'Sleep on it' is excellent, science-based advice, study finds

25 May 2011

(Medical Xpress) -- In recent years, much sleep research has focused on memory, but now results of a new study by University of Massachusetts Amherst psychologist Rebecca Spencer and colleagues suggest another key effect of sleep is facilitating and enhancing complex cognitive skills such as decision-making.

In one of the first studies of its kind, Spencer and postdoctoral fellow Edward Pace-Schott investigated the effects of sleep on affect-guided decision-making, that is decisions on meaningful topics where subjects care about the outcome, in a group of 54 young adults. They were taught to play a card game for rewards of play money in which wins and losses for various card decks mimic casino gambling.

Subjects who had a normal night's sleep as part of the study drew from decks that gave them the greatest winnings four times more often than those who spent the 12-hour break awake, and they better understood the underlying rules of the game. Psychologists believe rule discovery is an often hidden yet key factor that is crucial to making sound decisions.

"This provides support for what Mom and Dad have always advised," says Spencer. "There is something to be gained from taking a night to sleep on it when you're facing an important decision. We found that the fact that you slept makes your decisions better."

This role of sleep in everyday life is accepted as common wisdom, but it hasn't been well characterized by science until now, she adds. She and her colleagues believe this sleep benefit in making decisions may be due to changes in underlying emotional or cognitive processes. "Our guess is that this enhanced effect on decision-making is something that depends on rapid-eye-movement or REM sleep, which is the creative period of our sleep cycle," the psychologist notes.

Results are in the current early online issue of the *Journal of Sleep Research*.

The UMass Amherst study used the Iowa Gambling Task, a gambling card game that assesses frontal lobe function, where more emotional decisions originate. Spencer explains, "It means that you care about the wins and losses. You care about winning."

To begin, the researchers gave two groups of 18- to 23-year-old college undergraduates a brief morning or afternoon preview of the gambling task, so brief that it was not possible for them to learn its underlying rule. Subjects were then asked to come back in 12 hours. The 28 subjects who got the preview in the afternoon went home to a normal evening and their usual night of sleep while the 26 who received the game preview in the morning came back after a day of normal activities with no naps.

On the second visit, subjects played the full gambling task for long enough to learn that drawing cards from four decks of cards yielded different rewards of play money: Drawing from two advantageous decks yielded low rewards, occasional low losses and a net gain over many draws, while drawing from disadvantageous decks yielded high rewards, occasional high losses and a net loss over many draws. The object was to avoid losing and collect as much play money as possible.

Subjects who got to sleep between the game's brief introduction and the longer play session showed both superior behavioral outcome, that is, more advantageous draws, and superior rule understanding when asked to explain them at the end, than those who did not sleep between sessions.

To assure that time of day didn't explain the different performance between sleep and wake groups, the researchers added two smaller groups

of 17 and 21 subjects to perform both the preview and the full task either in the morning or the evening. All subjects said they had normal sleep patterns (for college students) and the groups didn't differ on overall game skills at the start. Males and females do not differ in game-playing skills, the authors point out, but there were equal numbers in each group.

Provided by University of Massachusetts Amherst