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THEORETICAL REVIEW

Behavioural sleep treatments and night time crying in infants: Challenging the *status quo*

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SUMMARY

In Australia, as in many Westernised industrialised nations, the majority of families encourage infants to sleep alone or 'solo' from an early age. Sleeping solo can increase night time crying, which in turn disrupts sleep for both parent and infant. Night time waking and crying are frequently culturally constructed as behavioural sleep 'problems'. The pursuit of solo sleeping is thus achieved through 'behavioural sleep treatments' that teach an infant to sleep alone. Some behavioural extinction treatments necessitate a parent leaving an infant to cry for extended periods unattended, a practice reportedly difficult for parents. Despite parent's anxieties, and the potential (though little studied) stress to the infant, the pursuit of those behavioural sleep treatments are advocated by many psychologists and clinicians as acceptable and necessary interventions. This paper questions this necessity and critically reviews and debates these methods from biological, anthropological and cultural perspectives. Specifically, it considers Foucaultian, Leidloffian, attachment and behavioural perspectives. The central debate in this paper is if and why an infant's nocturnal cries should be ignored. It challenges the aetiology and acceptance of the *status quo* in the hope of revisiting the underlying belief that these methods are necessary. In doing so, the paper theorises the ways in which current sleep training techniques do or do not satisfy the needs of infants and their parents and questions the extent to which they can be reconciled. The paper posits an agenda for further research in the area that may facilitate the reconciliation of the needs of parents and those of their infants.

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Introduction

In some western, industrialised and socially individualised countries families sleep separately from their infants. Whilst this does not apply to all countries,¹ it is certainly the case in Australia and potentially other Anglophone countries such as the United Kingdom (UK) and United States of America (USA). Some children never sleep in their parents' room. During the night, infants typically wake² and usually cry or signal for parental attention. This often becomes a significant contributor to parental complaints of sleep disturbance. The result is that many parents seek professional and clinical assistance to reduce the crying and thereby alleviate their own sleep disturbance. In fact, sleep disturbances are the most common issues for which medical assistance is sought by parents in the first year of life.³ In Australia, up to 30% of families have reported sleep disturbance.⁴ Not only do infant's nocturnal wakings

disturb adult sleep patterns and potentially cause significant stress to the mother and family,⁵ they challenge cultural constructions of day and night time use and working parents' abilities to maintain the fitness for work in the modern 9–5 industrial work hours, and the social and institutional demands of their workplaces.

The International Classification of Sleep Disorders⁶ recognises that infant sleep disturbance, which includes difficulty initiating or maintaining sleep alone and/or frequent night wakings, are problematic enough to be considered sleep 'disorders'. At least, they are problematic for parents. These are usually categorised as Behavioural Insomnia of Childhood.⁶ Difficulties initiating sleep may be due to the inability of the infant and/or child to initiate sleep without the assistance of another individual (Sleep Onset Association Disorder) or bedtime reluctance where an older child is unwilling to go to bed and parents have difficulty in setting and implementing healthy and adequate sleep guidelines (Limit Setting Disorder).⁶

As these sleep 'disorders' are considered behavioural, so too are the techniques to treat them. Extinction methods (common behavioural techniques by which parents are trained and instructed to teach their child to sleep alone) are the subject of this paper. It will consider why night waking and subsequent crying are considered

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'problematic' and for whom. It will discuss the extent to which a disparity between what a parent wants and what an infant wants defines a culturally constructed 'problem' that is frequently defined in biological terms. We will endeavour to critically deconstruct the notion of 'problematic' in a value-free way, with the aim of re-examining and re-evaluating current behavioural sleep methods that advocate leaving an infant to cry unattended. We thus provide an alternative perspective and critically appraise an approach that has been taken for granted for many years.

Firstly, it is important to deconstruct 'sleep problem' in relation to overnight waking and crying in infants and for whom it may be a problem.

Behavioural sleep treatments

As discussed above, night waking and sleep disturbance are problematic for parents,⁷ with parents adopting an adult-centric view that pathologises infant night time crying. These problems are 'treated' with behavioural sleep treatments which aim to reduce night time crying and thus consolidate sleep for both infant and parent. The most interactive method in behavioural sleep treatments allows parents to stay in the infant's room at sleep time and gradually withdraw their presence, eventually leaving the room altogether (e.g., the "camping out method").⁷ Two other common treatments advocate significantly less parental interaction or presence. The first, the 'extinction method' (sometimes called the "cry-it-out-method") instructs parents to leave their infant alone at sleep time, completing ignoring their cries. The second, the 'graduated extinction method' (sometimes called controlled crying or controlled comforting) instructs the parent to leave their infant alone at sleep time but to check them with minimal interaction at increasingly longer intervals.^{7,8}

There is evidence to suggest that these methods all achieve a relatively rapid reduction in night time protests, encourage 'self settling' or solo re-initiation of sleep, and improve sleep consolidation with low relapse rates.⁷ As these outcomes are the aims of sleep treatments they may be therefore considered 'successful'. However, there is also evidence to suggest that the significant amount of crying as the infant communicates their desire for parental attention can be difficult for a parent to withstand. This is reportedly the case particularly in the extinction and graduated extinction methods.⁷ This is often due to the 'post extinction burst', in which the frequency, intensity and duration of the crying behaviour increase considerably over the short term time before subsiding.^{2,9} Researchers^{2,9} report that parental reactions to extinction techniques are often highly aversive and compromise the ability of a parent to continue these treatments.

If then these sleep treatments are to be 'successful', parents need to withstand their infant's crying and control or override their emotional and instinctive drives. In extinction techniques, parents are actually instructed to ignore their infants' crying, to override body and emotion with scientifically legitimated expert advice. Extinction techniques are the most common approach to infant night time crying throughout many western industrialised and non collectivist countries such as Australia and the USA.¹ Even though they are intuitively questioned, often resisted by parents and protested by infants, extinction techniques are promoted by many clinicians who are widely accepted as experts in their field. Because parental sleep is disrupted by infant crying, and infant crying is difficult for parents to ignore, then sleep treatments would appear primarily to be concerned with how to manage the crying, rather than the sleeping *per se*.

Crying

Therefore, one of the central concerns of this discussion is to prompt critical reflection on why an infant's cries should be ignored

during sleep programs, not with the question of whether a sleep treatment should be undertaken or not. Crying behaviour punctuates the life course, especially in the absence of alternative forms of communication.¹⁰ Because of this, it is most common in infants but does not extinguish in childhood where it often symbolically expresses the verbally inexpressible. It continues into adulthood where, for emotional well being, adults are encouraged to express and reappraise emotions rather than suppress and ignore.^{11,12} However, during extinction techniques, parents are advised to ignore crying in those who are most prone to it, or have no other communication alternative, particularly when alone at night. Furthermore, this infant crying, a potent symbolic and pre-verbal communication, has potential 'signal value' moving caregivers to provide solace and physical contact.¹⁰ Given that crying is arguably the only form of communication available to an infant, the question should be asked: Are there conditions under which this should be ignored?

To attachment theorists such as Bowlby¹³ and Ainsworth,¹⁴ who used etiological models to explain parent-child interactions, crying is part of a biological system that 'hard wires' parents to respond to and reflect on their infants, and reciprocally spurs infants to cry for their parents. They propose that the cry of an infant in response to distress or need, is an interactive, social and communicative process that matches the infant's primary needs with the parental provision of that need. This would suggest that infant cries at night are expressing a need worthy of parental attention. Furthermore, Courage and Howe¹⁵ suggest that infants' crying indicates to caregivers that their biological attachment system is activated. If this is correct, then they are crying at night to communicate distress to their parent. In that sense, crying can be regarded as a social system that establishes and maintains relationships of reciprocity "I will help you" - and informs the understanding and expectation "when I need help you will help me" and "when you need help I will help you". Around the same time that parents begin to understand and nurture this communicative relationship with infants, they are instructed by extinction advocates to ignore it. Not only are they ignoring their infant's cries, they may be ignoring the invitation to develop a shared basis of communication and understanding at that moment. It is not known how or if this may translate to ignoring the invitation to develop a shared basis of communication and understanding at other moments. Whilst attachment theory is more complex than the communications system presented above,¹⁶ it may highlight the need for a balance between responsive parenting and non responsive parenting.

As noted above, in addition to, or as a result of this attachment system, parents are biologically primed to the cry of their infant.¹⁴ Experimental evidence suggests that the cry sounds of infants alter with the infant's physiological distress and, furthermore, that adult caregivers are sensitive to these variations or gradations.¹⁷ It is therefore plausible to suggest that the more an infant cries in protest, (which can be interpreted as distress by parents), the more difficult it may become for a parent to withstand/ignore their protests for designated amounts of time.

If then, parents are primed to an infant's cry and infants are communicating needs to be met, should we encourage parents to ignore these cries and thereby refuse to meet their infants' needs? Moreover, should parents ignore this developing pre-linguistic form of communication? Despite these important questions, families who follow extinction techniques purposefully ignore their infant's cry. Is it ethical for health professionals to encourage this ignorance?

The discussion thus far has centered on nocturnal sleep related crying. Crying is a very complex behaviour with multiple aetiologies and motivations. It is important to note that in the normally developing infant, crying *per se* is not problematic or the target of

behavioural interventions. Diurnal crying, for example, is rarely classified as a disorder requiring treatment. During daytime distress, an infant may cry to alert their parent to a distressful situation such as pain or fear, but this is not typically ignored by parents. This may be because the parent is within close proximity and arguably more approachable during the day. Daytime crying is neither clinically nor popularly considered a 'disorder' in its own right. However, night time crying is pathologised as disadvantageous in extinction techniques. It seems then that the classification of nocturnal crying psychologically as part of a 'disorder', could be understood culturally as dis-orderly in that the social ordering of behaviour during the day and at night is being challenged by nocturnal crying. In addition, pathologising nocturnal crying, the interruption of parental sleep needed for their participation in the workforce, perceived deficiencies in their infant who refuses to sleep uninterrupted or in their parenting are arguably all components of this cultural labelled nocturnal 'disorder' which may then encourage the use of extinction techniques. Needless to say, parents implement extinction sleep treatments to hasten the necessary consolidation of overnight sleep for their infant and themselves, because these techniques are fast and 'successful'.⁷ In fact, any concern over short term nocturnal crying may well be overruled by these longer term benefits.

Nonetheless, a crying infant at night is considered 'problematic' for parents and attending to the cry becomes more so, particularly when the child is not within close proximity.¹⁸ Behaviour theory suggests that crying is 'reinforced' due to parental attention.¹⁹ What difference is there when a parent attends to a daytime cry but not a night time cry? In terms of behaviour theory, when a stimulus (crying) is attended to or reinforced on an irregular basis (depending on whether it is day or night or sleep time or not) there is violation of a 'reinforcer expectation'.¹⁹ This lack of consistent and dependable attention may lead to confusion in the infant, who will not be sure their cries will be attended. This can undermine the development of expectant and secure attachment behaviours.^{13,20} It also undermines the theory of classical conditioning that it derives from in the first place as irregular reinforcement schedules are more difficult to extinguish than regular reinforcement.¹⁹

Infants are unable to rationalise when and why their cries are differentially attended according to a diurnal or a nocturnal cue, particularly as day/night circadian rhythms are not developed in infants until 3–4 months of age.² As noted above, a decrease in proximity between infant and parent is a contributor to night time crying.^{18,21} Given that many cultures^{22,23} report reduced night time crying when infants are close, the essential trigger for night time crying may well be dependent on whether an infant is within parental proximity overnight.

The quest for solo sleeping

The human infant is born the most immature neurologically of all primates and develops independent survival skills more slowly.²⁴ It is thus comparatively and physiologically more dependent on its care giver. Ironic therefore that it is the only primate expected to sleep alone and at a much younger age, especially in urban settings.²⁴ This would indicate a dichotomy between the cultural and biological aspects of infant sleep¹ which together influence what is considered 'normal' and 'abnormal' for sleep in infants.

Descriptions of child rearing and parenting practices in divergent cultures from Margaret Mead,²⁵ Jean Leidloff²⁶ and Mary Ainsworth,¹⁴ give insight into the cultural inscriptions of sleeping arrangements. More recently, numerous divergent cultural sleep practices presented across several tribal non-industrialised societies^{23,24} show that babies and children do not always sleep alone.¹ The data presented by these authors suggest that indigenous

cultures frequently co-sleep, often for reasons of space and crowding, but also because for these cultures, co-sleeping is the 'norm'.

Culture offers a contextual understanding of differences between family sleeping arrangements in different settings. Sleep disturbances are not medicalised or constructed as 'disorders' in indigenous settings. Therefore, cultural regulation of sleep patterns and culturally constructed definitions and expectations of infant sleep respond to wider cultural values and social pressures, which are not in and of themselves actually "about" sleep. Night sleep disturbance and subsequent night time crying are little reported in indigenous cultures who co-sleep.²³

Some recent evidence from non-indigenous urban settings has confirmed that, depending on the age,²⁷ co-sleeping infants do cry less. Recent studies have investigated this via cortisol pathways during infant crying. Raised cortisol is considered an indicator of increased stress in babies. In a longitudinal British study, higher blood cortisol levels (an indicator of stress response) at age five occurred more in children who did not co-sleep or co-slept for only one year, compared to those who co-slept and those who co-slept past their first birthday.¹⁸ The co-sleeping corresponded with reports of decreased overnight crying and cortisol levels at night and after wake in the morning, both as infants and at five years of age.¹⁸ The relationship between solo sleeping and increased crying in that study was clear. Another study by St James et al.²¹ cites evidence that 'infant demand parenting', where babies were not left to sleep alone and were attended to on demand, resulted in less crying and less parental stress. Interestingly, reports suggest that co-sleeping may result in more fragmented sleep for parents and infant²⁸ despite the fact that co-sleeping appears to reduce infant crying, which in turn reduces cortisol.

This research on the effects of cortisol levels on infant well being is supported by evidence suggesting that infants exposed to elevated maternal cortisol *in utero* displayed more crying, fussing and negative facial expressions particularly between weeks 1–7, suggesting that cortisol may have a secondary effect on behaviour.²⁹ Although the longer term effects of higher cortisol in infants is little known and warrants further research, there have been reports that higher cortisol levels in preschool children are correlated with teachers' ratings of increased internalizing behavior and negative emotionality.³⁰

The evidence presented above suggests that the parent-child separation required of solo sleeping increases night time crying and stress in the short term. Behavioural approaches to infant sleep training acknowledge this,⁷ yet solo sleeping is still pursued. The rationale for this warrants further exploration.

One of the major factors in the decision to solo sleep that has emerged particularly in the nineteenth century is health-related as co-sleeping has been identified as a risk factor for SIDS.³¹ Moreover, sleep accidents (such as smothering, suffocation etc.) are also more common in co-sleeping infants. Statistics suggest that 4,300 babies and children die suddenly and unexpectedly from sudden infant death syndrome, fatal sleeping accidents and accidental death in Australia each year.³¹ Concern of SIDS risks are entirely understandable and many parents avoid this risk altogether by not co-sleeping.²⁷ However, co-sleeping is not a unitary phenomenon. That is, co-sleeping is often narrowly understood as sharing a single bed when it can simply entail sharing a room. Co-sleeping is a condition in which other SIDS risk factors (such as overheating, dangerous bedding) may be altered as opposed to directly causative and there have been suggestions that in fact co-sleeping, without these risk factors can actually reduce SIDS.²⁷ Given that parents can share a room with their infant without increasing SIDS risks, there must be other factors which contribute to solo sleeping. The socio-historical and cultural conditions surrounding the emergence of

solo sleeping as a normative part of parent-infant relations are two such contributors.

There is evidence to suggest that solo sleeping emerged in Victorian times,³² with the rise of Evangelicalism³³ and was driven by the Protestant ethic well before the SIDS risks were recognised. A picture emerges which indicates the importance, among other elements, of disciplinary considerations and ideas concerning the reformatory agency of space, (particularly in regards to bedroom space) and the nuclear family. In general terms, the history of Victorian sleeping space is a story of privatisation, of which the modern bedroom represents the most complete expression and spatial isolation at night was thought to secure self discipline.³³

'Spoiling' children through indulgences such as succumbing to their desire to co-sleep, became an undesirable parenting trait that was thought to lead to 'lazy' and recalcitrant children.¹ This may be predicated on the assumption that denial of desires leads to the piety and obedience so highly valued and sought-after³⁴ with the rise of Evangelicalism. This protestant ethic became embedded in general parenting practices and the strong moralism of strict behaviour regulation in the early 20th Century that resisted over-indulging children³⁵ and where "children are to be seen and not heard". Borrowing from a Foucaultian framework, the bodily obedience of children made them more 'docile', productive and useful.³⁶

Alongside the development of a protestant ethic to parenting, a deeper scientific understanding of sleep increased parental efforts to increase and regulate children's sleep.¹ This led to efforts to discipline children by disciplining 'sleep' and sleep space. Parents were to resist the 'vicious practice' (p 213) of rocking infants to sleep,¹ for example. That is, discipline of solo sleeping was inextricably linked to the discipline of how to deal with nocturnal crying. This mentality was popularised¹ by later prominent parenting authors such as Dr Benjamin Spock³⁷ who advocated that children should be disciplined and obedient and that 'giving in' to a child was tantamount to weak parenting.³³ This philosophy of parenting has been compared to the prominent behaviourist psychological theorists of the time³³ who applied and popularised the behavioural theory of reward and reinforcement into a polarised view of infant sleep and night time crying. For example, crying at night (behaviour) that is attended to by a parent (reward or reinforcement) forms a learned behaviour pattern ("I cry = Parent comes = I am happy"). In this paradigm, parental attention to a cry is a reward.² However, the extent to which this reward is interpreted as 'spoiling' is largely culturally informed. Does attending to an infant cry constitute "spoiling"? If so, what might be being spoiled besides the infant? Can attending to this cry (and therefore 'rewarding it') be optional?

In addition, poverty, crowded housing, bottle feeding, milk expressing and socio-cultural factors such as women's liberation, maternity leave, workers' rights, unionism and female re-entry into the workforce have all impacted on the prevalence of and preference for solo sleeping³⁸ with its subsequent nocturnal crying. With the increasingly affluent society and the emergence of the dual working family, there may have been added incentives (social pressures) for parents to opt for methods that maximise individuality and independence for children at an earlier age. The luxury of a single room for children became an indicator of class-status, social mobility, wealth and success.³³ Furthermore, the protestant promises behind solo sleeping may tap into broader parental desires to produce independent, resilient children¹ and contribute to the individualist society that characterised Western, industrialised nations.³⁴ It may well have been argued that solo sleeping reduces social interdependence and lowers expectations of reliance on others and increases resilience and independence. These are

attributes valued in many industrialised societies such as Australia and potentially the UK and USA.

Another contributor to the solo sleeping debate coinciding with the Victorian separation of space is the Foucaultian notion of partitioning of space and power relations.³⁶ According to Foucault, the aim of disciplinary space is to be able to, at all times, supervise and judge the conduct of each individual, a procedure therefore aimed at knowing, mastering and using space to its full advantage. As the ability to evaluate, grade and rank is implicated in Foucault's techniques of discipline, the ability to sleep alone and self-settle can be interpreted as a means of measuring a child's developmental progress and classify infants as more or less developed and disciplined. This argument can be applied to the shaping of infant behaviour at night with the simultaneous development and maintenance of power relations.³⁹ Regulation and power in the Foucaultian sense are inextricably linked and would arguably sustain the notion of strict discipline in the parent/infant dyad. Mastery and control are in turn aimed at making systems work more effectively.³⁶ However, if discipline is about making things easier and more effective, why are extinction techniques so difficult to achieve? In our desire to view the infant as ordered and independent, we may have misjudged the strength of infant to protest this independence.

The sexualisation of the parental bed is similarly implicated in the privatisation of sleep spaces throughout the Victorian era. The provision of more bedrooms meant that children were subject to greater segregation where mothers and fathers were now able to sleep apart from their children. There has been considerable discussion of the positive effects of this separation in general^{23,27} and on the desexualisation of the shared family sleeping space³³ not just the question of co-sleeping with children but also the co-sleeping of spouses. This had a dual effect - the control of the sleeping space of children and the establishment and enforcement of controlled and 'acceptable' infant parent relationships. Solo sleeping resolved many of these issues. It may be that parents began to trade off negative short term outcomes (such as increased stress during night time crying) for positive longer term outcomes and benefits. Sexual independence for both infant and parents at night may be one. Social institutional demands of functional, disciplined and efficient workers¹⁸ beginning with disciplined children, may be another.¹

To summarise the literature reviewed above, for a range of reasons, recent parenting practices have resulted in the common practice of solo sleeping. If infants cry because of reduced proximity in solo sleeping, and co-sleeping results in less crying, then we should expect an increase in crying, rather than a decrease, in those households which practice solo sleeping. Given the above mentioned research on maternal/infant dyads and attachment we should also therefore expect maternal difficulty in ignoring an infant's cries, reportedly a pre-linguistic form of infant communication. Parents are primed to their infants' cry and infants are primed to demand their parent's care. In extinction techniques parents are instructed to ignore this. Therefore, it is probable that in solo sleeping cultures, we are triggering a strong innate crying communication in the infant to be with their carer. Thus, for a net behavioural and psychological benefit to occur, the ability to withstand crying must be balanced against a strong cultural desire to encourage solo sleeping. How can this be achieved?

A re-evaluation of extinction-based behavioural sleep treatments

Extinction techniques have been utilised for many years, although they have been considered differently.^{40,41} One can find for almost every preference, pattern or norm of sleep training, its opposite approach in some other cultural setting.^{1,5,22,27,28} But over arching these cultural considerations, the basic premise of an infant

crying unattended requires reconsideration. It may be that we may have made errors in our judgements and that our decision to let infants “cry it out” (such as in extinction techniques) may be misplaced or even morally wrong.

To further consider this paradigm differently, the decision to let an infant cry unattended may be more productively reframed as the debate over ‘needs’ versus ‘wants’. The infant nocturnal cry can be distinguished heterogeneously as a ‘need’ or ‘want’ cry.

What does an infant need and what does an infant want? Given the vulnerability of an infant, in otherwise normal parent/infant dyads, their needs would appear to be priority. Maslow reported that the needs of human beings are, in order of priority, basic physiological needs of food, shelter, and bodily comforts, then safety, and security and love.⁴² Theoretically, Maslow would suggest that attending to an infant’s cries would fulfil a basic physiological need for nourishment and cleanliness in young infants, but additionally, bodily comfort and security and the psychosocial and emotional need to know that their care giver is close. Refusal to attend would not fulfil those needs.

If this is true, then ignoring an infant cry is in fact ignoring the needs of that infant. Are psychosocial and emotional security a ‘want’ rather than a ‘need’ and which cultural or scientific paradigm decides this? Is it a sign of the protestant or Foucaultian ethic in our culture that crying is ‘wanting’ and is subsequently downplayed, discouraged, dismissed and understood as ‘spoiling’?

If this latter observation is correct, the pro-extinction camp may suggest that an infant’s cries are not a need worthy of fulfilment within the short term (leading to ‘controlled crying’) or at all (leading to ‘cry-it-out’). That is, there may be no need to attend to the cry. In contrast, the anti-extinction camp may suggest that whenever an infant cries, this communication needs to be valued and attended to however minimally. The former is based on the construction of crying as a ‘want’, the latter that it is a ‘need’. If this is true, it may be that we have misunderstood what an infant needs and misinterpreted this as a want, therefore allowing us the option of not fulfilling it. It is important to consider that our perceptions and established thoughts about the adoption of extinction techniques may have been constructed on a truth that is based on unquestioning acceptance.

Chess and Thomas⁴³ cited in Jenni et al.¹ describe this notion as a goodness of fit model. That is, when an infant’s motivations and behavioural demands and the environmental responses are in accord this leads to “positive development” (p. 21). If they are not in accordance, there is dissonance and maladaptive functioning. Behavioural demands include of course sleep behaviour.⁹ This suggests that how a child is taught to sleep and the expectations around that must be well matched with the infant’s biological and instinctual characteristics. Chess and Thomas⁴³ suggest that if culturally guided strategies are not matched to the infant’s biological and individual needs they are a “poor fit” and incongruent with the infant’s positive development. McKenna²⁷ similarly suggests there is an altering of the adaptive fit between the infant’s neurological immaturity and need for care and the social support environment he may be exposed to when left to cry. In these contexts there is an imbalance between infant needs and adults wants as opposed to infant needs vs infant wants. What does a parent need and how do we reconcile this with the needs of an infant? How often does a parent ‘need’ to leave an infant to cry unattended?

If there is poorness of fit, a misperception of a want instead of a need, or an imbalance between parent and infant needs, we are choosing to allow our infants to cry unattended when in fact this may not be necessary, ethical or biologically sound. Extinction cannot and should not teach an infant not to cry, because crying is an innate communication.¹³ Extinction can however teach an infant to give up.⁴¹ An infant needs to be sure that their caregiver is

available, perhaps not all the time, but at the very least with consistency and predictability.¹⁹ This reassures the infant that requests for help will be answered. This is not the case in extinction techniques. What has been interpreted as the success of these techniques with a reduction in night time crying, may more accurately be understood as extinguishing infants’ communication through our own misinterpretation and potentially even alienation. Is the cessation of crying a ‘cure’ or is it that the child has ‘given up’ and is now depressed and has partially withdrawn from the attachment dyad? Chess and Thomas⁴³ and McKenna⁴⁰ suggest such repercussions may be possible.

There is more to consider besides the potential threat to communication and psychosocial relationships. As discussed above, there is evidence that leaving an infant to cry for extended periods such as occurs in extinction models, can increase cortisol levels both in the short term¹⁸ and the long term.⁴⁴ The trauma literature suggests that babies left for extensive periods either alone or crying show signs of stress, withdrawal, attachment disorders^{13,14,20,45} and even changes to neural structure.⁴⁶ Whilst there is a sense that it is not probable that extinction techniques practiced over a few days or weeks are likely to result in such radical changes to neural structure, this is unknown. But if there is any doubt, caution should be extreme. There is a need for longitudinal studies, potentially randomised control trials, to systematically answer whether extinction practiced even over the short term, results in long term psychological sequelae or emotional deregulation. Scientific investigation of any long term sequelae are problematic and potentially unethical and perhaps for these reasons have not been undertaken. We may therefore be able to justify our extinction practices with the lack of scientific evidence to refute it. We may be able to argue that short term pain is worth the long term gain. We may be able to argue that disciplined infants will be disciplined members of our community. But whether there is scientific evidence to support or refute this claim may not help. It may not help parents who are experiencing the significant stress of ignoring their infant’s cries. It may not help an infant who has no understanding of time (when a parent will come) or space (where a parent is) and is left to cry unattended.

Conclusion

A fundamental tension between needs and wants may well be found at the heart of debates regarding extinction techniques. These tensions exist within and between biological, psychological and socio-cultural constructions of what constitutes a need or a want and for whom. Transcending discipline-specific standpoints, several points are currently clear.

It is undeniable that an infant *needs* to know his parents and caregivers are there.¹⁴ It is even probable that an infant *needs* simple physical touch.^{27,40} It is probable that the infant may *want* more than merely knowledge of their presence or simple physical touch, for example, *wanting* more intense physical comforting and protesting at the lack of it.

If this is the case, then it is possible that we can attend an infant’s needs without ‘excessive’ interaction that results in behavioural reinforcement of ‘wants’. For example, a parent may alleviate the *need* for presence and physical comfort (e.g., by patting their infant to calm them) without reinforcing the intense *want* of being rocked or patted until *completely* asleep. That is, there can be some parental night time intervention which can simultaneously attend to the infant whilst promoting solo sleeping as practiced in the ‘camping out’ method.⁴⁷ Once the *need* has been alleviated the *want* can arguably remain unfulfilled. Leaving an infant unattended and in distress is not the only efficacious method by which sleep consolidation can be achieved.

Clearly, the interpretation of needs and wants is subjective but it is central here is to understand the difference between interpreting an infant's night time cries as an expression of protest (a want) or distress (a need). If we attend an infant during daytime crying are we indulging a want and spoiling them? When crying, an infant does not have the capacity to recognise the contextual difference between being attended to during the day or during the night.¹⁵ Our social constructions of acceptable diurnal crying and unacceptable nocturnal crying should be critically reassessed within the context of extinction sleep treatments.

But what of parent needs? What about the parent who is struggling with disrupted sleep? It is impossible to leave these parents struggling with disrupted sleep which is frequently associated with depression and other physical and mental health issues⁴⁸ that can, in turn, negatively impact the well being of children in their care. Reducing night time awakenings is paramount to consolidated sleep in these circumstances. The question is not whether parental sleep should be consolidated, but how this is achieved.

It is important to consider moral and ethical sensibilities in behavioural sleep treatments. It is and equally important to consider that 'desirable' infant sleep behaviour is also morally and culturally defined. We need to discuss the ethics of doing what we have always done when it is so incongruent with our instincts and biological drives. At the very least, we need to acknowledge that what we have always done can always be done better.

Middle ground should be sought between extreme parenting styles, ranging from the protestant inspired strictness with few parenting choices (which has arguably resulted in extinction techniques), to permissive parenting which offers too many choices. For example, sleeping arrangements and behavioural interventions could be developed to achieve sleep training without involving the extinction of an infant's communicative behaviours or any potential for stress or unfulfilled need. This may constitute a more acceptable compromise between the possible safety risks of co-sleeping and the biological imperative of night time proximity. A middle ground offers a place where needs and wants can be accommodated for both parent and infant.

It would appear that in many western, 'individualistic' and industrialised societies notably Australia, parents are encouraged to sleep alone and thereby foster increased night time crying in the short term and extinction in the long term. This choice is largely driven by normative psychological and scientific discourse that legitimises leaving an infant to cry unattended and causes distress in parents and infants alike. As a result, a problem has been created which has then necessitated the creation of a solution, without acknowledging our role in creating the problem in the first place. The irony seems to have gone unnoticed. Moreover, reactions to the disruption to adult sleep from crying have resulted in pathologising the behaviour and communication of infant crying as abnormal or at the very least unacceptable.

It is clear that extinction techniques are supported by a large percentage of health professionals in many Anglophone cultures.⁴¹ Indeed, significant scientific and psychological literature reports 'success' in extinguishing night time 'cries for attention'.⁹ It is concerning that these successes require the conscious and intentional ignorance or reduced attention to the cries of an infant by adults, and that professionals deem this acceptable.

Future directions for research

For decades, extinction practices have been little challenged and it is timely to critically re-evaluate extinction techniques in treating behavioural sleep problems. Researchers and clinicians need to take a step back and shift paradigms from a pure behavioural perspective to a social paradigm, observe these extinction methods

from a different angle and investigate and reconcile the interests and questions of all stakeholders, especially infants.

Attachment theorists Ainsworth and Maslow would urge us to identify ways in which infant needs can be fulfilled while taking into account the *status quo* of cultural and/or individual guidelines and philosophies about infants sleep, not to mention the industrial imperative and societal constraints. For instance, parents and caregivers could be provided assistance in distinguishing between an infant's needs and wants and advice on how to ensure that they are not operationalised in a way that could compromise well being for parent or infant. At the very least, some parents may benefit from a less rigid set of expectations regarding sleep treatments.

Perhaps health professionals sought out by parents seeking advice on sleep training techniques could engage them in the rudimentary elements of developmental, learning and attachment theories that could inform their choices. Health professionals provide a major source of knowledge for parents about infant sleep but their advice is necessarily based on their own cultural values and beliefs in interaction with their personal and clinical experience and the norms of the period.¹ Consideration of how these cultural perceptions impact treatment choices should be an important part of medical training in this field. This is because it is important for health professionals to critically reconsider the myth that crying is anything other than communication and that leaving a child to cry in distress is a *necessary* sleep training method. Accordingly, future scientific investigation and discourse should provide parents with a more comprehensive view of how these factors are constructed in extinction techniques. 'Informed choice' should not be restricted to a single disciplinary perspective or reduced to the binary of for or against extinction techniques. Neither should parents' informed choices be disregarded.

To further guide some of this fundamental discussion, future research should target and clarify the *implicit* theoretical and cultural assumptions that drive the choice of methods in many of the current studies. In particular, there are 3...

Firstly, measurements of physiological distress (as measured by adrenaline and cortisol) should be compared during different types of behavioural sleep treatments in randomised controlled trials ranging from extinction methods to those that do not necessitate ignoring an infant's cry (for example, techniques such as 'fading' and 'camping out' where parents can stay in the same room as their infant habituates to being alone.⁷ Studies that evaluate long term effects of extinction techniques are necessary but need considerable thought, given the inherent difficulties in scientific control of extraneous variables that affect infant sleep and the related ethical concerns of wait-list control methods. We anticipate that the significance of better understanding the long term effects of extinction techniques will be worth the effort.

Secondly, if behavioural techniques such as extinction are 'successful' in promoting solo sleeping, then why not wait at least until a child can better understand the concepts of abstract thinking, time and space, day and night?¹⁵ This would counteract the disinclination of the controlled crying advocates to consider infant sleep practices within a developmental and/or biological context. Parents may be more able to withstand an older child's protests when able to explain in verbal language their desires and reasons for independent sleeping. Evaluation of these techniques in older children and most notably the reaction and compliance of parents would be beneficial.

Thirdly, we need to audit the opinions, techniques and agreement amongst clinicians and health professionals who promote and instigate behavioural sleep treatments in infants to identify gaps and conflicts in the knowledge network that surround infants. It would appear that current clinical recommendations concerning infant sleep management reflect the perceived social needs of

parents more than they do the unique psychological and biological needs of the infant.^{27,41} This is not to suggest that nocturnal waking and resultant crying is not problematic, inconsequential for parents or unworthy of remedy. Rather, we propose that established solutions utilising extinction require reconsideration. The cultural meanings of night time crying need to be reconsidered in that context. The extent to which culturally based attitudes of health professionals create the conditions within which parent-infant sleep struggles emerge, need to be reconsidered within a scientific forum. In fact, dialogue or dissonance amongst clinicians (especially those who have children and can empathise with parents) is integral to scientific advancement.

Before, during and after future research in this arena, we must ask ourselves one important question: are our accepted sleep training techniques the best we can do to meet the needs of our infants and how much responsibility do we share to challenge the *status quo*?

Practice points

- Sleep disruption and frequent night waking are the most common and pressing issues addressed in primary care during the first year of life.
- Extinction techniques, which require the conscious and intentional ignorance or reduced attention to the cries of an infant by their caregivers, are commonly utilised to consolidate sleep in infants in non collectivist industrialised countries such as Australia.
- During extinction techniques, there appears to be a poorness of fit, a difficulty in interpreting parent and/or infant needs, and an imbalance within and between the biological, psychological and socio-cultural constructions of infant sleep and nocturnal crying.
- Leaving an infant unattended and in distress, advocated by many clinicians, is not the only efficacious method by which sleep consolidation can be achieved and may not be either necessary, ethical or biologically sound.

Research agenda

- Randomised controlled trials measuring immediate and long term indicators of physiological distress involved in extinction interventions (adrenaline and cortisol) have not been systematically studied and should be compared during different types of behavioural sleep treatments.
- Studies that evaluate long term effects of extinction techniques, whilst problematic to undertake, will be worth the effort in answering questions about the potential harm to infant and parent.
- Evaluation of these techniques in older children and most notably the reaction and compliance of parents would be beneficial.
- Researchers could examine the 'goodness of fit' between a substantial range of cultural patterning of infant sleep with those supportive of the biological and neuro-developmental needs of infants
- A renewed theoretical and scientific discussion amongst clinicians and health professionals who promote and instigate behavioural sleep treatments would identify gaps and conflicts in the knowledge network that surrounds infant sleep.
- Rather than reactively creating a new approach, critical reappraisal and re-evaluation of behaviour techniques such as extinction should become the *status quo*.

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