2000; Murray, 1979; Porter, Miller, & Marshall, 1986; Zeskind, Klein, & Marshall, 1992; Zeskind, Wilhite, & Marshall, 1993). Cry vocalizations vary along several acoustical dimensions, reflecting the intensity of the infant's distress. For example, cry pitch or fundamental frequency is directly related to parasympathetic activity in the child (Green, Irwin, & Gustafson, 2000; Porter, Porges, & Marshall, 1988). Adults are sensitive to these acoustic variations and use these cues as well as contextual information to interpret the cry and infer its causes. Many studies have demonstrated that adults' perception of cry sounds and their caregiving responses depend on a wide range of acoustic characteristics (LaGasse et al., 2005). In particular high-pitched cries are perceived as more urgent, elicit more physiological reactivity and more tender and caring responses on the part of the adult (Crowe & Zeskind, 1992; Zeskind, 1980; Zeskind & Marshall, 1988). This suggests a synchrony of arousal in parent and child, so that crying functions to elicit parental arousal and subsequent caregiving that alleviates the infant's distress (Zeskind, Sale, Maio, Huntington, & Weiseman, 1985).

Given the adaptive value of infant crying, reciprocal mechanisms may have evolved in the adult to perceive infant cries adequately and to respond appropriately (Newman, 2007; Zeifman, 2001). Indeed, several studies have shown that specific brain structures, neurotransmitters and peptide hormones are involved in the perception of infant crying and parental sensitivity to infant signals (Bakermans-Kranenburg & van IJzendoorn, 2008; Feldman, Weller, Zagoory-Sharon, & Levine, 2007; Fleming, Corter, Stallings, & Steiner, 2002; Lorberbaum et al., 2002; Swain, Lorberbaum, Kose, & Strathearn, 2007; van IJzendoorn, Bakermans-Kranenburg, & Mesman, 2008). Both parents and nonparents respond with increased autonomic arousal to infant crying (Crowe & Zeskind, 1992; Frodi et al., 1978). While listening to their own infants' cries, mothers were shown to display specific cardiac responses that are associated with preparation for action or intervention (Wiesenfeld, Malatesta, & DeLoach, 1981).

On the other hand, infant crying has also been described as a proximal cause of abuse and neglect, and even infanticide (Soltis, 2004). Indeed, several studies of shaken baby syndrome have suggested that excessive, prolonged and inconsolable crying may trigger an abusive episode (Barr et al., 2006; Lee, Barr, Catherine, & Wicks, 2007; Talvik, Alexander, & Talvik, 2008). Apart from excessive crying, specific acoustic characteristics of cry sounds may also contribute to the development of abusive parent-child interactions, especially extreme increases in fundamental frequency (Frodi, 1985; Soltis, 2004). Infants with medical or neurological conditions or prenatal and perinatal complications often display these abnormal cry acoustics (Soltis, 2004; Wasz-Höckert, Michelsson, & Lind, 1985), while the same infants are also known to be at increased risk for abuse and neglect. Indeed, it has been shown that the cry sounds of these infants are perceived as especially aversive and elicit greater autonomic arousal in mothers than the cries of healthy infants (Frodi et al., 1978; LaGasse et al., 2005; Zeskind & Lester, 1978). Mothers also reported that they were less willing to interact with premature infants after listening to their cry sounds (Frodi et al., 1978). Therefore, parents' continued exposure to excessive and high-pitched crying accompanied by high levels of physiological arousal may suppress empathic responses in favor of more abusive responses (Frodi, 1985).

In addition, some parents may be more reactive to stressful child stimuli than others. Experimental studies have shown that abusive parents feel more annoyed, hostile, and less sympathetic towards a crying infant compared to nonabusive parents (Bauer & Twentyman, 1985; Frodi & Lamb, 1980). Although abusive parents are able to differentiate between cry sounds varying in fundamental frequency, they perceive cry sounds with hyperphonation as less urgent than comparison parents and more similar to the cries of their own infants (Zeskind & Shingler, 1991). In addition, they tend to display excessive physiological arousal in response to crying, reflecting a hyperreactive trait (Frodi & Lamb, 1980; McCanne & Hagstrom, 1996). Interestingly, Crowe and Zeskind (1992) found that individuals at risk for child abuse displayed this heightened physiological response *before* they had children of their own. The authors conclude that "there may be some constitutional quality of some adult listeners that may predispose them to finding the psychophysical qualities of crying to be particularly grating and aversive" (p. 27).

Therefore, both the acoustic structure of cry sounds as well as parents' perceptual and physiological responses to crying may influence their caregiving responses. Nevertheless, few studies have directly examined the relation between perception and caregiving. Two studies reported that adults waited longer to respond to infant cries which they had previously rated as sounding less distressed (Wood & Gustafson, 2001) and less aversive (Del Vecchio, Walter, & O'Leary, 2009). However, these studies used cry sounds with a limited range in fundamental frequency, and focused on timing of intervention instead of type

Download English Version:

<https://daneshyari.com/en/article/345456>

Download Persian Version:

<https://daneshyari.com/article/345456>

[Daneshyari.com](https://daneshyari.com)