



# Maternal frustration, emotional and behavioural responses to prolonged infant crying



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## ABSTRACT

Prolonged inconsolable crying bouts in the first months of life are frustrating to parents and may lead to abuse. There is no empirical description of frustration trajectories during prolonged crying, nor of their emotional predictors or emotional and behavioural sequelae. Frustration responses and their relationships were explored in an analogue cry listening paradigm. Without knowing how long it would last, 111 postpartum mothers were randomized to listen to a 10-min audiotape of infant crying or cooing while continuously recording frustration on a visual analogue 'slider' scale. The listening bout was preceded by questionnaires on negative mood, trait anger and empathy and followed by questionnaires on the reality of the cry sound, positive and negative emotions, soothing strategies, coping strategies and urges to comfort and flee. Individual frustration trajectories were modelled parametrically and characterized by frustration maximum, rate of rise, inflections and harmonicity parameters. As hypothesized, the modal response was of gradually increasing frustration throughout. However, there were marked individual differences in frustration trajectories. Negative mood, trait anger and empathy did not predict modal or modelled individual trajectories. However, frustration responses were significantly related to post-listening emotions and behavioural ratings. In particular, prolonged crying generated highly ambivalent positive and negative emotional responses. In summary, maternal frustration generally increased as the crying bout progressed; however, frustration trajectories were highly individual and emotional responses were highly ambivalent in terms of positive and negative emotions generated. Some emotional and behavioural responses were associated with specific trajectory parameters of frustration responses.

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## 1. Introduction

In the first few months of life, all modes of crying (i.e. fussing, crying and inconsolable crying) are prolonged and prolonged inconsolable crying bouts are almost unique to this period (Barr, Paterson, MacMartin, Lehtonen, & Young, 2005; St.James-Roberts, Conroy, & Wilsher, 1995; St.James-Roberts, Conroy, & Wilsher, 1996). Prolonged inconsolable crying generates

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more frustration than other modes of crying (Fujiwara, Barr, Brant, & Barr, 2011; St.James-Roberts et al., 1996). Clinically, this is reflected in complaints of 'colic' or excessive crying. The associated frustration and anger are legendary, and have been well documented (Barr et al., 2005; Barr, Rotman, Yaremko, Leduc, & Francoeur, 1992; Forsyth, Leventhal, & McCarthy, 1985; Forsyth, McCarthy, & Leventhal, 1985; Papousek, 2000; St.James-Roberts & Halil, 1991; St.James-Roberts, Hurry, & Bowyer, 1993; St.James-Roberts et al., 1996). Particularly concerning, however, is the accumulating evidence that this crying, frustration and anger is recognized as the most common trigger for abusive head trauma [AHT, also known as shaken baby syndrome (Christian, Block, & Committee on Child Abuse and Neglect, 2009)] (Barr, Trent, & Cross, 2006; Lee, Barr, Catherine, & Wicks, 2007; Talvik, Alexander, & Talvik, 2008) and abusive fractures (Leventhal, Martin, & Asnes, 2010).

In trying to understand how caregivers get from crying to abuse, listener perceptions are likely to be important. Most work on listener cry perception has focused on which acoustic features influence perceived meaning (Green & Gustafson, 2001; Green, Irwin, & Gustafson, 2000; LaGasse, Neal, & Lester, 2005; Zeifman, 2004) using single cries, brief segments or, at most, 4 min of crying (Wood, 2009; Wiedenmann & Todt, 1990; Zeifman, 2003, 2004). While acoustic variations in cry cycles or brief cry episodes (Barr, 2000) contribute to caregiver perceptions and responses, properties of crying *bouts* [that is, clusters of cry cycles or cry episodes (Barr, 2000)] such as duration, inconsolability and unpredictability are likely to be important determinants of frustration and anger as well (Barr et al., 1992; St.James-Roberts et al., 1996). Furthermore, brief cry stimuli do not permit an understanding of changes in time course of frustration across a crying bout. Consequently, there is little empirical understanding of how prolonged crying generates frustration (or negative emotions generally) and what properties, if any, predict frustration responses.

To begin to understand such responses, we elected to develop a listener perception paradigm in which the primary independent variable was a continuous prolonged infant crying bout. In the absence of previous literature using prolonged crying stimuli, this was an exploratory study. Our aims were to (a) test the hypothesis that prolonged crying induces increasing frustration over time; (b) characterize individual differences in the patterns of frustration responses over time; (c) explore emotional predictors of the frustration response over time; and (d) explore affective emotional and behavioural responses to prolonged infant crying. To our knowledge, this is the first attempt to describe frustration levels and trajectories concurrent with a prolonged infant crying stimulus.

## 2. Method

### 2.1. Design

This is a two group randomized controlled trial of maternal responses to listening to a recorded prolonged infant crying bout (10 min). Control participants listened to infant cooing that acted as a procedural control. This study was reviewed and approved by the University of British Columbia/Children's and Women's Health Centre of British Columbia Research Ethics Board (UBC C&W REB).

### 2.2. Participants/study setting

Otherwise normal primiparous postpartum mothers with healthy infants less than six months of age were recruited from the BC Children's and Women's Hospital postpartum wards, community health centres or community-based mother-infant drop-in centres in and around Vancouver, BC, Canada. Eligible participants were visited in their homes. Participants were told that the overall visit would last about one hour, but the length of the audiotape was never specified so that participants did not have an expectation of how long the sounds would continue. Written informed consent was obtained at the beginning of the session.

### 2.3. Procedure

After informed consent, the participant completed a pre-study questionnaire that included demographic information, the Edinburgh Postnatal Depression Scale (Cox, 1987; Jomeen & Martin, 2005), the Interpersonal Reactivity Index [a measure of empathy (Davis, 1983)] and the Trait Anger scale of the State-Trait Anger Inventory (Forgays, Forgays, & Spielberger, 1997). The research assistant (RA) then provided a brief, 2-min training on how to use the computer-based continuous visual analogue scale (CVAS, see below) for concurrent recording of frustration while listening to the infant sound. The participant was asked to imagine 'that the sounds you are hearing are from your own baby, that you are holding him/her in your arms, and that s/he has been fed and changed and is healthy.' The RA then left the room and the recording was started.

The infant sounds were delivered through SONY Stereo MDR-XD200 Headphones. Following the 10 min of listening, the RA returned to the room and asked the participant to complete a post-test questionnaire. The participant was then debriefed, provided with a debriefing form, invited to discuss her experience and/or ask questions, and provided with a copy of the *Period of PURPLE Crying* DVD and booklet about the normality of increased early crying in infancy (Barr & National Center on Shaken Baby Syndrome, 2004) and a resource list should the participant experience any distress later.

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