BULLETIN

CENTRES OF EXCELLENCE FOR CHILDREN'S WELL-BEING

Early Childhood Development

BULLETIN OF THE CENTRE OF EXCELLENCE FOR EARLY CHILDHOOD DEVELOPMENT

VOLUME 6, No 2-SEPTEMBER 2007

WHAT IS ALL THAT CRYING ABOUT?

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Given its universality and salience to parents throughout the world, it is amazing that, until about 30 years ago, there was so little research on infant crying. So little, in fact, that there was hardly anything known about it except that it happened. There has since been a small explosion of studies. These studies have made a difference. We have changed our conceptualization of what early crying is about, the factors that affect the way parents respond, and of its consequences.

It may seem simple, but the realization that crying can be different at different developmental stages (before and after 4 months of age approximately) is an important breakthrough. The studies of Stifter, Zeifman, St. James-Roberts, Barr and Lehtonen all indicate that early increased crying—including the prolonged inconsolable crying bouts that so irritate caregivers—is actually a normal developmental phenomenon that occurs in completely normally developing infants. Furthermore, the outcome for these infants is excellent. It is more of a challenge, however, if an infant has persistent fussiness that last throughout infancy. This is indicative of a normal individual difference referred to as "difficult temperament." As Zeifman notes, parental training in sensitivity and responsiveness to these infants can be beneficial.

The key, as Zeifman, Zeskind, and Oberlander point out, is how the parents respond to these frustrating properties of crying. As St. James-Roberts and colleagues showed, cultural differences in responding vary widely, but do not affect the increased inconsolable crying. On top of that, if the mother is unfortunate enough to experience post-partum depression just when this normal increased crying occurs, the cry signal may be read differently resulting in over-responding or under-responding, but in either case less reliably than in other mothers.

Anyone who has experienced the worst of this inconsolable crying would admit that it is counterintuitive to think of it as "normal." Being able to understand that, from the evolutionary point of view, lusty, strong crying has been helpful for infants who might receive too little caregiving in the first post-partum weeks, and that they turn out normally, is a significant new way to think about this behaviour. If increased crying were to be widely accepted as normal, the anger generated by this age-old behaviour might be reduced.

This is an important public health target to achieve. It is now clear that it is the anger triggered in caregivers by this normal infant behaviour that leads to most early traumatic brain injury (or Shaken Baby Syndrome). In fact, the dire consequences (death, blindness and motor challenges) of Shaken Baby Syndrome are the only significant negative long term clinical consequences of early increased crying.

It is not the crying, but the caregivers response to the crying that is the key. That gives us all something important to do; namely, to make sure that we and everyone who takes care of infants know that, no matter how frustrating it gets to hear crying, never ever shake an infant.

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WHY DO BABIES CRY?

For parents of newborns, the increased and often inconsolable crying of their infants during the first few months of life can be a frustrating and stressful experience. Understanding these inconsolable bouts of crying is key to helping parents cope with the situation and develop appropriate responses, thus promoting the healthy social and emotional development of their children.

Crying is the primary means of communication available to young infants during a stage of development when they are almost completely dependent on others to meet their needs. Because crying typically elicits care, it also plays a role in developing the attachment relationship, as the infant becomes emotionally attached to the individual who most reliably responds to his or her crying.

While the quality and quantity of early crying can vary greatly, several studies have demonstrated that infants typically increase in their crying across the first 3 months, with a peak around 6 to 8 weeks of age. Crying decreases significantly around 3 to 4 months of age, coinciding with important developmental changes in affect, non-negative vocalizations and motor behaviour.

Dr. Cynthia A. Stifter, of Pennsylvania State University, distinguishes two types of excessive crying. Unexplained, excessive or persistent crying in the first 3 months of life that occurs in an otherwise healthy infant is labelled "infant colic," and affects about 10% of the population. Infants who fuss or cry for shorter periods of time, but who are difficult to soothe and whose fussiness persists throughout infancy, are said to have a "difficult temperament".

Although there is ample evidence that colic is psychologically stressful for parents in the short term, the parent-infant relationship appears to heal soon after colic disappears. However, many infants labelled as having difficult temperament show numerous deficits in childhood and adolescence, including attention, behaviour and school problems.

The data suggest that caring for a fussy, hard-to-soothe infant stresses the parenting system. For example, mothers of difficult infants have been found to be less responsive and exhibit lower levels of positive maternal behaviour. Dr. Debra M. Zeifman, of Vassar College, notes that early interventions targeting parental sensitivity and responsiveness have been successful in improving child development outcomes in such cases.

On the other hand, Dr. Philip Sanford Zeskind, of the Carolinas Medical Center, argues that it is the combination of cry sounds and adult characteristics that determines how the parent will respond and consequently, the impact on the infant's psychosocial development. *"Infant crying is as a biological siren, a signal that alerts and motivates the parent to attend to the infant's needs,"* he describes.

Infants who are at risk for poor psychosocial outcomes due to prenatal or other conditions — including brain damage, malnutrition, asphyxia and substance abuse during pregnancy — often have particularly high-pitched or hyperphonated cries. Yet this cry is a double edged sword. Some caregivers will try to do whatever is necessary to stop the sound, thus providing the kinds of auditory, visual and tactile forms of stimulation that promote infant development. Others, however, may respond defensively, resulting in actions that are detrimental to the infant's well-being. In extreme cases, this may include physical abuse or neglect (see article on Shaken Baby Syndrome p.4).

One study showed that adolescent mothers, women suffering from depression and women who used cocaine during pregnancy perceived cries of increasing pitch as being less arousing and less worthy of immediate care. Dr. Zeskind concludes that "*when helping parents cope with excessive*

"Most infants who cry a great deal are healthy and stop crying spontaneously."

crying, we should be cognizant of possible difference in the cry sound and how these cry sounds may have different salience for different mothers, especially those suffering from depression or other conditions that alter their perceptual set."

CAUSES OF COLIC

Yet even healthy infants cry for long periods for no apparent reason. Parents often have a sense of losing control; many view it as a sign that something is wrong. Popular books have given parents conflicting advice, compounding the problem.

Dr. Ian St. James-Roberts, of the University of London, U.K., explains that while excessive crying, or colic, was once attributed to gastrointestinal disturbance, more recent research has begun to nuance this view. In fact, organic disturbances are rare; proper diagnosis is therefore important. Dietary treatments (such as eliminating cow's milk from the mother's diet) lack evidence of practical effectiveness and may cause women to abandon breastfeeding, going against public-health policy.

The search for the cause of crying has shifted to studies of the neurodevelopmental changes that normally take place during early infancy. A Montreal study led by Dr. Ronald G. Barr looked at the duration, frequency and intensity of crying in infants at 6 weeks and 5 months. It concluded that while prolonged distress bouts and unsoothable crying are specific to the first few months and more common in infants with colic, they are not unique to these infants. *"This implies that our understanding of colic may depend more on why these infants cry longer once started than what makes infants cry,"* the researchers state.

This new understanding that colic or unsoothable crying in the first few months of life is usually part of a baby's normal development also implies that the social and emotional consequences of this crying are largely a function of how parents interpret and respond to the crying.

MATERNAL DEPRESSION

In the context of post-partum depression (PPD), excessive crying behaviour poses a particular problem. Post-partum depression affects 10% to 20% of all mothers, and can compromise infants' social, emotional and cognitive development. Incidence is highest in the first 3 months, corresponding to peak crying among infants. *"If infant crying is a signal to engage the mother, what does it mean for the developing infant when the cry signal is ignored or misinterpreted by the depressed mother?"* asks Dr. Tim Oberlander, of the University of British Columbia.

Preliminary studies suggest that infants of depressed mothers cry more frequently and that PPD may reduce the mother's capacity to process the infant's signals and respond appropriately. Infant crying itself may adversely influence maternal mood. In light of these findings, Oberlander suggests that infant crying may be a gateway for intervening in maternal depression. Interventions might focus on helping mothers understand why their baby is crying. "*Understanding maternal failure to respond appropriately may be a key element in developing interventions that promote healthy infant and child development in the presence of post-partum depression*."

INFORMATION AND SUPPORT

Ultimately, how parents interpret and respond to their infant's cries, rather than the crying itself, is what determines long-term social and emotional development outcomes. "*Most infants who cry a great deal are healthy and stop crying spontaneously*," states Dr. St. James-Roberts. For this reason, current recommendations focus on providing parents with information and support to contain crying.

Finally, Dr. Liisa Lehtonen, of the Turku University Hospital in Finland, adds there is even a positive side to crying: *"If crying is explained to parents as signalling vigour, health and robustness, parents may even see its positive side."*

• BY EVE KRAKOW

Ref.: The articles of the quoted authors are available in: Tremblay RE, Barr RG, Peters RDeV, eds. *Encyclopedia on Early Childhood Development – Crying Behaviour* [online]. Montreal, Quebec: Centre of Excellence for Early Childhood Development. Available at: http://www.excellence-jeunesenfants.ca/theme.asp?id=15&lang=EN Stifter CA. Crying behaviour and its impact on psychosocial child development. 2005:1-7; Zeskind PS. Impact of the cry of the infant at risk on psychosocial development. 2005:1-7; Barr RG. Crying behaviour and its importance for psychosocial development in children. 2006:1-10; Zeifman DM. Crying behaviour and its impact on psychosocial child development: Comment on Stifter, and Zeskind. 2005:1-4; St James-Roberts I. Effective services for managing infant crying disorders and their impact on the social and emotional development of young children. 2004:1-6; Oberlander TF. Post-partum depression and infant crying behaviour. 2005:1-8; Lehtonen L. Infant crying behaviour: Comments on Oberlander, and St James-Roberts. 2005:1-6.
And in: Barr RG, Trent RB, Cross J, Age-related incidence curve of hospitalized Shaken Baby Syndrome cases: Convergent evidence for crying as a trigger to shaking. *Child Abuse & Neglect* 2006; 30:7-16.

PREVENTING
SHAKEN BABY SYNDROME

New evidence suggests that crying is indeed what triggers some parents to shake their babies. Equipping them with coping strategies may help reduce the incidence of Shaken Baby Syndrome.

"The shaking episode that brings the child to the emergency room may only be the last in a series of shaking episodes that began days to weeks earlier."

Shaken Baby Syndrome (SBS) is a form of intentional injury to infants and children inflicted by violent shaking, with or without impact on a hard surface. It can result in severe head trauma, such as bleeding in and around the brain, retinal hemorrhages and bone fractures. About 25% of clinically diagnosed infants die, and about 80% of survivors suffer lifelong neurological damage.

Excessive crying is often cited as the trigger that causes exhausted or frustrated parents to shake their babies, yet there are limited data backing this claim. Researchers therefore decided to compare the age and incidence of babies hospitalized in California for SBS with the "normal crying curve." This curve charts the pattern of crying demonstrated by babies in the first few months of life.

The results revealed a number of common properties between the two curves. They both begin their ascent when the infants are 2 to 3 weeks of age, following a peak; there is an almost linear decline until about 36 weeks of age. The main difference is the timing of the peak: the number of SBS cases peaks at about 10 to13 weeks, while the crying curve peaks at 5 to 6 weeks.

However, given that 35% to 50% of diagnosed shaken baby cases have evidence of prior shaking or abuse, this could simply be a delay between cause and effect. *"The shaking episode that brings the child to the emergency room may only be the last in a series of shaking episodes that began days to weeks earlier,"* explains lead author Dr. Ronald G. Barr, from the University of British Columbia.

If crying is the trigger for shaking and other forms of abuse, then prevention programs should focus on improving parents' understanding of the unique properties of early crying. There is increasing evidence that prolonged unsoothable bouts of crying are likely to occur regardless of the soothing methods used. In 95% of cases, this kind of crying is a normal part of a healthy baby's development. Parents who are aware of these facts might get less frustrated, knowing that it will pass.

To this end, the National Center on Shaken Baby Syndrome has developed intervention materials called *The Period of PURPLE Crying*: **P** for crying peak; **U** for unexpected; **R** for resistance to soothing; **P** for pain-like face (even when the infant is not in pain); **L** for long crying bouts; and **E** for evening clustering of crying. Caregivers are encouraged to take three actions to prevent SBS: First, increase their contact, carry, walk and talk responses, which will help reduce crying, although not stop it altogether. Secondly, if the crying becomes too frustrating, put the baby in the crib and walk away for a few minutes to calm themselves. Finally, never shake or hurt their baby.

Given the similar properties of the age-specific incidence curve for SBS and the normal crying curve, it is hoped that this kind of education strategy will help parents better understand and cope with excessive infant crying, preventing Shaken Baby Syndrome.

• BY EVE KRAKOW

Ref.: The articles of the quoted authors are available in: Tremblay RE, Barr RG, Peters RDeV, eds. *Encyclopedia on Early Childhood Development – Crying Behaviour* [online]. Montreal, Quebec: Centre of Excellence for Early Childhood Development. Available at: http://www.excellence-earlychildhood.ca/theme.asp?id=15&lang=EN Barr RG. Crying behaviour and its importance for psychosocial development in children. 2006:1-10; St James-Roberts I. Effective services for managing infant crying disorders and their impact on the social and emotional development of young children. 2004:1-6.
And in: Barr RG, Trent RB, Cross J, Age-related incidence curve of hospitalized Shaken Baby Syndrome cases: Convergent evidence for crying as a trigger to shaking. *Child Abuse & Neglect.* 2006;30:7-16.
National Center on Shaken Baby Syndrome: www.dontshake.org

CARING FOR CRYING

Parents are often given conflicting advice about whether to apply a "scheduled" approach to baby care, or follow their infants' demands. A recent study looked at the impact of different parenting approaches on infant crying and sleeping.

Researchers compared infants and parents in three communities with substantially different parenting approaches. The first group of parents praticed a "proximal" form of care: they held their babies more (15 to 16 hours/day), breastfed more often and slept with their infants throughout the night.

A second group of parents, in London, U.K. adopted a more "structured" approach: they spent much less time holding and carrying their babies, let their babies cry more often, and switched to bottle-feeding earlier.

A third group, in Copenhagen had an "intermediate" method: they held their babies less than the proximal care parents but more than the second group of parents, were more responsive to their babies than the second group of parents, and co-slept with their babies less than proximal care parents and only during part of the night.

The biggest finding was that the amount and intensity of unsoothable bouts of crying at 5 weeks of age, when colic usually peaks, were the same in all groups. Both babies who received proximal care and those who received intermediate care fussed and cried less overall in the first 12 weeks of life.

On the other hand, the babies in both the structured care and intermediate care groups were more likely to sleep through the night at 12 weeks than the proximal care babies.

Ultimately, the "best" strategy depends on what parents want to achieve, says Dr. Ian St. James-Roberts, the study's lead researcher, from the University of London. "*Proximal care may suit some parents' wish for close contact with their babies. For many Western parents, the goal is to minimize early crying and to encourage their babies to sleep through the night at as young an age as possible. If that's the goal, then the intermediate approach to care seems to be better overall.*"

Dr. Dominique Cousineau, paediatrician and head of developmental pediatrics at the CHU Sainte-Justine in Montreal, says the finding that colic is independent of the method of care will no doubt be reassuring for parents. In her experience, most North American parents practice a form of care similar to the parents in the study who adopted an intermediate approach, because that is what practitioners are advocating. "*In the first few months of life, the mother and the child are one. Holding babies and responding quickly to their cries helps develop their sense of security and plays an important role in developing the attachment relationship*," she explained. "*It also fosters cerebral growth. Parents are teaching their baby that there is a consistent response to their actions, and this helps the brain organize and structure itself.*"

While the optimal method of infant care is still under debate, parents of babies prone to colic can be reassured by one thing: it's not their fault.

• BY EVE KRAKOW

"Holding babies and responding quickly to their cries helps develop their sense of security and plays an important role in developing the attachment relationship."

Ref.: St James-Roberts I, Alvarez M, Csipke E, Abramsky T, Goodwin J, Sorgenfrei E, Infant Crying and Sleeping in London, Copenhagen and When Parents Adopt a "Proximal" Form of Care. *Pediatrics* 2006;117(6):e1146-e1155.

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CEECD ENCYCLOPEDIA

For more information about **crying behaviour**, consult our articles by experts in the CEECD online encyclopedia, free of charge:

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The Bulletin is a publication of the Centre of Excellence for Early Childhood Development, one of four Centres of Excellence for Children's Well-Being. Funding for the Centres of Excellence for Children's Well-Being is provided by the Public Health Agency of Canada. The opinions expressed in this publication are those of the authors/researchers and do not reflect necessarily the official views of the Public Health Agency of Canada.

The CEECD identifies and summarizes the best scientific work on social and emotional development of young children and makes this information available to service planners, service providers and policy-makers.

The Centre's partners are the Université de Montréal, Fondation Lucie et André Chagnon, CHU Sainte-Justine Research Center, Canadian Paediatric Society, Montreal Children's Hospital, Canadian Child Care Federation, University of British Colombia, Institut national de santé publique du Québec, Dalhousie University, IWK Health Centre, Centre de Psycho-Éducation du Québec, Queen's University, First Nations of Quebec and Labrador Health and Social Services Commission, Invest in Kids, Atkinson Center for Society and Child Development.

We are grateful to Ronald G. Barr, MDCM, FRCPC, Canada Research Chair,Child and Family Research Institute, Vancouver, for his collaboration on the scientific proofreading of this bulletin.

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Scientific proofreading: Ronald G. Barr, Dominique Cousineau, Liisa Lehtonen, Tim Oberlander, Ian St. James-Roberts, Cynthia A. Stifter
Layout: Guylaine Couture
Printing: QuadriScan

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ISSN **1499-6219**
ISSN **1499-6227**