Study shows differences in brain waves between people who recall dreams and those who don't

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(Medical Xpress)—Researchers at Lyon Neuroscience Research Center and University Lyon in France, have found that people who regularly recall their dreams have different alpha brain wave patterns than do people who rarely recall their dreams. They have published a paper describing their research in *Frontiers in Consciousness Research*.

Despite hundreds of years of study, scientists still know very little about

why people dream, how it comes about or why some recall their dreams quite vividly while others rarely remember them at all. To find out if there are any measurable differences between groups of people who recall their dreams and those that don't, the researchers in this latest effort enlisted the assistance of 36 young volunteers—half of whom were described as high recallers (those that remember their dreams almost every night) and half whom were described as low recallers (those that remember their dreams just once or twice a month). Each was connected to an EEG machine and given headphones to wear while they slept. As they did so, the researchers monitored their brain waves, but added a stimulus as well. Each of the volunteers had their first name spoken to them while they were sleeping to see how their brains reacted. To provide an example to compare against, each was also monitored while hearing their name spoken to them while wide awake.

In studying the data, the researchers found that both groups responded when their names were called when they were sleeping, but the high recallers responded more. Quite unexpectedly, the same group also showed brain wave spikes when hearing their name spoken when wide awake. The team also found that the high recallers spent more time awake on average during their sleep cycle than did low recallers (30 minutes compared to 15).

The researchers speculate that high recallers are more reactive to environmental stimuli in general, which explains why their brains would respond more in response to hearing their name called when awake. Why they respond more when sleeping, they add, likely means they are more responsive when dreaming as well, which may or may not be connected to why the same group spends more time awake at night.

More information: Alpha reactivity to first names differs in subjects with high and low dream recall frequency, *Front. Psychol.*, 13 August 2013 DOI: 10.3389/fpsyg.2013.00419

Abstract

Studies in cognitive psychology showed that personality (openness to experience, thin boundaries, absorption), creativity, nocturnal awakenings, and attitude toward dreams are significantly related to dream recall frequency (DRF). These results suggest the possibility of neurophysiological trait differences between subjects with high and low DRF. To test this hypothesis we compared sleep characteristics and alpha reactivity to sounds in subjects with high and low DRF using polysomnographic recordings and electroencephalography (EEG). We acquired EEG from 21 channels in 36 healthy subjects while they were presented with a passive auditory oddball paradigm (frequent standard tones, rare deviant tones and very rare first names) during wakefulness and sleep (intensity, 50 dB above the subject's hearing level). Subjects were selected as High-recallers (HR, DRF = 4.42 ± 0.25 SEM, dream recalls per week) and Low-recallers (LR, DRF = 0.25 ± 0.02) using a questionnaire and an interview on sleep and dream habits. Despite the disturbing setup, the subjects' quality of sleep was generally preserved. First names induced a more sustained decrease in alpha activity in HR than in LR at Pz (1000–1200 ms) during wakefulness, but no group difference was found in REM sleep. The current dominant hypothesis proposes that alpha rhythms would be involved in the active inhibition of the brain regions not involved in the ongoing brain operation. According to this hypothesis, a more sustained alpha decrease in HR would reflect a longer release of inhibition, suggesting a deeper processing of complex sounds than in LR during wakefulness. A possibility to explain the absence of group difference during sleep is that increase in alpha power in HR may have resulted in awakenings. Our results support this hypothesis since HR experienced more intra sleep wakefulness than LR (30 ± 4 vs. 14 ± 4 min). As a whole our results support the hypothesis of neurophysiological trait differences in high and low-recallers.