

Sleep and Motivation

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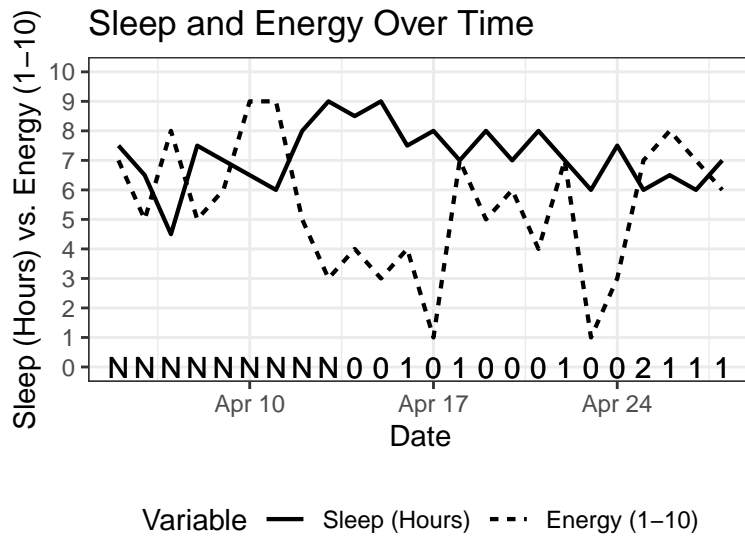
Sleep and Motivation

I kept track of my hours of sleep, motivation level, and energy level for three weeks from April 5 to April 28, 2023. I found these results interesting enough to publish. The tl;dr is that getting excited at night about something you are doing the next day can drastically increase your energy levels the following day. Having a locus of motivation when you go to bed has a more positive impact on energy levels than getting an extra hour of sleep.

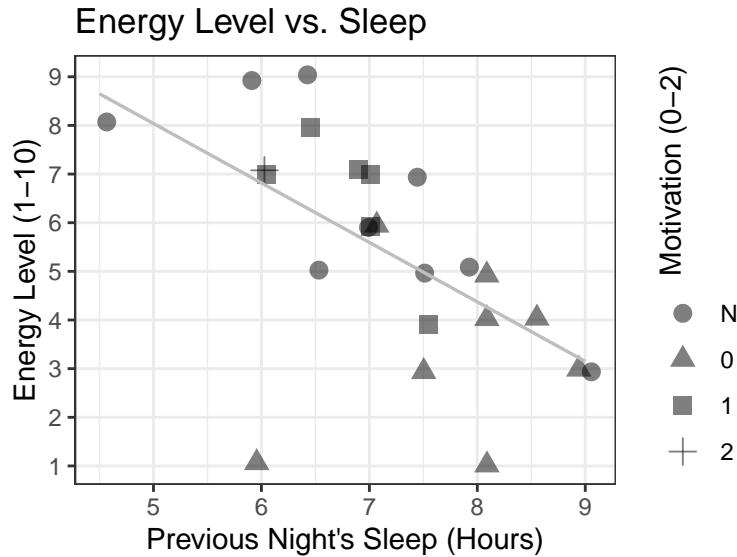
Definitions:

- **Sleep (Hours):** Number of hours of sleep I got the previous night, rounded to the nearest 0.5 hours.
- **Motivation (No Data [N], 0, 1, 2):** Boolean value for whether or not I am excited about something the next day when went to sleep the previous night. Examples are: thinking about a math problem I want to understand, having a presentation I know I've prepared well for, or getting up early to submit an assignment before class. I started tracking my motivation about 9 days into data collection. There was only one day for which I had a motivation level of 2.
- **Energy Level (1-10):** Self-evaluated energy level throughout the day. Includes focus, productivity, and happiness that day. Evaluated by reflecting on my whole day the first time I returned to my room after 6pm.

Analysis

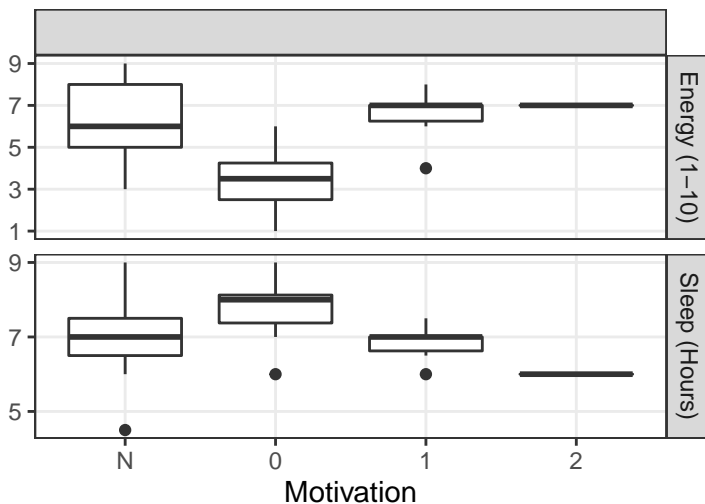


Okay, so my sleep data is probably pretty typical for an Oliner. I got an average of around 7 hours of sleep, with certain periods above and below. The second half of this semester has been hard for me to find motivation for, because I'm not as interested in most of my classes as I usually am. I am normally proud of having very high motivation and energy for the things I do, especially for my classes, so for me, an average energy level of 5.5 out of 10 is disappointingly low. If I could choose, a slow day for me would be a 6, and I could consistently target 7's and 8's., but I have had several consecutive days below 4 in the last month. My motivation level the previous night is annotated for each day along the bottom of the graph.



It appears that my energy level is inversely correlated with sleep, with an extra hour of sleep correlating with a drop of just over one point in energy. The correlation coefficient is 0.57, so it's not a fully robust conclusion. Two distinct regions emerge: high-motivation and low-motivation days. The high-motivation data points are clustered around lower sleep (median 6 hours) and higher energy (median 7 out of 10). The low-motivation data points are skewed towards longer sleep (median 8 hours) and lower energy (median 3.5 out of 10). Before I started collecting motivation data, I was also skewed towards more energy and lower sleep, although it spans a wider range.

Energy and Sleep Distributions vs. Motivation



My explanation for this is when I am excited for something the next day (remember, motivation is scored

when I go to bed the night before), then I am more likely to set my alarm earlier, get right out of bed, and/or wake up before my alarm. Being excited about something gives me energy through anticipation and just doing the thing I am motivated for.

The data appear to suggest a causation: Higher motivation leads to less sleep and higher energy; sleep is either not directly correlated with energy or is inversely correlated. This could lead to the conclusion that sleep is unimportant for energy. However, this needs to be interpreted cautiously for a few reasons besides the fact that it contradicts common sense.

First, shown here is only the correlation for *instantaneous* motivation, sleep, and energy—the values for a single day. If there is a lag between the effect of sleep and energy, for example, then it will not show up on this correlation plot. Second, so far I only have 23 days worth of data, which is not statistically significant and does not contain long-term trends. Last and most importantly, my energy level does not necessarily mean good physical health. I annotated a couple days on my data collection sheet when my energy level was high but I was feeling the physical effects of lack of sleep. For example, on April 25, I wrote “*feel sluggish. Mental capacity low, energy/excitement still high, motivation to keep going.*” I can thrive on mental energy and motivation alone, but I can’t survive on it.

Conclusion

With those caveats aside, the data clearly show the importance of motivation on energy. In particular, I tracked how motivated I was for something the next day at the time I went to sleep and found that it had a big impact on my energy the next day. Smaller amounts of sleep were correlated with both greater motivation and higher energy, suggesting that motivation is more important than raw hours of sleep for short-term energy levels.

Now, this is an actionable finding! If you wish to increase your energy level during the day, it pays to think of something you are looking forward to the next day, and get yourself excited about it. You’re going to ace that presentation. Hype up; visualize it. If there’s nothing you’re inherently excited about, pick something you know you will be doing—even your morning routine—and think about how special it will be tomorrow. Know that you’re going to do it right when you get out of bed, and know that it will give you a good start to your day—even just by thinking about it. Good luck!