Sleep Boosts Ability To Learn Language, University Of Chicago Researchers Find

Scientists at the University of Chicago have demonstrated that sleeping has an important and previously unrecognized impact on improving people's ability to learn language.

Researchers find that ability of students to retain knowledge about words is improved by sleep, even when the students seemed to forget some of what they learned during the day before the next night's sleep. This paper, "Consolidation During Sleep of Perceptual Learning of Spoken Language," is being published in the Thursday, Oct. 9 issue of the journal Nature. The paper was prepared by researcher Kimberly Fenn, Howard Nusbaum, Professor of Psychology, and Daniel Margoliash, Professor in Organismal Biology and Anatomy.

"Sleep has at least two separate effects on learning," the authors write. "Sleep consolidates memories, protecting them against subsequent interference or decay. Sleep also appears to 'recover' or restore memories."

Scientists have long hypothesized that sleep has an impact on learning, but the new study is the first to provide scientific evidence that brain activity promotes higher-level types of learning while we sleep.

Although the study dealt specifically with word learning, the findings may be relevant to other learning, Nusbaum said. "We have known that people learn better if they learn smaller bits of information over a period of days rather than all at once. This research could show how sleep helps us retain what we learn."

In fact, the idea for the study arose from discussions Nusbaum and Fenn had with Margoliash, who studies vocal (song) learning in birds. "We were surprised several years ago to discover that birds apparently 'dream of singing' and this might be important for song learning," Margoliash said.

"Ultimately, our discussions stimulated a research design first proposed by Kim Fenn. The interdisciplinary nature of the research and the free exchange of ideas between animal and human work is also very exciting for us," Margoliash added.

"We were shocked by what we found," Nusbaum said. "We were particularly intrigued by the loss of learning the students experienced during the day and then recovered."

Researchers could not determine if the reduction in performance during the day was due to students forgetting what they'd learned, their listening to other speech or their thinking about unrelated issues during the day.