

Associations between mental health and academic performance, sleep behaviors, trait and daily behaviors in college students

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Introduction

The SNAPSHOT Study is a large-scale and long-term study that seeks to measure: **S**leep, **N**etworks, **A**ffect, **P**erformance, **S**tress, and **H**ealth using **O**bjective **T**echniques.

This study investigates (1) how daily behaviors influence sleep, stress, mood, and other wellbeing-related factors (2) how accurately we can recognize/predict stress, mood and wellbeing (3) how interactions in a social network influence sleep behaviors.

This poster introduces our study, population and results about the associations between mental health and daily behaviors in college students.

Methods

Participants

116 undergraduate students at one university (age: 18-25, 19.6 ± 1.5, male: 78) ~30-day experiment



Measurement

1) Wearable Sensors (on wrist)

Q-sensor, (Affectiva) & MotionLogger (AMI)
Acceleration : activity patterns
Skin conductance: a marker of sympathetic activity

2) Phone (Android): Social Interaction

Phone & SMS usage, Screen on/off, Location



3) Email (through <https://immersion.media.mit.edu/>)

To, From, Cc, timestamps

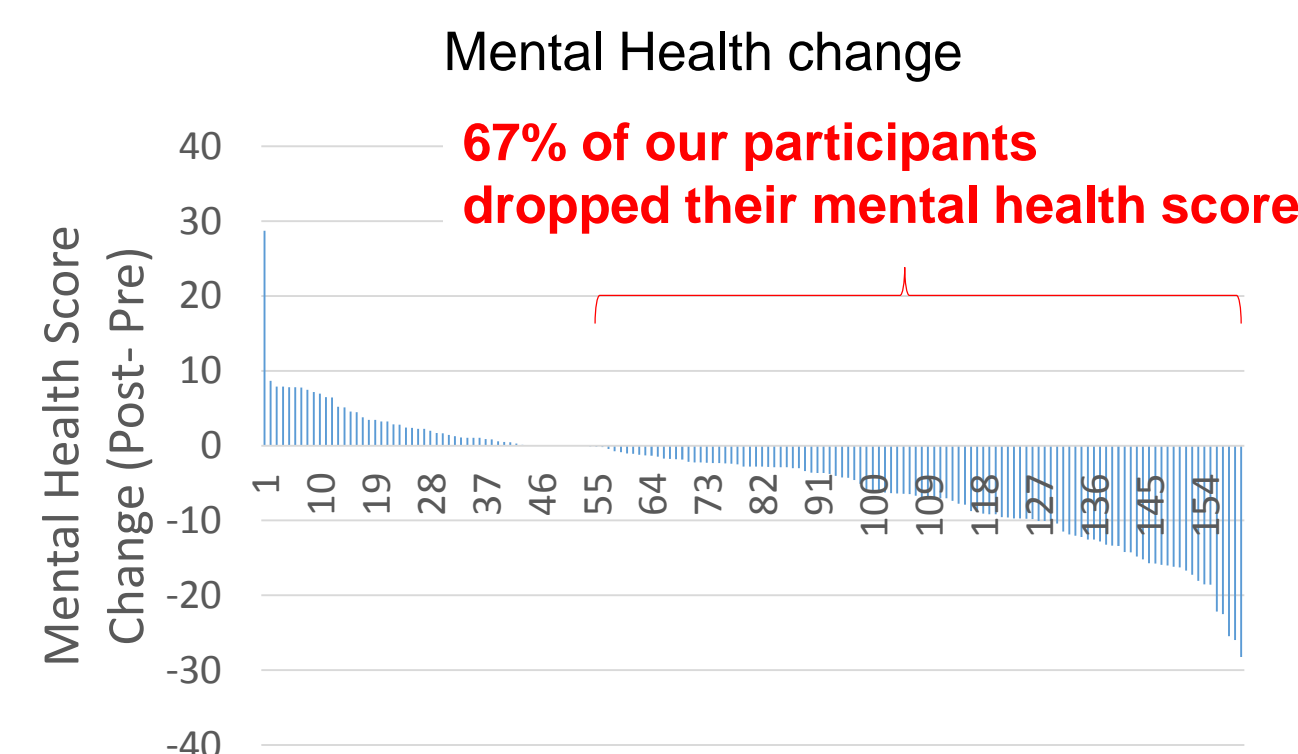
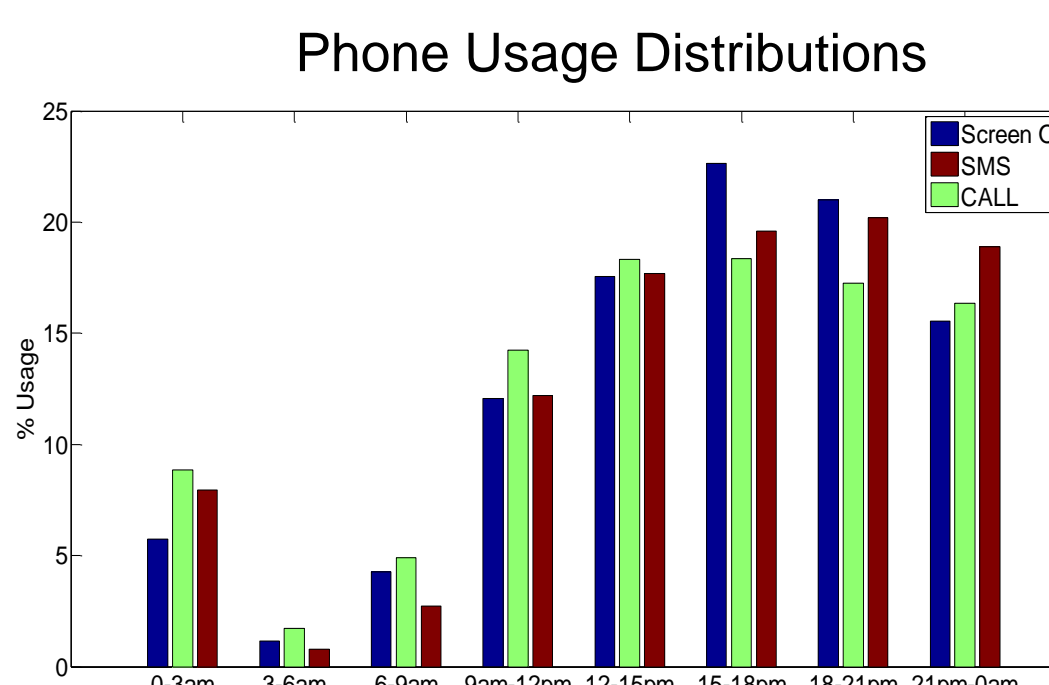
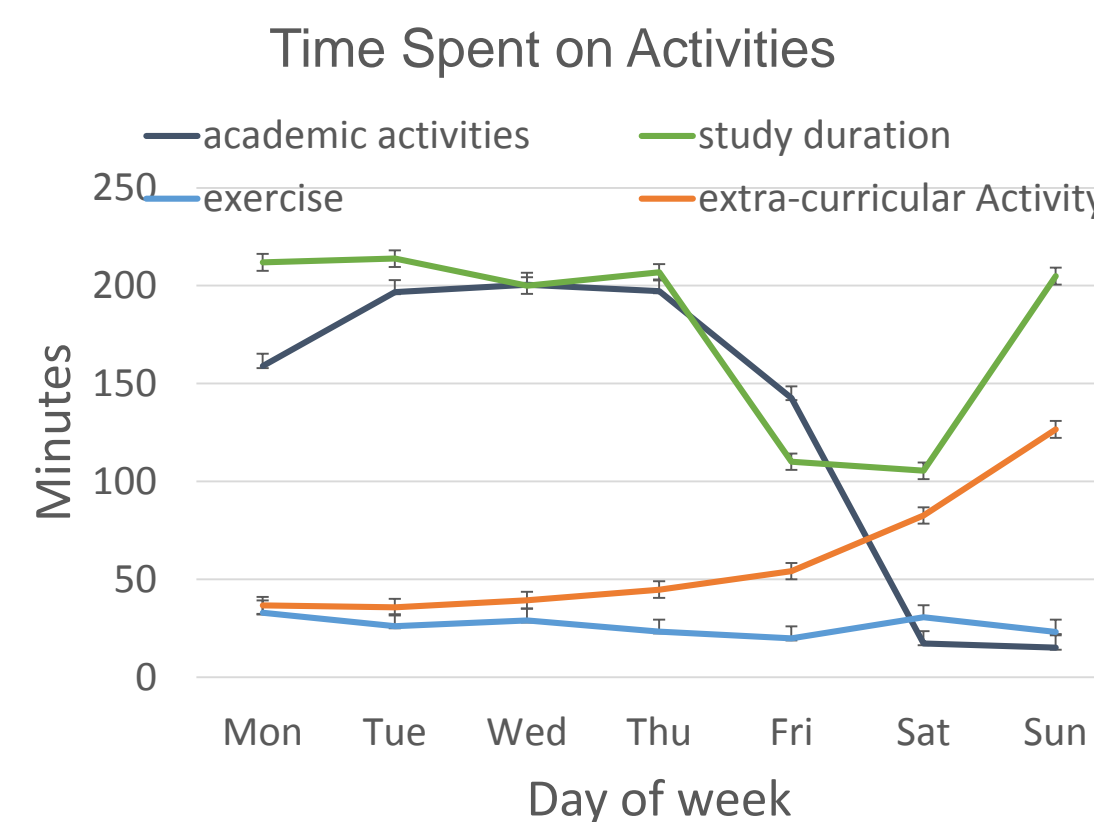
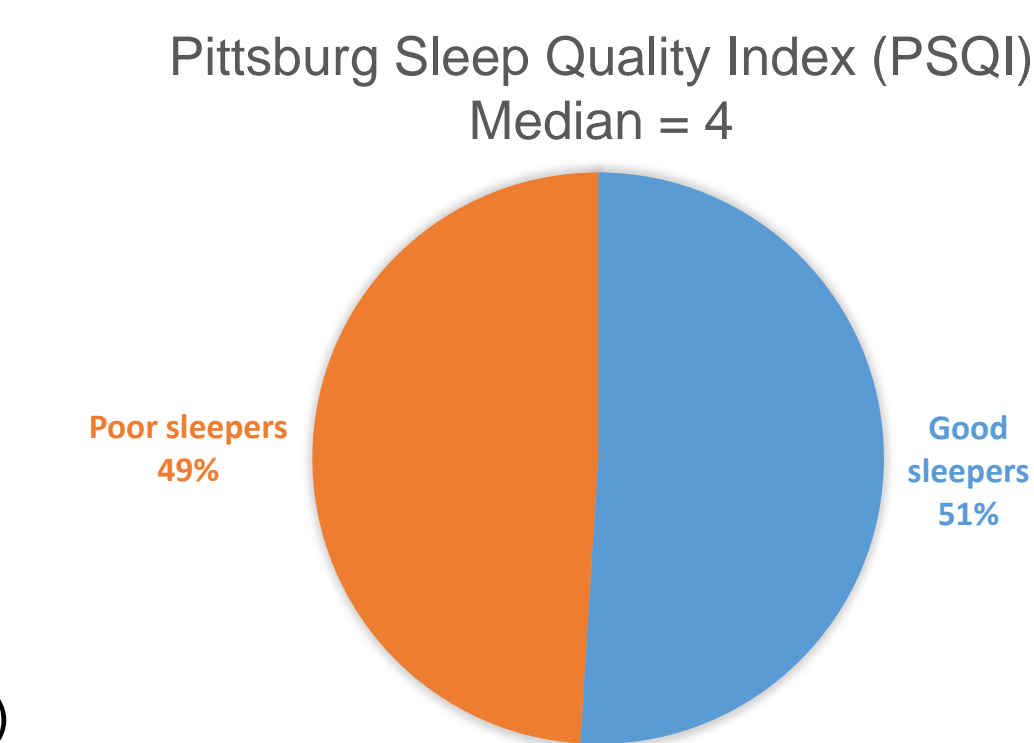
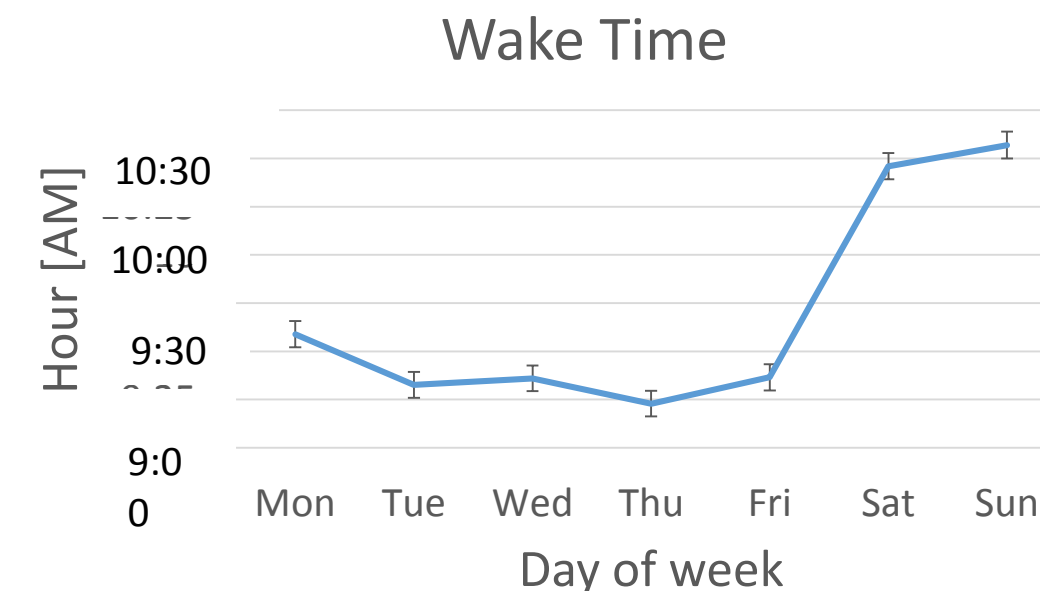
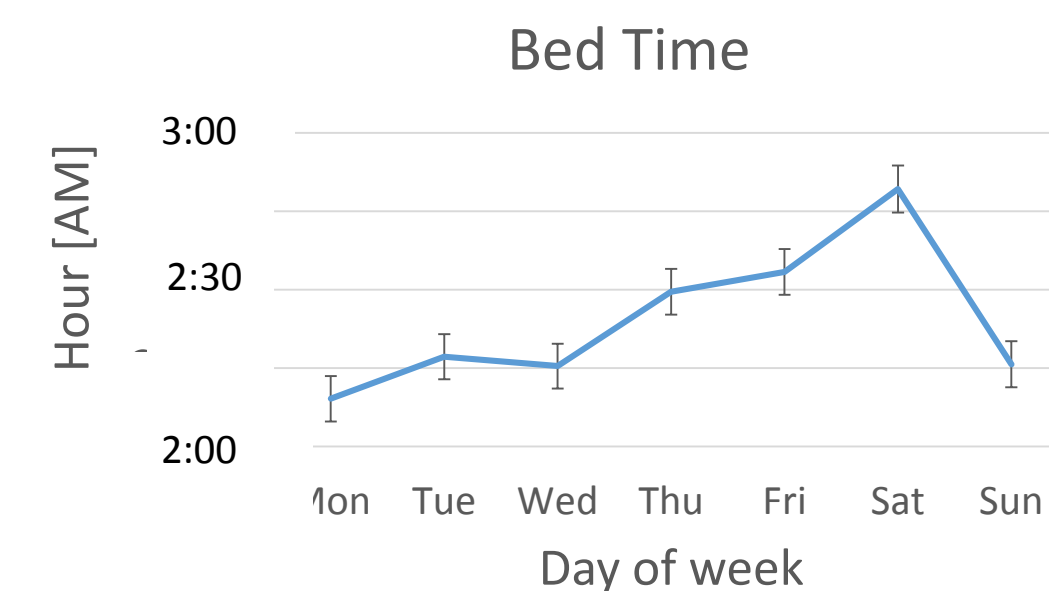
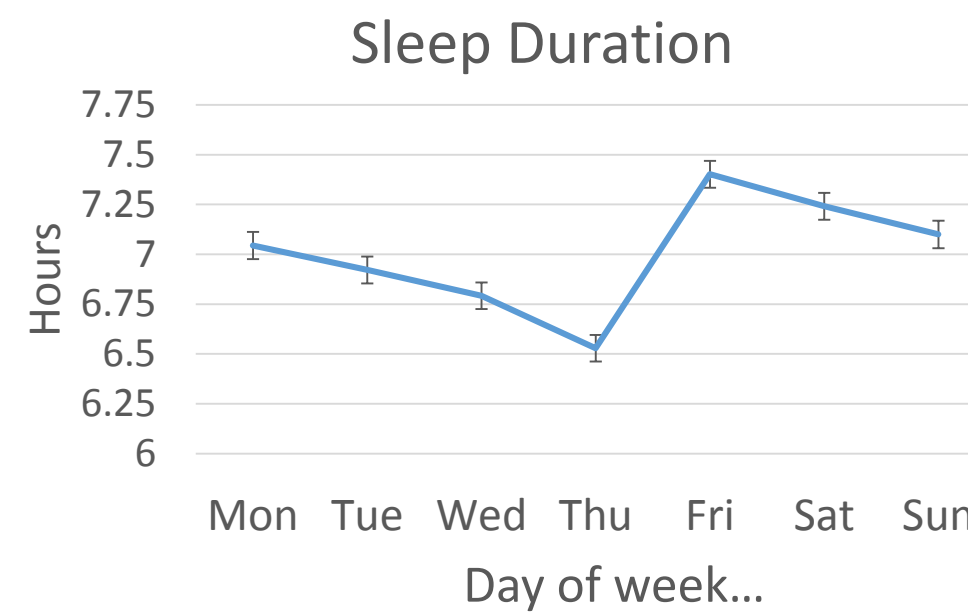
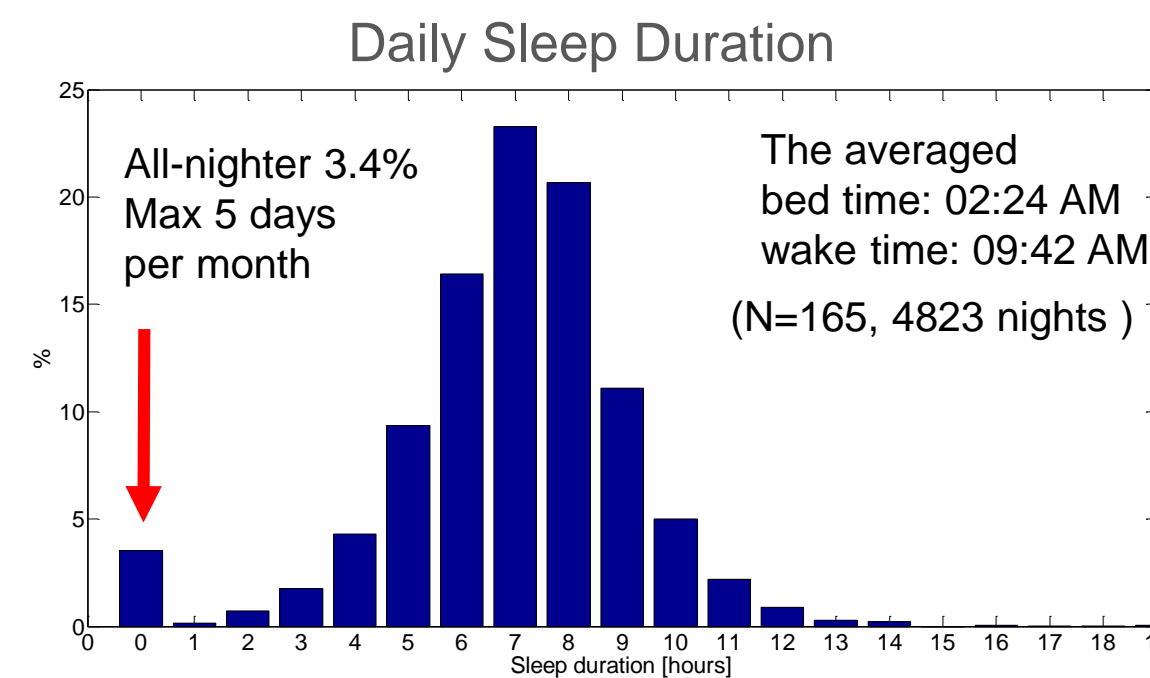


4) Surveys

Pre/post-study and morning/evening surveys (details below)

Pre-study (once)	8 surveys about demographics, morningness-eveningness, sleep habit, personality, stress, mental and physical health and social interactions
Daily survey (every morning and evening)	16 morning questions, 18 evening questions about academic, exercise, extracurricular activity, sleep, caffeinated/alcoholic drink and drug intake, social interactions, wellbeing-related measures (alertness, happiness, energy, healthiness and calmness)
Post-study (once)	5 surveys about stress, anxiety, mental and physical health and social interactions

Our Population



Analysis

We analyzed the association of change of mental health score (MCS post - MCS pre) with academic performance (GPA), sleep behaviors (sleep duration, bedtime, waketime, regularity, latency and Pittsburg Sleep Quality Index (PSQI)), anxiety, daily activities, phone usage and skin conductance.

We split the participants into two groups:

1) MCS change ≥ 0 "increase" group and 2) MCS change < 0 "decrease" group.

We used coarsened exact matching to control several covariates (gender, year and MCS pre) and then, applied t-test or Mann-Whitney U test (for parameters with non-Gaussian distributions) to compare how these two groups differ.

Results

Mental Health increase group (N=13)

Mental Health decrease group (N=25)



** p < 0.01 * p < 0.05



4.5	GPA*	4.2
3.8	PSQI (>5: poor sleepers)*	4.8
32	State Anxiety*	39
9.3	Sleep Latency [min] **	18.7
54	Extra Curricular activity [min] *	33
1.4	Phone usage (% of 24hr phone usage occurring during 3-6am) *	2.5
0.60	Skin conductance amplitude SD (day time during sitting) (p=0.06)	0.80
0.37	Skin conductance median 2Q sleep (p=0.07)	0.56

Conclusions

Our analysis showed we can measure statistically significant factors in college students daily life that are related to mental health drop.

Acknowledgments

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