

Sleep protects against forgetting of new meanings for familiar words learned through stories.



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When learning new meanings for familiar words (e.g., a ‘foam’ is a ‘safe concealed within a piece of furniture’), adults must integrate new meanings with existing word knowledge. The Complementary Learning Systems model (Davis & Gaskell, 2009) suggests that information is encoded into hippocampal episodic memory, and after offline consolidation (e.g., during sleep) becomes integrated into neocortical semantic memory. We investigated whether sleep is important for active consolidation of word meanings. In Experiment 1 eighty-four participants learned new meanings for familiar words through reading stories in the evening or morning, and were tested following 12 hours of sleep or wake. Participants who slept had better explicit knowledge (recall and recognition) of new meanings. Experiment 2 (preregistered: <https://osf.io/uvgp4>) aimed to distinguish between active and passive benefits of sleep on memory of word meanings. Eighty-four participants had two training sessions and one test session at 12-hour intervals, but began and completed the study either in the morning or evening. Explicit knowledge of new meanings was higher when sleep occurred between training and test, but this benefit disappeared when 12 hours of wake preceded test. Results are consistent with sleep providing passive protection against interference due to less opportunity to encode new information.

Davis, M. H., & Gaskell, M. G. (2009). A complementary systems account of word learning: Neural and behavioural evidence. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, 364, 3773–3800.