Is Infant Sleep Related to Early Motor Milestone Onset?

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Introduction
- Infant sleep becomes less fragmented during the first year of life (Scher & Cohen, 2005)
- In the latter half of the year, periods of interrupted sleep were observed as mobility increased (~i.e. crawling and pull-to-stand movements) (Atun-Einy & Scher, 2016; Scher, 2005)
- Rolling enables infants to move in their current location rather than moving from place-to-place (Kobayashi, Watanabe & Taga, 2016)

Aims:
- Given that rolling is learned before other motor skills (~i.e. crawling and walking), its impact on sleep will be studied.

Questions:
1. How does the onset of rolling affect infants’ sleep as a preliminary skill?
2. What patterns are observed in movement (MAX)?
3. Does the acquisition of rolling result in more wake episodes (WEPs)?

Participants
- Ten infants participated (5 females)
- Infants’ sleep was monitored for 7 consecutive nights (three nights before rolling onset, the night of rolling onset, and three nights after)
- Mean rolling onset = 4.92 months (SD = 1.28)

Method
- Parents recorded infants’ milestones using a motor milestone diary.
- We collected nightly video of infants’ crib activity using the Nanit crib monitor.
- Nanit’s computer vision algorithm coded maximum minutes infants spent in one location (MAX).

Results
- Low MAX value on onset night translates to high activity level
- There was a significant 5th order effect of night on MAX, $F(1,9) = 11.51, p < .01$
- There are 5 changes in the MAX data during the seven-night period
- Number of WEPs did not change over the seven nights; occurred at an average of 5.89 episodes each night

Discussion
- Increased activity after learning may reflect ongoing skill mastery or “practice” during sleep
- Given the continuity in wake episodes each night, rolling does not contribute to sleep fragmentation as a preliminary skill
- Correlation between MAX and WEP trends give insight regarding motor development (rolling) because of the specificity in infants’ location that the Nanit monitor provides
- Future directions include investigation of the generalizability of these trends across a larger sample size

References

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