

Sleep Quality in Preschoolers: Links to Attachment Security and Mother-Child Interactions

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Introduction

Given that infants spend more time sleeping than engaging in all other activities combined, sleep is sometimes considered to be the single most important activity of the brain during early childhood. Infant sleep problems have been reported to be parents' most frequent motive for consulting pediatricians and seeking professional health services (Bayer, Hiscock, Hampton, & Wake, 2007; Ferber, 1987; Lozoff, Wolf, & Davis, 1985; Wake et al., 2006)

However, there has been little empirical investigation of what factors may contribute to poor sleep during early childhood. Sleep initiation and maintenance both imply a drastic decrease of vigilance, a state that requires the child to feel safe (Dahl, 1996). Attachment theory postulates that this feeling has a strong interpersonal component and is closely related to the quality of young children's interactions with their primary caregiver, which then translates into the security of their attachment relationship (Dahl, 2005).

Therefore, we hypothesized that both maternal sensitivity (i.e., the quality of maternal behavior during mother-child interactions) and security of the mother-child attachment relationship would relate to sleep quality in early childhood. The present study relied on a physiological measure of sleep rather than on parental reports, which may be biased by the quality of the relationship with the child.

Method

Forty-nine families were assessed when children (20 boys) were aged 12 months (T1), 15 months (T2), and 2 years (T3).

Maternal sensitivity was assessed at T1 using the Maternal Behavior Q-Sort (Pederson & Moran, 1995), based on observations performed throughout a 1.5 hour home visit. The MBQS yields scores describing several aspects of the quality of maternal behavior: Response to Positive Signals; Response to Negative Affect; Affect Sharing; Hostility/Rejection; Sensitivity/Responsiveness; Teaching Orientation; and Physical Contact.

Attachment security was assessed at both T2 and T3, using the observer-rated Attachment Q-Sort (Waters, 1995), based on a one-hour home visit where mother-infant dyads engaged in a variety of activities.

Child sleep was assessed at T3, at which point families were given instructions in order for their child to wear an Mini-Mitter® Actiwatch Actigraph (AW64; Respironics, Oregon), during 72 consecutive hours. The Actiwatch contains an accelerometer to monitor the number of wrist or ankle movements per epoch (60 sec) and establishes wake and sleep periods using a standard algorithm.

However, the most commonly used algorithm, relying on a medium (40) sensitivity threshold for sleep detection, was reported to be too sensitive for use with children (Goodlin-Jones et al., 2009), and hence to result in false negatives in this population.

Method

In the present study, following the procedure described by Goodlin-Jones and colleagues (2009), actigraph data were analyzed by applying a secondary 'smoothing' filter to the medium sensitivity algorithm (40), using the following scoring criteria:

1. During the night, wake was scored when activity ≥ 100 for 2 consecutive 1-min epochs;
2. During the night, the end of a wake period was scored when activity ≤ 50 for 3 consecutive 1-min epochs;
3. During the day, sleep (nap) was scored when activity ≤ 50 for 3 consecutive 1-min epochs;
4. During the day, the end of a sleep (nap) period was scored when activity ≥ 100 for 2 consecutive 1-min epochs.

Results

Results revealed that mothers who were observed to be more hostile/rejecting toward their infants at 1 year had children with shorter total night time sleep duration 2 years later ($r = -0.29, p < .05$).

No association has been found between attachment security at T2 and T3 and quality of sleep. Furthermore, children whose scores for **attachment security increased** (proportionally to the remainder of the group) between T2 and T3 **spent less time awake** during the night ($M = 26.5$ minutes), compared to those whose rank-order for attachment security decreased ($M = 42.2$ minutes) ($t(47) = -2.23, p < 0.05$).

Conclusion

Therefore, children of more sensitive mothers and those forming an increasingly more secure attachment relationship with their mothers were found to have more consolidated sleep patterns at 2 years of age, thus confirming the positive relation between quality of early caregiving relationships and children's developing sleep patterns. We can hypothesize that secure attachment relationships and interactions with a sensitive caregiver promote feelings of safety in children, thereby helping them sleep well at night.

Limitations and future research

Because of the small sample size, statistical analyses were limited to their simplest form. Future studies should use larger samples and consider the use of other child attachment measures, such as the Strange Situation procedure.

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