My Biological Rhythms (In Sickness and In Health)

(AKA I wore all the wearables in my house for a week).

By Azure Grant.

1) Stomach Activity
2) Heart Rate
3) HRV RMSSD
4) HRV SDNN

5) Distal Temp
6) Axial Temp
7) Core Temp

8) Blood Glucose
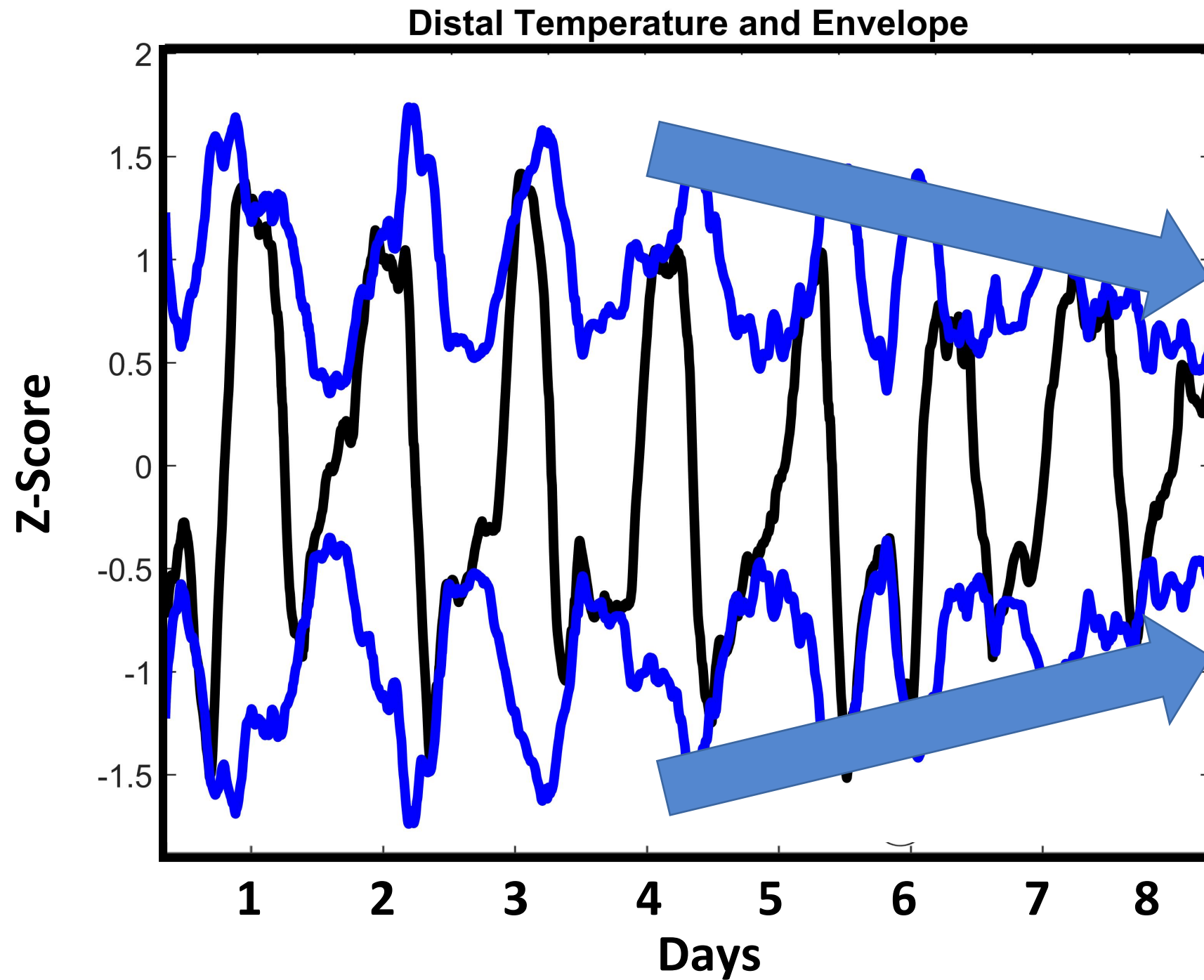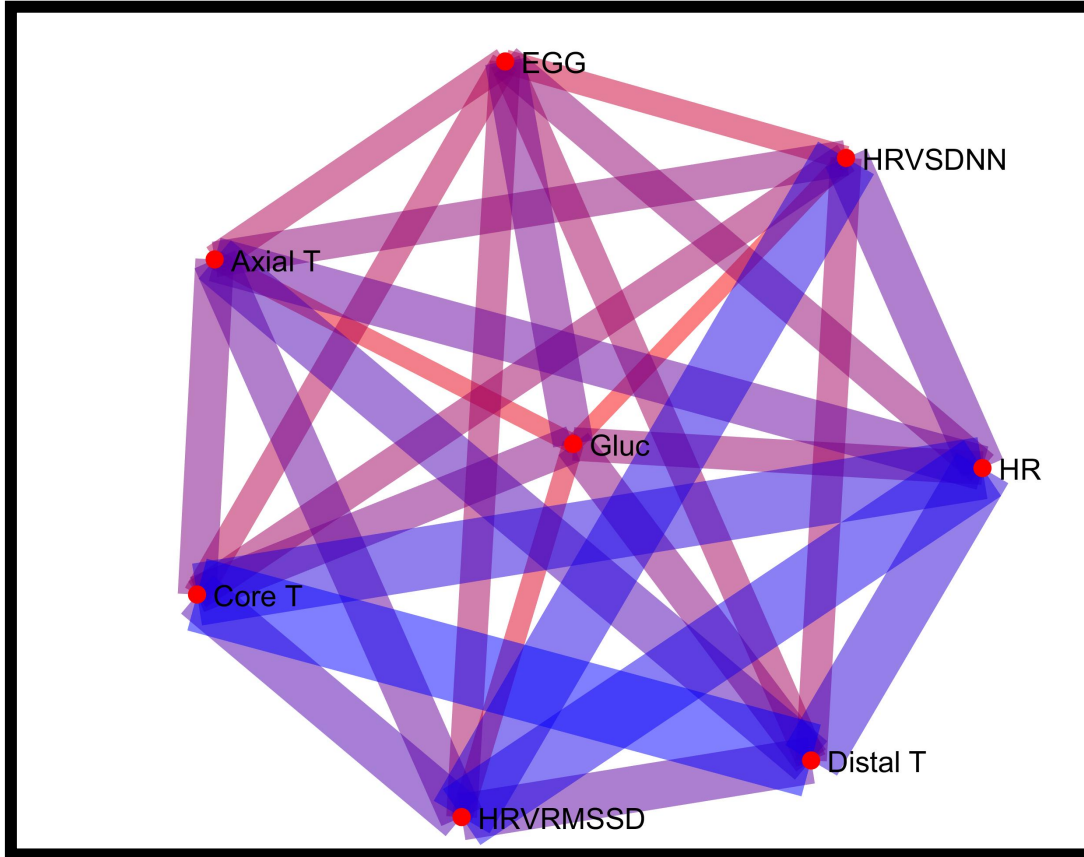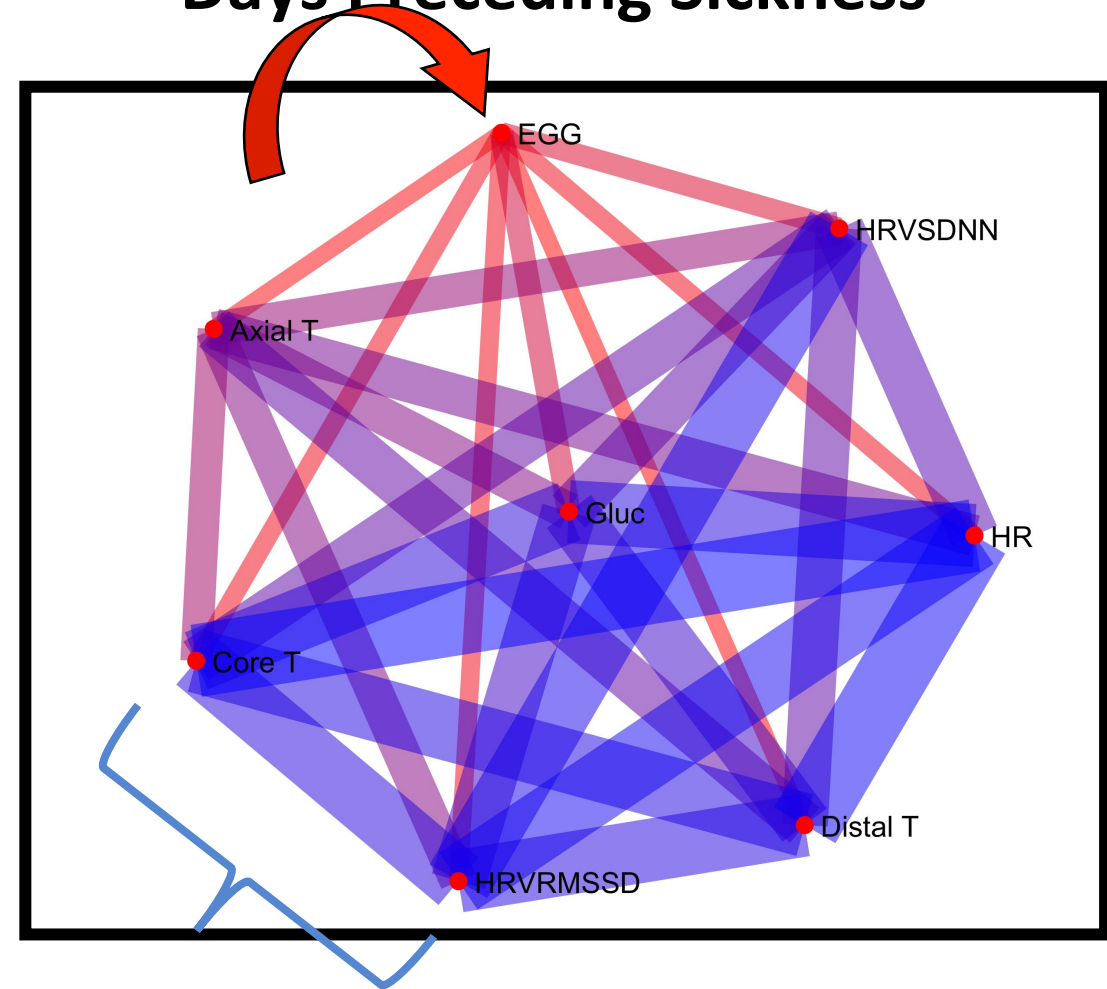
← Food, Sleep, & Event Log

*Image from Gharibans et al., 2018

**Distal Temperature and Envelope**

Daily Rhythm Coherence (Wider and Blue Edges are Stronger) of All Nodes

On Healthy Days   and   Days Preceding Sickness

Healthy Days Have More Distributed, Moderate Coherence . (Lots of purple-ish blue)

Days preceding illness show much lower coherence with stomach activity (thinner, redder lines), but higher coherence among heart rate and temperature metrics
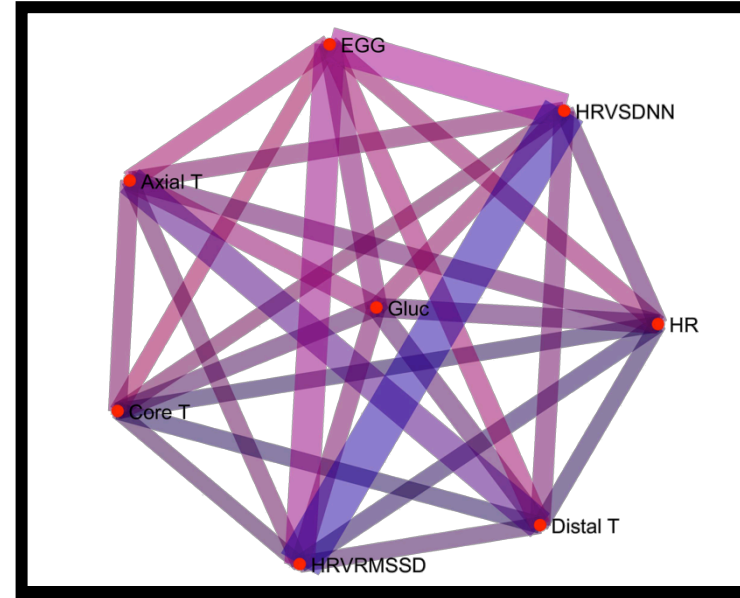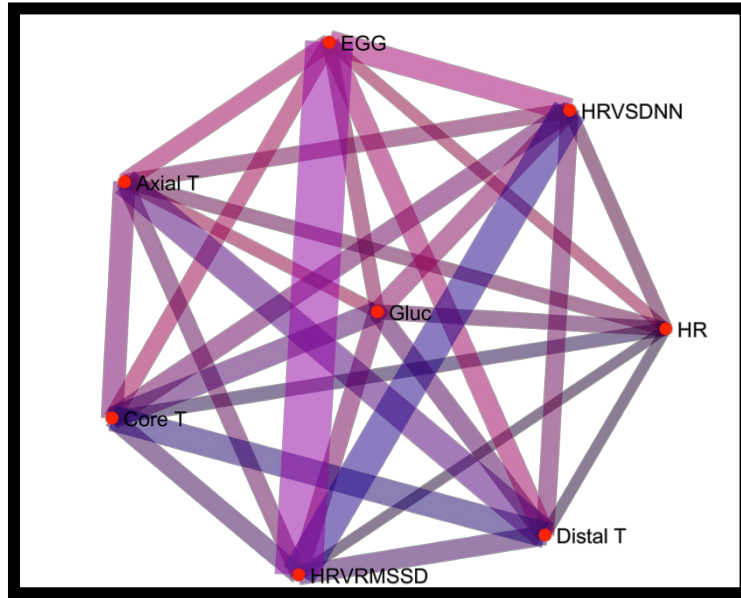
Mixed.

Wake Only

Sleep Only
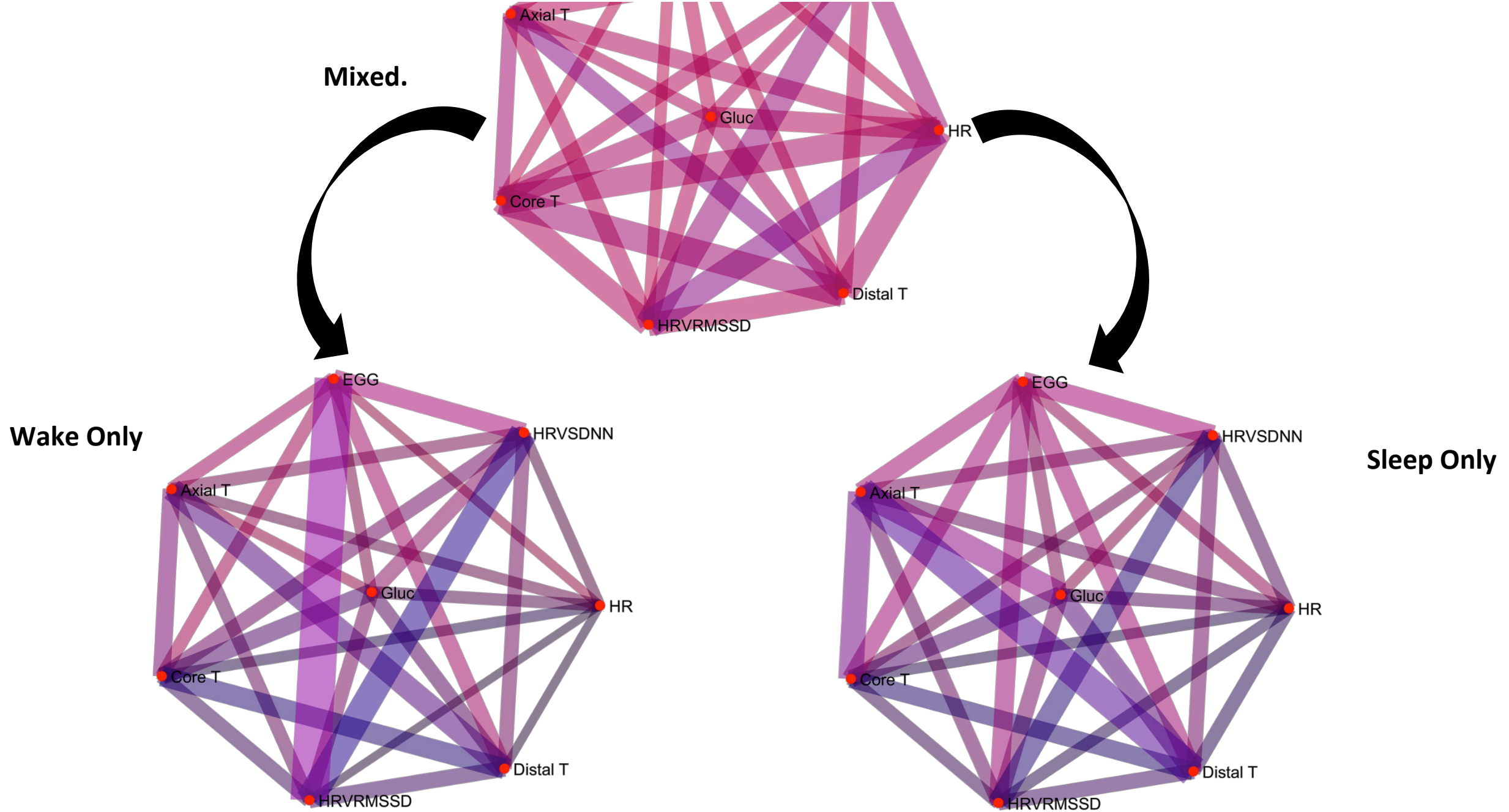
UR Networks Must Be Separated by Day vs. Night: Different Periodicities Dominate

URs get Weaker Leading Up to Sickness

What I learned?

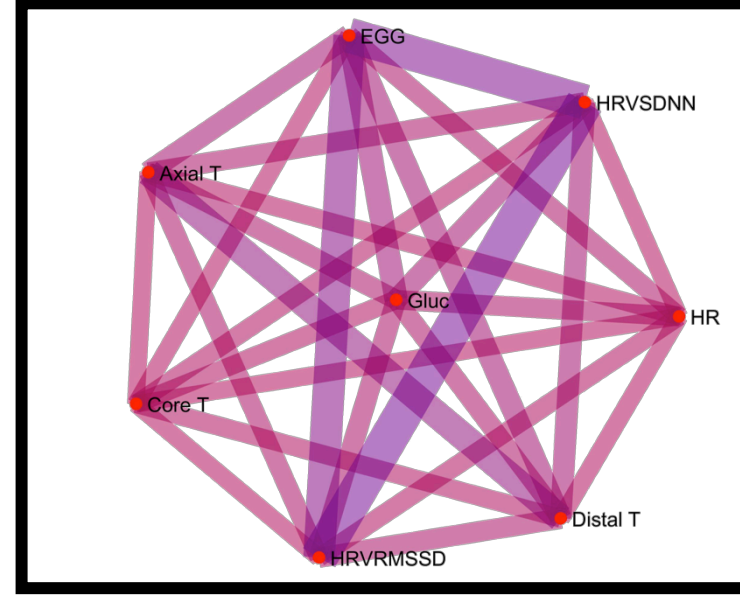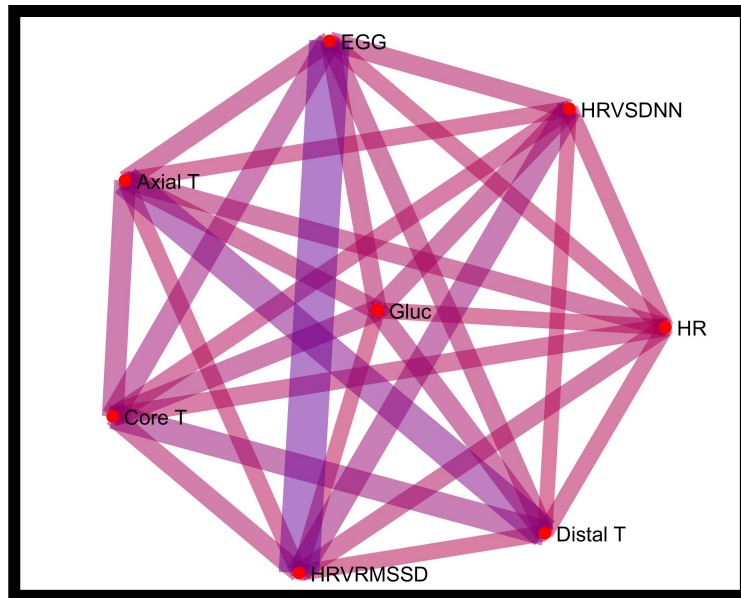- *Coordination among my biological rhythms is perturbed days before I am aware I'm getting sick.*
- When I'm getting sick: the coordination between my gut's circadian rhythms and all other outputs becomes very weak.
- My Ultradian Rhythms (Timescale of daily meals, and nightly sleep cycles) become weaker when I'm getting sick
- None of this would have been obvious to my eye: it was way too much information to look at. Nor did the linear average of each signal change. Different signals were perturbed in different ways (some phase, some range). This meant that the coordination among rhythms in different outputs was the overall structure that began to suffer.
- I'd like to repeat this again (hopefully without getting sick afterwards) to see how consistent my healthy baseline is.
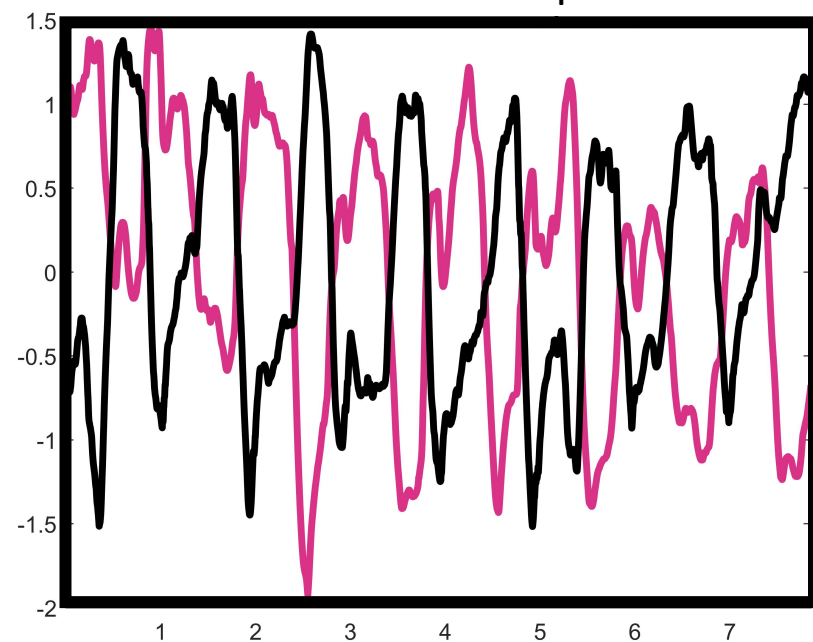
Glucose and Distal Temp
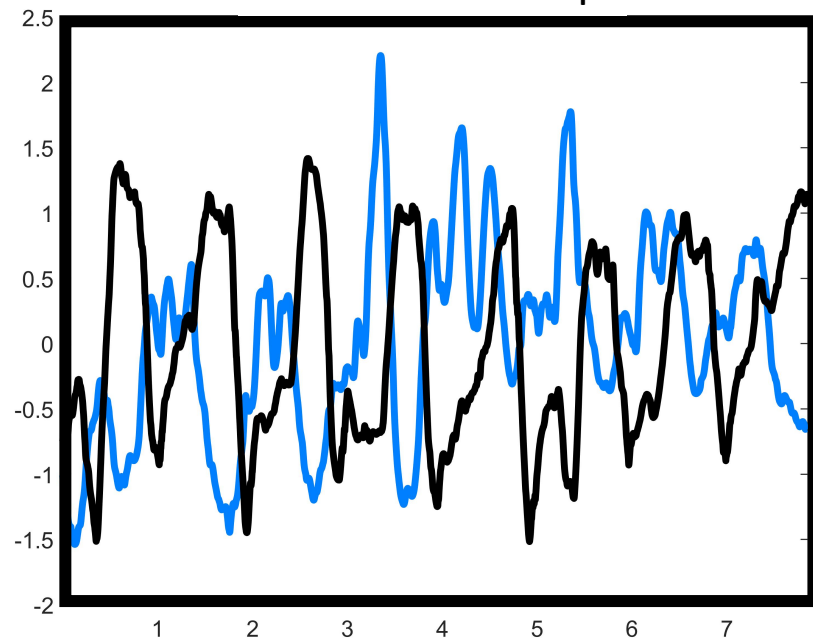
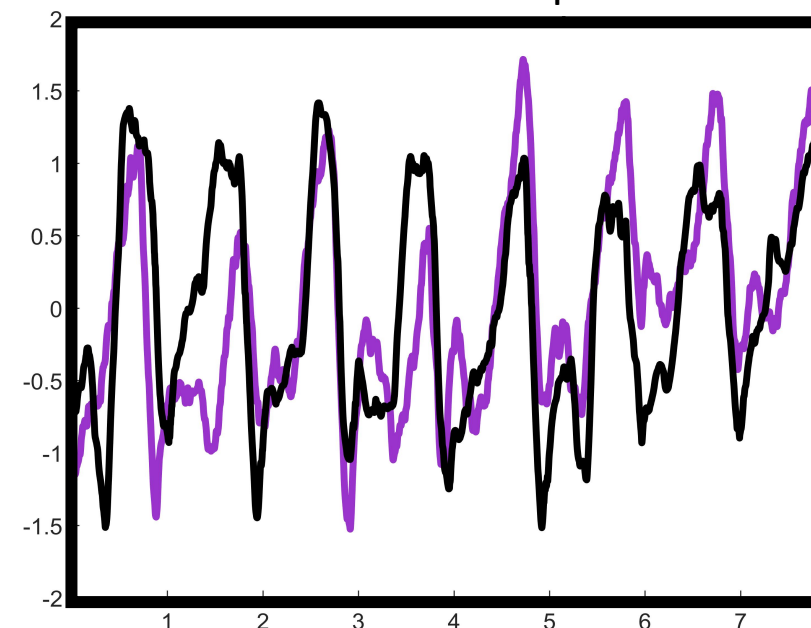**Glucose** and **Stomach Activity**
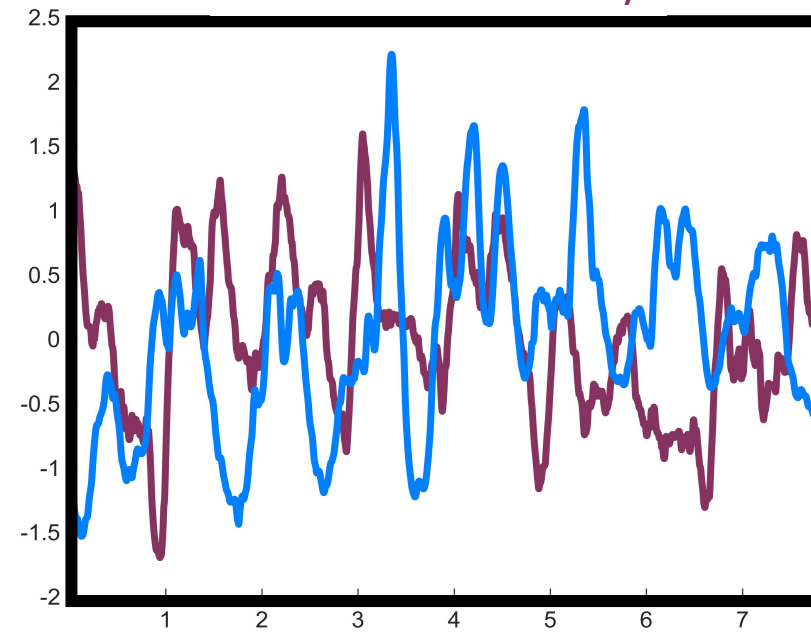
Core and Distal Temp

HRV and Distal Temp

Z-Score

Days

Extract a measure (Coherence) of the coordination of activity between outputs. Each Line represents *a pair rhythms coordinated activity*. These tell us that 24 h (daily), 1-2 h and 3-4 h rhythms are doing something interesting – but are still too complicated to understand holistically