



## The Importance Of Sleep In Regulating Emotional Responses

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According to a research abstract presented at SLEEP 2009, the 23rd Annual Meeting of the Associated Professional Sleep Societies, sleep selectively preserves memories that are emotionally salient and relevant to future goals when sleep follows soon after learning. Effects persist for as long as four months after the memory is created.

Results indicate that (the sleeping brain seems to calculate what is most important about an experience and selects only what is adaptive for consolidation and long term storage. Across long delays of 24 hours, or even three-to-four months, sleeping soon after learning preserved the trade-off (compared to waiting an entire day before going to sleep).

According to lead author, Jessica Payne, PhD, of Harvard Medical School in Boston MA, It was surprising that (in addition to seeing the enhancement of negative memories over neutral scenes, there was also selectivity within the emotional scenes themselves, with sleep only consolidating what is most relevant, adaptive and useful about the scenes. It was even more surprising that this selectivity lasted for a full day and even months later if sleep came soon after learning.)

"It may be that the chemical and physiological aspects of sleep underlying memory consolidation are more effective if a particular memory is 'tagged' shortly prior to sleeping," said Payne.

The study included data from 44 college students between the ages of 18 and 22 who encoded scenes with neutral or negative objects on a neutral background and were tested on memory for objects and backgrounds 24 hours later. Half of the participants were randomly assigned to the 'sleep first' group, which trained and tested on the scenes between the hours of 7 and 9 p.m. while the other half was assigned to the 'wake-first' group which trained and tested on the scenes between the hours of 9 and 11 a.m. Four months later, participants were once again tested on their memory of the scenes.

Negative, but not neutral objects were better remembered in the sleep-first than wake-first group. Backgrounds associated with negative, but not neutral objects were more poorly remembered in the sleep-first compared to the wake-first group. Thus, while negative object memory was enhanced in the sleep-first group compared to the wake-first group, memory for the backgrounds on which they were presented was impaired in the sleep-first group compared to the wake-first group. This pattern persisted four months later, with emotional objects being preferentially retained in the sleep-first group only.

Payne said that sleep is beneficial for memory and that we remember things best when we 'stagger' our learning episodes across time.

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