Tracking and Improving My Sleep

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A New Scientific Finding

Several research studies demonstrated that auditory stimulation during Slow Wave Sleep results in enhancement of Slow Wave Activity and improvements of memory (Ngo, Claussen, Born, Molle, 2013; Tononi, Riedner, Hulse, Ferrarelli, Sarasso, 2010).

Retention of word pairs
What did I do?

Does the effect of sound and stimulation during sleep generalize to the wild?
How Did I Do It?

iPhone Screenshots

Created by neuroscientists:
Sleep deeper and woke up rested.

Track the quality of your sleep.

Compatibility: Requires iOS 5.0 or later. Compatible with iPhone, iPad, and iPod touch. This app is optimized for iPhone 5.

Customer Ratings

We have not received enough ratings to display an average for the current version of this application.

More iPhone Apps by Proactive Life LLC
Overview of Memory Test
Manipulation

• Within Groups Design with 3 conditions:

  - No stimulation
  - 20 minutes of stimulation
  - 40 minutes of stimulation
Other trackers

Hexoskin

Galaxy Gear

Actiwatch
Does stim improve memory?

0 (red) = no stim
1 (green) = 20 mins stim
2 (blue) = 40 mins stim
Does stim improve efficiency?

0 (red) = no stim
1 (green) = 20 mins stim
2 (blue) = 40 mins stim
Does stim improve alertness?

0 (red) = no stim
1 (green) = 20 mins stim
2 (blue) = 40 mins stim
Did the stim noticed?

0 (red) = no stim
1 (green) = 20 mins stim
2 (blue) = 40 mins stim
What did I Learn?

Auditory stimulation didn’t work

The stimulation was noticed (not good)
Actiwatch Produces Big Data

Over 200 nights of data 😊
A Week Of Data: 8-13-14

bedtime = 12:58:00 AM waketime = 9:14:00 AM efficiency = 84
A Week Of Data: 8-14-14

bedtime = 1:41:30 AM waketime = 8:46:00 AM efficiency = 83
bedtime = 2:59:15 AM waketime = 8:06:45 AM efficiency = 90
A Week Of Data: 8-16-14

bedtime = 1:40:45 AM waketime = 12:41:15 PM efficiency = 79
bedtime = 2:22:15 PM waketime = 12:41:15 PM efficiency = 79
A Week Of Data: 8-17-14

bedtime = 12:45:30 AM waketime = 8:31:30 AM efficiency = 93
A Week Of Data: 8-18-14

bedtime = 3:26:45 AM waketime = 8:56:45 AM efficiency = 94
A Week Of Data: 8-19-14

Bedtime = 12:17:00 AM, Waketime = 8:45:30 AM, Efficiency = 94
What did I Learn?

In terms of making inferences about sleep, continuous data can in some situations be more informative than more accurate data that has less continuity.
How about the Hexoskin?

Measures:
Motion,
Breathing,
Heart
Can Breathing and Heart data improve sleep detection?
Heart rate has been used by sleep researchers to detect deep sleep (Bartsch, et al., 2012; Hamann, et al., 2009; Shinar et al., 2001; ).

Issue of comfort
Some Problems With Sensitivity

Heart rate has been used by sleep researchers to detect deep sleep (Bartsch, et al., 2012; Hamann, et al., 2009; Shinar et al., 2001;)

Issue of comfort
What did I Learn?

A good system ought to have as much accurate reliable data as possible and be as contiguous as possible.
What did I Learn?

Learned more about the difficulties of doing research in the wild than the veracity of the scientific question.
For sleep, the current state of technologies still has a ways to go… maybe the Apple Watch can help