Title: Dichotomy of objective versus subjective sleep in older men and women

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Analytic Plan

Compared to older men, older women disproportionately complain of insomnia. There have been mixed results in the literature as to whether the objective sleep of older women is any different from that of older men. It may, however, be that given the same objective sleep, older women perceive their sleep to be worse than do older men. Using multivariate modeling, we propose to examine how men (MrOS) and women (SOF) perceive sleep by examining the PSG morning survey (subjective sleep quality) in relation to sleep polysomnography variables (sleep efficiency, wake after sleep onset, total sleep time, number of transitions, time spent in N3 sleep, apnea-hypopnea index), age, race, and mood variables (Goldberg Anxiety Scale, Geriatric Depression Scale).

Datasets to be used:
Both SOF and MrOS:
Baseline [Education level, Race, Age, Socioeconomic status]
Visit 8 (SOF)/Sleep2 (MrOS) [Geriatric Depression Scale, Goldberg Anxiety Scale, Pittsburgh Sleep Quality Index, Polysomnography, Psg morning survey, General self-reported medical conditions, Teng Modified Mini-Mental State Exam 3MS (MrOS) or short MMSE (SOF)].

Covariates
Potential covariates include but are not limited to age, education, race, socioeconomic status.

**Background**
It is commonly accepted in the field of insomnia that women report having worse sleep than do men. It is not known, however, if given the same measurable objective sleep, whether men and women have the same subjective evaluation. In other words, do older women and men have equally poor sleep but the women just complain more, or is there a more complicated relationship? Factors that might influence both objective and subjective sleep in older individuals include health status, cognitive status, mood (depression, anxiety), as well as other covariates such as age, education, socioeconomic status, and race.

**Research Hypotheses**
We wish to test the hypotheses that:
1. There is a mismatch between objective and subjective sleep in older individuals
2. The mismatch between objective and subjective sleep is greater in older women than in older men
3. The relationship between objective and subjective sleep in both sexes is modulated by mood state (depression/anxiety)

**Statistical Analysis**
These hypotheses will be tested by using multivariate analysis, making both comparisons between “identical” objective and subjective measures of sleep by sex (e.g., WASO from the morning survey vs. WASO from the PSG) and between global subjective measures of sleep and specific objective sleep measures (e.g., subjective sleep quality assessment from the morning survey vs. objective WASO from the PSG). Moderator and mediator analyses will be conducted to examine the relative contribution of demographic covariates (educational level, race, age, socioeconomic status), sleep health covariates (PSQI), cognitive covariates (global cognitive function), and emotional covariates (depression, anxiety).

**Plan for abstract?** Yes

**Who will do the analyses?** Dr. Friedman

**Sample plots**

This graph is taken from one of our published articles that examined the relationship between subjective “restedness” at the end of a night and subjective sleep efficiency during the same night in a group of older individuals with insomnia. The two lines (grey/black) represent different genotypes and are linear regressions with 95% confidence intervals. As can be seen in this type of analysis, the non-overlapping confidence intervals...
only occur at subjective sleep efficiencies less than 70%. This indicates that the relationship between restedness and sleep efficiency is different by genotypes below 70% subjective sleep efficiency (i.e., only when sleep is sufficiently poor does the difference in how rested the different populations feel become evident). We intend to do similar analyses in the current project but splitting the population based on sex instead of on different genotypes.

References:
