Sleep quality as predictor of self-reported mood state: A longitudinal n-of-1 case study

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Abstract

Prior work has established the relationship between sleep and mood states. I propose an N-of-1 time series analysis of sleep data in order to predict self-reported mood data. The sleep dataset was created using the Oura Ring (a highly-accurate consumer-grade wearable device) and contains four years of heart rate variability, resting heart rate, breathing rate, body temperature, sleep bout length, sleep/wake timing, physical activity. The mood dataset contains roughly 200 observations of each mood type over the same period. These observations range from 0 (where the mood type is absent) to 4 (where the mood is present and extreme). I will perform an exploratory analysis to better understand how these sleep metrics can predict mood states. Specifically, I hypothesize that (1) the relationship between sleep length and mood intensity will be strong, and, (2) that there is a patterned delay (1-2 days) between reduced sleep quality and negative mood intensity.