

# The longitudinal day-to-day prediction of sleepiness from the day-to-day variation in prior sleep

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## Conclusion:

The daily variation in reported sleepiness is mainly determined by the duration of prior sleep and by illness.

## Background

Sleepiness is present in many aspects of life – sleep pathology, shift-work, sleep curtailment in general, probably also as subtle variations in daily life. This has never been investigated, however. The present study sought to relate the daily mean level of sleepiness to the amount of reported sleep in the prior night across a period of 42 days in 50 individuals.

## Results

The mixed model analysis (below) shows that the main multivariate predictors were prior TST and illness. The coefficient for the former corresponds to 0.17 units of sleepiness (KSS) for each hour of sleep, meaning that a reduction of 2 hours of sleep yields an increase in sleepiness of 0.32 units. The modest gradient probably reflects the modest variation in sleep duration (446±96 min).

Sleepiness	Multivariate			Univariate			Z <sup>p</sup>	SD random
	Fixed effect Coeff	Se	Z <sup>p</sup>	Fixed effect Coeff	Se	const		
Time of awoken	0.064	0.017	3.69 <sup>c</sup>	-0.061	0.013	4.64	4.01 <sup>c</sup>	0.901
<b>TST (h)</b>	<b>-0.166</b>	<b>0.012</b>	<b>10.2<sup>c</sup></b>	<b>-0.150</b>	<b>0.013</b>	<b>5.34</b>	<b>-11.70<sup>c</sup></b>	<b>0.930</b>
iSleep quality	-0.099	0.033	3.05 <sup>b</sup>	-0.231	0.030	5.13	-7.98 <sup>c</sup>	0.855
Stress average	0.048	0.027	1.97	0.079	0.025	4.03	3.18 <sup>c</sup>	0.865
Worries/stress	0.028	0.030	0.92	-0.149	0.027	4.85	-5.44 <sup>c</sup>	0.856
Weekend	0.080	0.047	1.71	-0.148	0.041	4.22	-3.62 <sup>c</sup>	0.880
<b>illness</b>	<b>-0.459</b>	<b>0.046</b>	<b>9.77<sup>c</sup></b>	<b>-0.385</b>	<b>0.046</b>	<b>6.05</b>	<b>8.64<sup>c</sup></b>	<b>0.861</b>
Constant	7.85	0.334	23.50 <sup>c</sup>					

a=p<.05; b=p<.01; c=p<.001

## Methods

50 individuals rated their sleep once a day (Karolinska Sleep Diary) and their sleepiness Karolinska Sleepiness Scale (KSS) on rising and bedtime and every three hours in between. The duration of the study was 42 days. The data was analyzed using a mixed model regression with KSS as the dependent variable and the listed variables above as predictors (fixed factors).

## CONTACT