The developmental and psychophysiological emergence of dreams and nightmares: state-dependent and state-independent fronto-cortical disconnectivity

Results:

We aimed to characterize sleep and to test the frontal dysfunction hypothesis of nightmares, as well as to bridge the relationship between the ontogeny of frontal-executive and emotion regulation functions with age-related peculiarities of dreams and nightmares. Nightmare sufferers (NS) were characterized by performance decreases in several executive tasks (Emotional Go/NoGo, Emotional Stroop, Verbal Fluency). Alterations in the sleep architecture (decreases: sleep efficiency, slow wave sleep; increases: wakefulness, arousals, REM sleep), microstructure (increases in A2-microarousals of the cyclic alternating pattern), and qEEG (increased REM sleep 10–14 Hz power and synchronization) were paralleled by a more pronounced first-night effect of NS. Children are more accomplished dreamers with dream narratives closer to adult dream reports than authors of previous laboratory findings described. 4–8 years old children were characterized by a positive correlation of dream report length with slow wave sleep and with performance in the Emotional Stroop test. Negative correlation between the developmental level of executive functioning and dream recall frequency was also established. Our results suggest that NS are characterized by impairments in executive tasks involving the suppression of task-irrelevant semantic representations. Moreover, nightmare-related alterations in sleep architecture and microstructure are characterized by wake-like intrusions disturbing the neurocognitive function of sleep, as well as by emotion-related increases in REM propensity. Children's dreams should be collected by novel methods, involving their parents. Children's dreams depend on the maturation of emotion regulation and executive functions.

Published work:

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2. Simor P, Horváth K, Gombos F, Takács KP, Bódizs R. Disturbed dreaming and sleep quality: altered sleep architecture in subjects with frequent nightmares. Eur Arch Psychiatry Clin Neurosci 2012;262(8):687–696. (http://dx.doi.org/10.1007/s00406-012-0318-7)

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Area(s) of interest:

Nightmares, sleep, EEG, dreaming, children

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