



## Sleep's Influence on Memory Consolidation in Word Learning

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*Learning new words is vital to language comprehension and production. One extensively studied association is sleep's role in memory consolidation and markedly, its effects on word recognition. The earliest investigation was traced to Jenkins and Dallenbach (1924) who demonstrated on declarative tasks that retention of nonsense syllables was superior after a period of sleep than an equal period of wake upon encoding (cited in Stickgold, 2005). This line of research has resurged with mixed findings. Past research by Dumay and Gaskell (2007, 2012) revealed that a period of delay, mostly accompanied with sleep is needed for new words learnt to integrate and then, engage with existing words for recognition. However, this proposition was challenged by Kapnoula et al. (2015) which demonstrated immediate integration processes by immediate testing on visual world paradigm task. The present investigation sought to address this contention by employing masked priming paradigm to test for competition between existing and newly learnt words (Qiao & Forster, 2013), speeded recognition task to test recognition memory, and Reicher-Wheeler paradigm to test for word-superiority effect as an index of how much lexical-semantic memory can support perceptual identification (i.e., letter perception) (as shown in Leach & Samuel, 2007). Participants were trained on novel written words constructed from its existing base English words (e.g., "alfond" – Almond), like in Forster and Verse, 1998. They were tested immediately and after a night's sleep (12 hours; Sleep group) and an equal period of wake (Wake group). It was observed that the performance on masked priming and Reicher-Wheeler tasks showed either no effect of sleep or an effect that did not necessarily reflect memory enhancement. Only recognition memory as measured by reaction time and accuracy score, showed significant evidence that sleep improved memory enhancement for newly learned words, viz. consolidation ( $p < 0.01$ ) in a sample of normal native English-speaking adults.*