

# Brain activity in sleep may impact emotional disturbances in children with ADHD

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Sleep consolidates emotional memories in healthy children but not in children with attention-deficit hyperactivity disorder (ADHD), according to research published May 29 in the open access journal *PLOS ONE* by Alexander Prehn-Kristensen and colleagues from University Hospital Schleswig-Holstein. The study suggests these deficits in sleep-related emotional processing may exacerbate emotional problems experienced in the daytime by children with ADHD.

For the study, healthy adults, healthy children and children with ADHD were shown pictures that had emotional relevance, such as a scary animal, or neutral pictures showing an umbrella or lamp. Participants were shown pictures in the evening, their [brain activity](#) was monitored as they slept, and recollections were tested the following morning. The researchers found that during sleep, regions of the brain thought to support consolidation of emotional memories were most active in healthy children, less so in healthy adults and least active in children with ADHD.

The study states, "While several studies reported a benefit from sleep with respect to emotional memory in healthy individuals, our results showed for the first time that healthy children outperform healthy adults." However, the authors add that this may be, in part, attributable to the child-oriented pictures used as stimuli.

Their results support the idea that frontal brain activity is critically to the consolidation of [emotional memory](#) in sleep, and this brain region is also

implicated in the emotional symptoms seen in children suffering from ADHD. The authors add that further studies are needed to confirm whether this function of sleep in forming emotional memories develops with time in adults with ADHD, or whether the dysfunction persists in ADHD sufferers of all ages.

**More information:** Prehn-Kristensen A, Munz M, Molzow I, Wilhelm I, Wiesner CD, et al. (2013) Sleep Promotes Consolidation of Emotional Memory in Healthy Children but Not in Children with Attention-Deficit Hyperactivity Disorder. PLOS ONE 8(5): e65098.  
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