

# Analysing the way children sleep could help us to understand autism

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On average, humans spend roughly a [third of their lives asleep](#). This might sound like quite a long time, but sleep has been shown to be vital for "normal" human functioning. Without enough sleep, things go downhill for most people pretty quickly.

As well as being vital for getting through the day, [sleep](#) is well known to play an important part in the process of memory making – sleep helps us

take newly formed "fragile memories" and make them "robust". Through sleep, our brains hit the "save" button, allowing us to transfer memories to a long-term storage system.

Research from the [Sleep Language and Memory](#) (SLAM) lab at the University of York has focused on the relationship between sleep and language learning. This research has shown that sleep plays a role in strengthening our memories for newly learned words – for both adults and [children](#).

We found that people who get more [deep sleep show bigger improvements](#) in their memory for new words after sleep. And that going to sleep after learning new words also allows those words to be embedded into the brain's mental dictionary – meaning these words begin to behave like words we already know.

As part of this research, children learned new words before and after a period of [wakefulness or sleep](#). Greater improvements in vocabulary learning were seen after a period of sleep, compared with the equivalent time spent awake. So in essence, children who learned new words then went to sleep were able to better recall the words, compared to the children who learned the new words and just stayed awake.

And with this in mind, the SLAM lab is now working out the optimal delay between learning something new and going to sleep. This includes the use of bedtime stories for vocabulary learning in children.

## **Sleep and developmental disorders**

But outside of learning new words, this research could also help to better understand [developmental disorders](#). This is because children with [autism spectrum disorder](#) (ASD), attention deficit hyperactivity disorder (ADHD) and dyslexia often have [sleep problems](#) and as part of our

research, we are looking at how these sleep problems impact on children's learning.

Sleep difficulties are thought to [affect up to 86%](#) of the ASD population, and given that we know about sleep and the learning of vocabulary, it's clear these sleepless nights could be having a damaging impact on these children's lives.

[Levels of vocabulary](#) in children with ASD vary dramatically. While some children have typical or above average vocabularies, many children with ASD show delays in early language acquisition – and often have smaller vocabularies than expected for their age. Researchers cannot currently explain this diversity, but it is suspected that sleep difficulties play a key part.

And [our own research](#) has also shown that children with ASD show almost the reverse pattern in terms of word learning and sleeping – so sleep doesn't seem to have the same memory making impact for these children in terms of [vocabulary](#).

## **Impact on education**

Our research is now beginning to untangle whether [sleep difficulties](#) might impact on learning difficulties in children with autism. And we are doing this by recording brain activity while children sleep in their own beds.

As yet, there has been no investigation into how poor sleep patterns may impact on the language learning difficulties that characterise ASD. So this is exactly what our research aims to address.

The SLAM lab, along with University College London, was recently awarded funding from the Economic and Social Research Council for

the SleepSmart project, which will look at how sleep supports language learning in both children who are developing "typically" as well as children who have autism spectrum disorder (ASD).

This type of research is vitally important and could potentially make a difference to many children's lives. And this all comes at a time when researchers are beginning to understand the importance of sleep – particularly for learning and [memory](#).

Yet historically far more emphasis has been placed on what we do while awake than what we do when we're sleeping. Which is why it's time to start giving sleep – especially for children – the respect that it deserves.

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