Disruption of sleep in children could hamper memory processes

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Sleep disordered breathing can hamper memory processes in children, according to a new study.

The research, which will be presented today at the Sleep and Breathing Conference (16 April 2015), found that disrupted sleep had an impact on different memory processes and how children learn.

Eszter Csabi led a team of researchers from the University of Szeged and Eötvös Loránd University in Hungary. They analyzed 17 children with sleep disordered breathing aged between 6 and 12 years. They looked at different memory processes compared to a control group of 17 children of similar age without any sleep disorders.

A story recall task was used to measure memories that can be consciously recalled, known as declarative memory, and a reaction time task was used to assess how the children learnt new skills and sequences, known as non-declarative memory. This is the first study to compare the impact of sleep disturbances on these separate memory processes in children.

The children were assessed across two sessions: a learning session and a testing session, which was separated by a 12-hour period which included sleep. This allowed the researchers to understand whether the children consolidated the information they learnt or had forgotten it by the next session.

The results found that children with sleep disordered breathing had a lower declarative memory in the learning and testing phase, suggesting that sleep can not only hamper how a child consciously learns but can also have a negative effect on whether they remember this learning after a period of time. The learning of new sequences and skills using non-declarative memory was not hampered by sleep disordered breathing in either session.

The authors conclude that disruption of sleep can affect the memory in different ways but is likely to hamper the declarative memory processes more than non-declarative processes.

Lead author, Dezso Nemeth, said: "Our results show that sleep disturbances have an impact on the developing brain and could affect the way children learn. It is crucial that we identify and diagnose any sleep problems early in childhood and properly treat them to prevent this. Our results have also helped us to pinpoint declarative memory as the memory process that is most affected. If these findings are confirmed in larger studies, we can tailor the training and rehabilitation therapies we provide to children with sleep disordered breathing by focusing on improving the conscious memory processes."

More information: Poster: Declarative and non-declarative memory consolidation in children with sleep disorder breathing; Presentation time: Thursday 16 April 2015 (13.45-14.45)

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