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Predicting day-to-day variation in sleep duration and and sleep quality

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CONCLUSION

Sleep duration is closely related to the working week / weekend, stress and alcohol. Sleep qualite is also closely related to stress/worries at bedtime, but apparently a late awakening may improve the perception of sleep quality somewhat.

Introduction

Nothing is known about the day-to-day relation of stress and sleep, across a number of days. Are the hassles of daily life related to the experience of the daily sleep episode. The present study addressed the latter question. Other, related, variables of interest is whether a particular day is one of work or not and whether alcohol has been involved. It may also be important to control for prior sleep behavior.

Aim

The present study investigated the longitudinal relation between sleep quality and sleep duration on the one hand and perceived stress, alcohol consumption, work/leisure, and prior sleep, on the other.

Methods

50 individuals aged 18-60 (35% males) participated. All filled out the Karolinska Sleep diary in the morning and the wake diary at bedtime across 42 days. They also wore actigraphs for 42 days.

The sleep diary contained items like bedtime, time of rising, difficult falling asleep, waking up too early, restless sleep, sleep quality (scored 1-5(easy, no, no, very well). The last 4 constituted the sleep quality index. Alcohol, weekday/weekend were scored 1/0.

Each day also contained 4-hourly ratings of stress (1-9extreme).

The results were analyzed using a mixed models approach, adjusting for gender, age and progression time in experiment.

Results

The day-to-day variation of TST (in minutes) was predicted by:

- **Weekend** (coeff=33.6±4.4, z=7.6, <.001),
- **Stress/Worries at** bedtime (=16.6±2.8, z=6.02, p<.001),
- **Alcohol** (c=-67.2±12.8, z=-.3, p<.001),
- **Day average of stress** (-9.2±2.4, z=-3.4, p<.001).

No effects were seen for prior time awake or prior sleep duration.

Thus, **TST would change** in the following way between maximum and minimum values of the predictor:

- Before a Day off = +34 minutes
- After alcohol = -67 minutes
- After evening stress = -83 minutes
- After a day of stress = -82 minutes

The **day-to-day variation of sleep quality** was predicted by:

- Stress/worries at bedtime (0.30±.02, z=14.9, p<.001)
- Time of awakening (0.05±.01, z=5.7, p<.01

Thus, **sleep quality (1-5) would change** in the following way between maximum and minimum values of the predictor:

- After evening stress = -1.5 units
- After extended sleep = +0.4 units

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