Sleep Enhances the Consolidation and Integration of Newly Learned Words

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Abstract

NREM sleep has been associated with the stabilization and strengthening of newly acquired memory traces, whereas REM sleep supports the integration of new information into pre-existing memory networks and semantic structures. To examine these processes, participants (N=50, 18–40 years) learned rare Spanish words paired with images-definitions, and then either took a 90-minute nap monitored with polysomnography (PSG) or remained awake. Memory performance was subsequently assessed analyzing word–image–definition associations and measures of semantic integration. Participants who slept preserved word memory across the retention interval, whereas those who remained awake showed a significant decline, indicating a beneficial effect of sleep on word-form consolidation. Memory for definitions showed a similar but weaker pattern, with no significant group differences. No group differences were observed in semantic integration measures, suggesting a ceiling effect or that short naps may be insufficient to support integration. Exploratory analyses examined associations between PSG-derived sleep measures and memory performance.

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