

PEDIATRIC TOP PAPERS

Do Behavioral Interventions Improve Infant Sleeping Behaviors?

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Gradisar M, et al. Behavioral Interventions for Infant Sleep Problems: A Randomized Controlled Trial. *Pediatrics* Jun 2016, 137 (6) e20151486; DOI: 10.1542/peds.2015-1486.

Sleep concerns in infants can have significant implications. While nocturnal awakenings are a normal part of early infant life, these should start to decline between 3-6 months and typically diminish by the end of the first year of life. Unfortunately, this is not seen in up to around 20% of infants. This can lead to daytime impairments in caretakers, and increased risk of physical abuse in the child, and higher rates of parental depression.

To combat this, several different behavioral interventions exist, including extinction and bedtime fading. Extinction involves ignoring or delaying (called gradual extinction or colloquially as “crying it out”) a response to an infant’s nocturnal cries. There is longstanding evidence that this method is effective, but there have been concerns that it may lead to elevated cortisol levels that establish feelings of helplessness in the infant and create insecure parent-child attachments. Bedtime fading delays an infant’s bedtime by small durations of time each night, indirectly compressing sleep time. It is not clear whether this method plays a role in the infant’s attachment ability.

Gradisar et al compared effects from graduated extinction and bedtime fading against a sleep education control on infants’ sleep, stress, attachment, and emotional and behavioral problems, along with maternal mood and stress. These comparisons were examined over a 3 month treatment period and at a 12 month follow up. Primary outcomes studied were sleep latency, number of awakenings, and wake after sleep onset. Secondary outcomes were infant cortisol levels (which acted as a measure for infant stress), parental stress/mood, and attachment behavior.

Three groups of infants (43 in total) aged 6-16 months were randomized into graduated extinction, bedtime fading, or the sleep education control group. Patients needed to be identified as having a “sleep problem” through a parental survey, but also needed to display proper growth

and development. Parents in the graduated extinction group were given a specific schedule of how long to delay their response to their child's cry per occasion. The bedtime fading group was giving specific durations to delay their child's bedtime. The sleep education group was given informational booklets on sleep. All groups had 24/7 cell phone support and were able to switch groups if need be by IRB request. Sleep measures were examined throughout via parent reported sleep diaries and infant actigraphy. Emotional concerns and parental stress were reported via assessment. Parent-child dyads underwent the strange situation procedure (standardized interactions that were videotaped and blind scored) to evaluate parent-child attachment.

Significant interactions were found for sleep latency, number of awakenings, and wake after sleep onset, with large decreases in sleep latency for both the graduated extinction and bedtime fading groups, and large decreases in the number of awakenings and wake after sleep onset for the graduated extinction group alone. Salivary cortisol levels showed small-to-moderate declines in graduated extinction and bedtime fading groups compared with controls. Parental stress showed small-to-moderate decreases for the graduated extinction and bedtime fading conditions over the first month, but no significant difference in mood. At the 12 month follow up, there were no significant differences in emotional and behavioral problems detected, and no significant differences in the attachment styles between the groups.

There were some mild improvements appreciated within the control group as well, suggesting developmental maturity and/or improvements due to caretaker education alone. Interestingly, no significant sleep changes were found using actigraphy, which may mean that the two measures used in this study (actigraphy and parental reporting) measured different aspects of wakefulness – crying vs. motion, perhaps. This may also reflect the growing ability of the infant to self-soothe.

Despite the small sample size, the findings of this paper do seem to suggest that brief behavioral sleep interventions can help improve infant sleep without leading to behavioral concerns or parental attachment issues. Specifically, it may be worth counseling families that the bedtime fading technique can improve sleep-onset latency, and that graduated extinction may assist with nocturnal wakefulness. Overall, educating families on sleep techniques seems to lead to less caretaker stress, better infant sleep, and no emotional harm.