

The Essential Role of Sleep in College Mental Health

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Our modern lifestyle creates a culture of **somnorexia**.



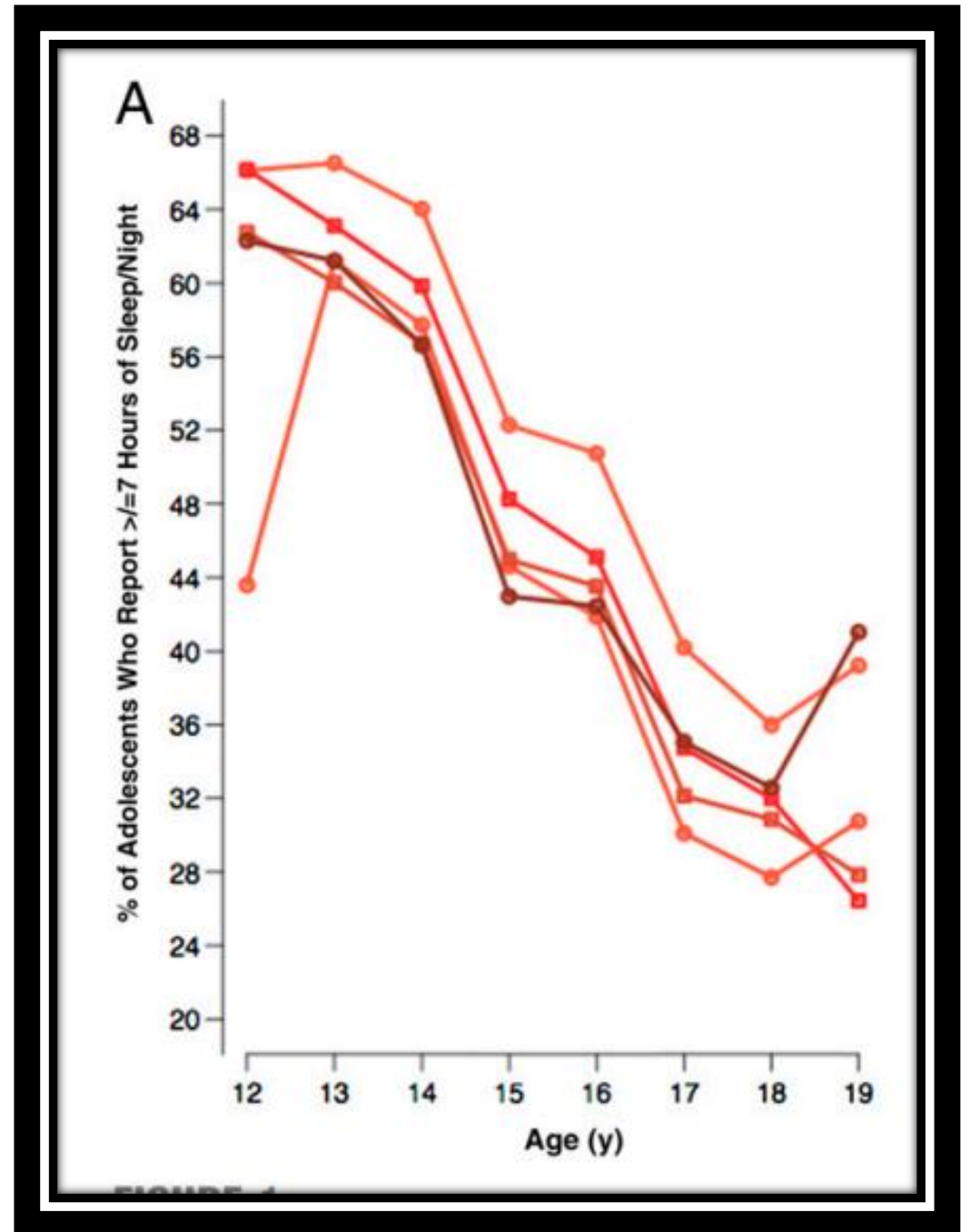
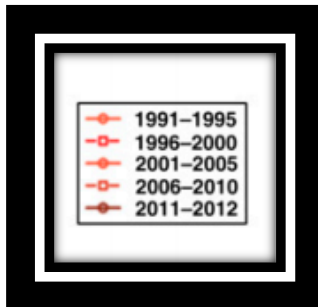
As a society, we get 20% less sleep than our ancestors only 100 years ago, and have 90 min less time in bed on weeknights than 50 years ago.

The Great Sleep Recession: Changes in Sleep Duration Among US Adolescents, 1991–2012

Katherine M. Keyes, PhD^a, Julie Maslowsky, PhD^b, Ava Hamilton, BA^a, John Schulenberg, PhD^{c,d}

abstract

BACKGROUND: Average nightly sleep times precipitously decline from childhood through adolescence. There is increasing concern that historical shifts also occur in overall adolescent sleep time.



What does sleep deprivation do to the adolescent brain? Just ask Google



is it normal for my teen to

is it normal for my teenager to be depressed

is it normal for my teenager to hate me

is it normal for my teenager to sleep all the time



why is my teenager so

why is my teenager so irritable

why is my teenager so angry

why is my teenager so tired

why is my teenager so hungry

why is my teenager so sleepy

why is my teenager so angry and aggressive

why is my teenager so clingy

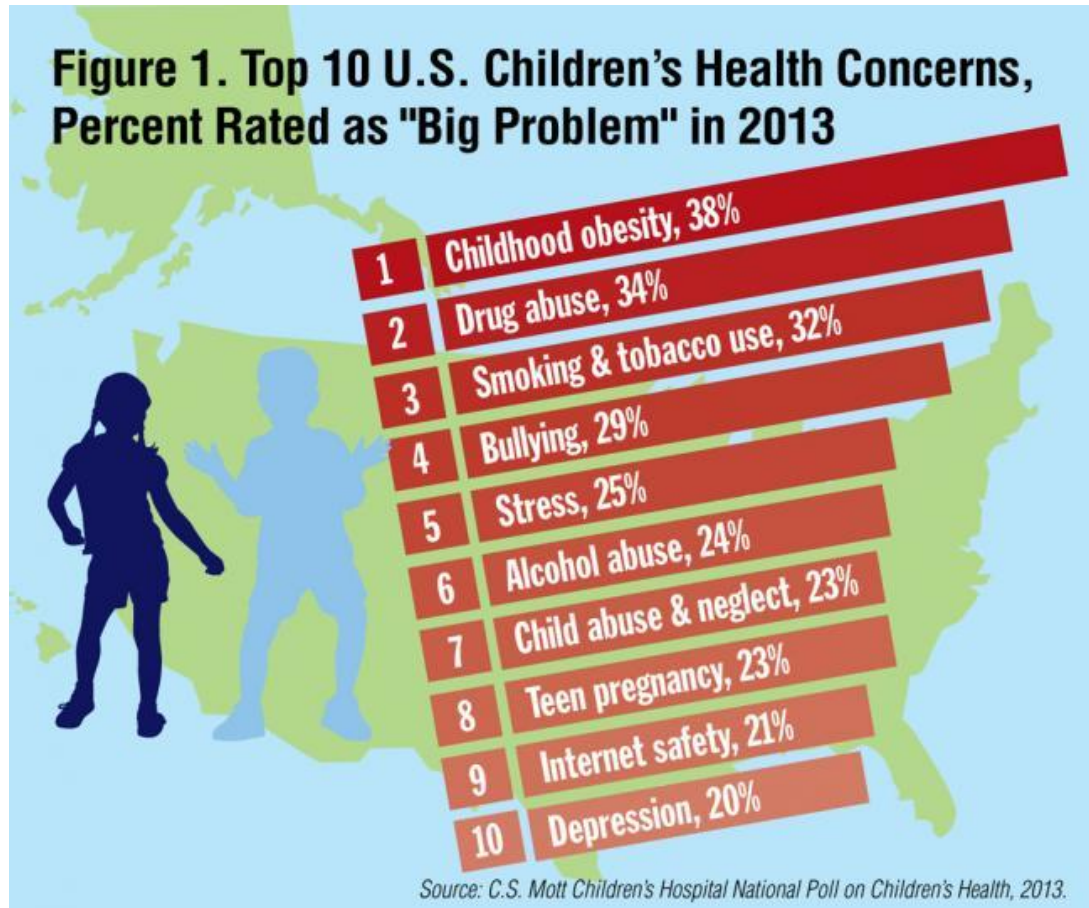
why is my teenager so stubborn

why is my teenager so sad

why is my teenager so argumentative



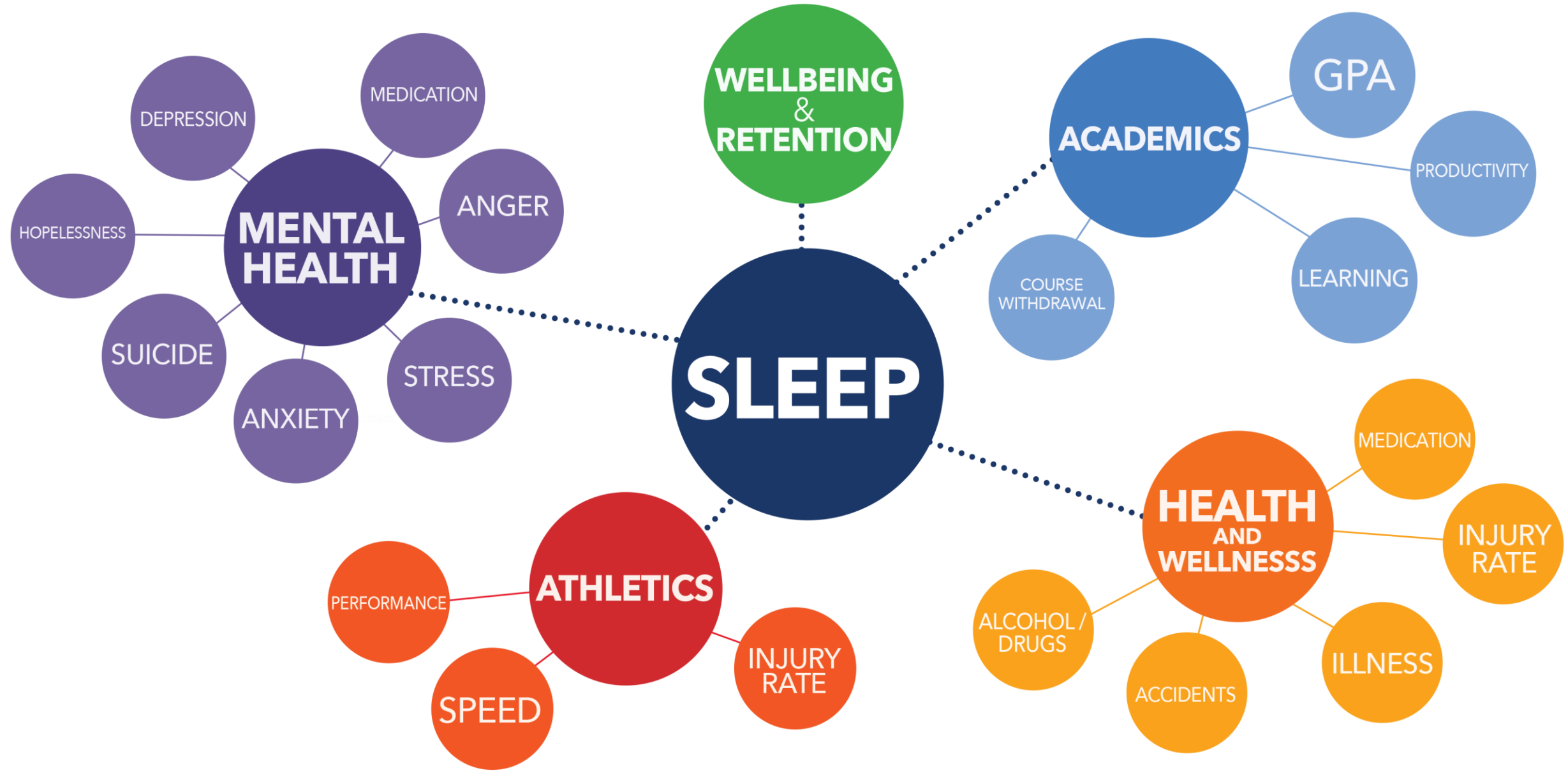
However, sleep isn't on parents' radar as a health concern.



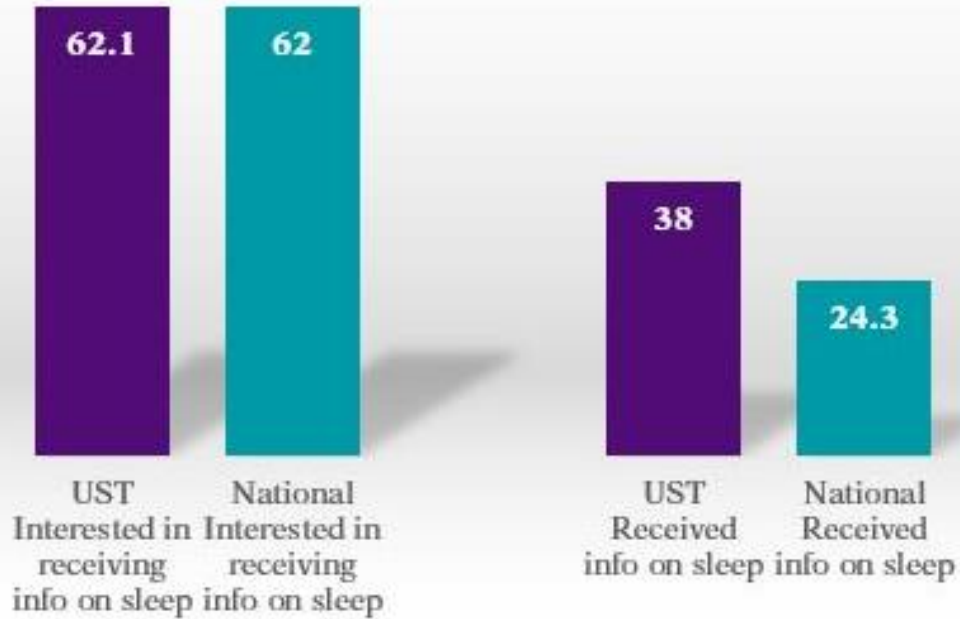
2023

1. Overuse of devices/screen time (67%)
2. Social media (66%)
3. Internet safety (62%)
4. Depression/suicide (57%)
5. Bullying (53%)
6. Stress/anxiety (52%)
7. Unhealthy diet (52%)
8. Costs of healthcare/health insurance (50%)
9. School violence (49%)
10. Smoking/vaping (48%)

Our Lab's Research Overview



Improvements in sleep at St. Thomas



SECTIONS | **Cut**

VARIETY

How University of St. Thomas students are sleeping their way to better grades

Getting plenty of shut-eye can improve academic and maybe even athletic performance.

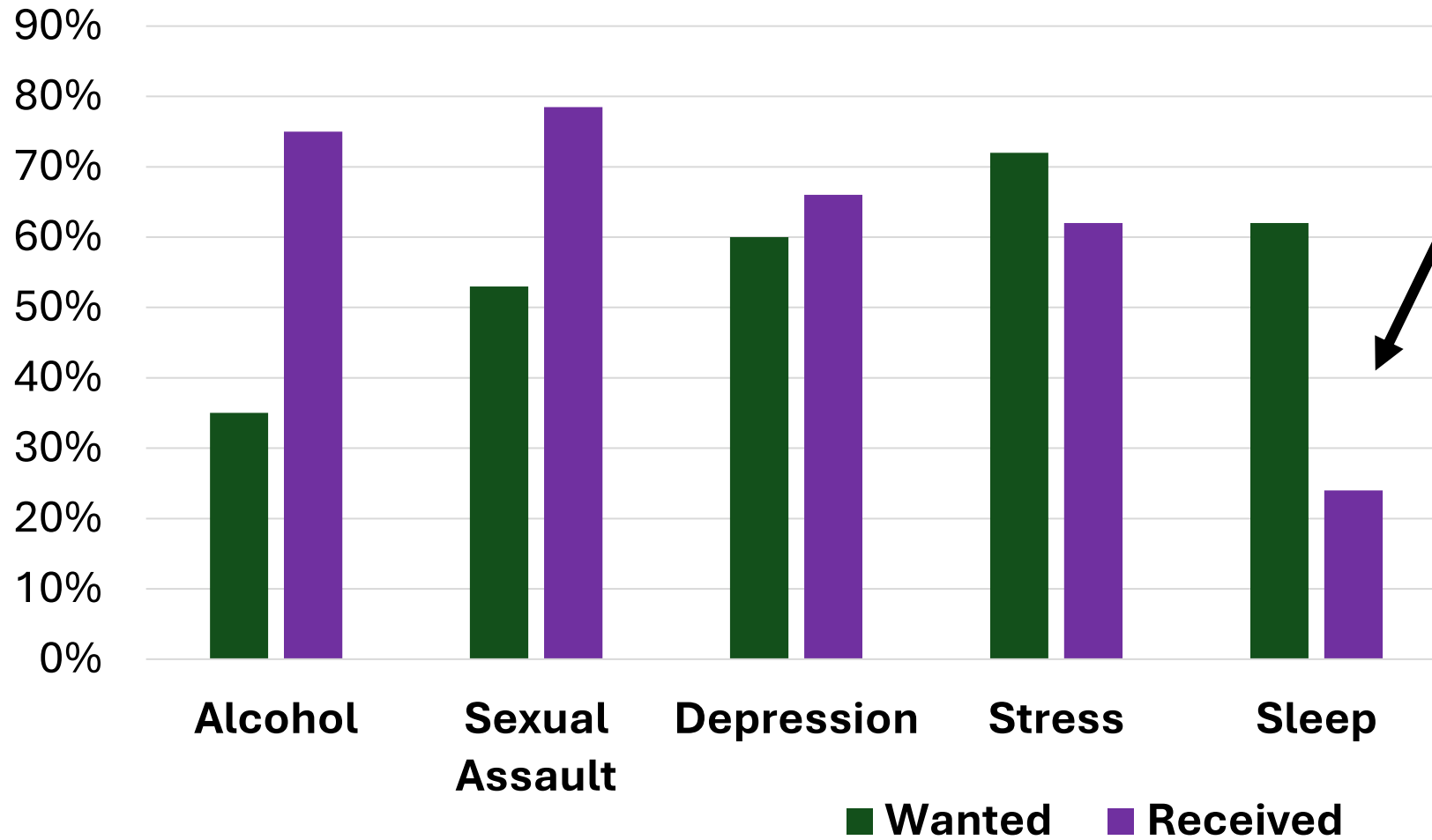
By Kevyn Burger Special to the Star Tribune | DECEMBER 6, 2016 — 4:36PM



- Sleep Patterns and Predictors of Disturbed Sleep in a Large Population of College Students. *Journal of Adolescent Health* (2010)
- Depression, Anxiety, and Tobacco Use: Overlapping Impediments to Sleep in a National Sample of College Students. *Journal of American College Health* (2017)
- Demographics, Health, and Risk Behaviors of Young Adults Who Drink Energy Drinks and Coffee Beverages. *Journal of Caffeine Research* (2017)
- Calculating the Contribution of Sleep Problems to Undergraduates' Academic Success. *Sleep Health* (2018)
- A wake-up call for collegiate athlete sleep: Narrative review and consensus recommendations from the NCAA Inter-association Task Force on Sleep and Wellness. *Br J Sports Med* (2019)
- Creating a Sleep Friendly Sleep Culture. *Strength & Conditioning* (2019)
- Sleep quality mediates the relationship between traumatic events, psychological distress, and suicidality in college undergraduates. *J Am Coll Health* (2020)
- Sleep predicts collegiate academic performance: Implications for equity in student retention and success. *Sleep Med Clin.* (2020)
- University housing reinforces the negative relationship between interpersonal violence, psychological distress, and suicidality in undergraduates, particularly among gender diverse students. *J Am Coll Health* (2021)
- Reducing the Negative Effects of Travel on Health and Performance of Student-Athletes Through Sleep and Circadian Strategies. *J Biological Rhythms* (2023)
- Psychological well-being in Asian and Asian American University Students: Impacts of Discrimination During the COVID-19 pandemic. *J Adolesc Health.* (2023)
- Sexual assault predicts gender-specific sleep problems in varsity student athletes (in revision, 2024).



Good news: A majority of students report wanting to learn about ways to get better sleep.

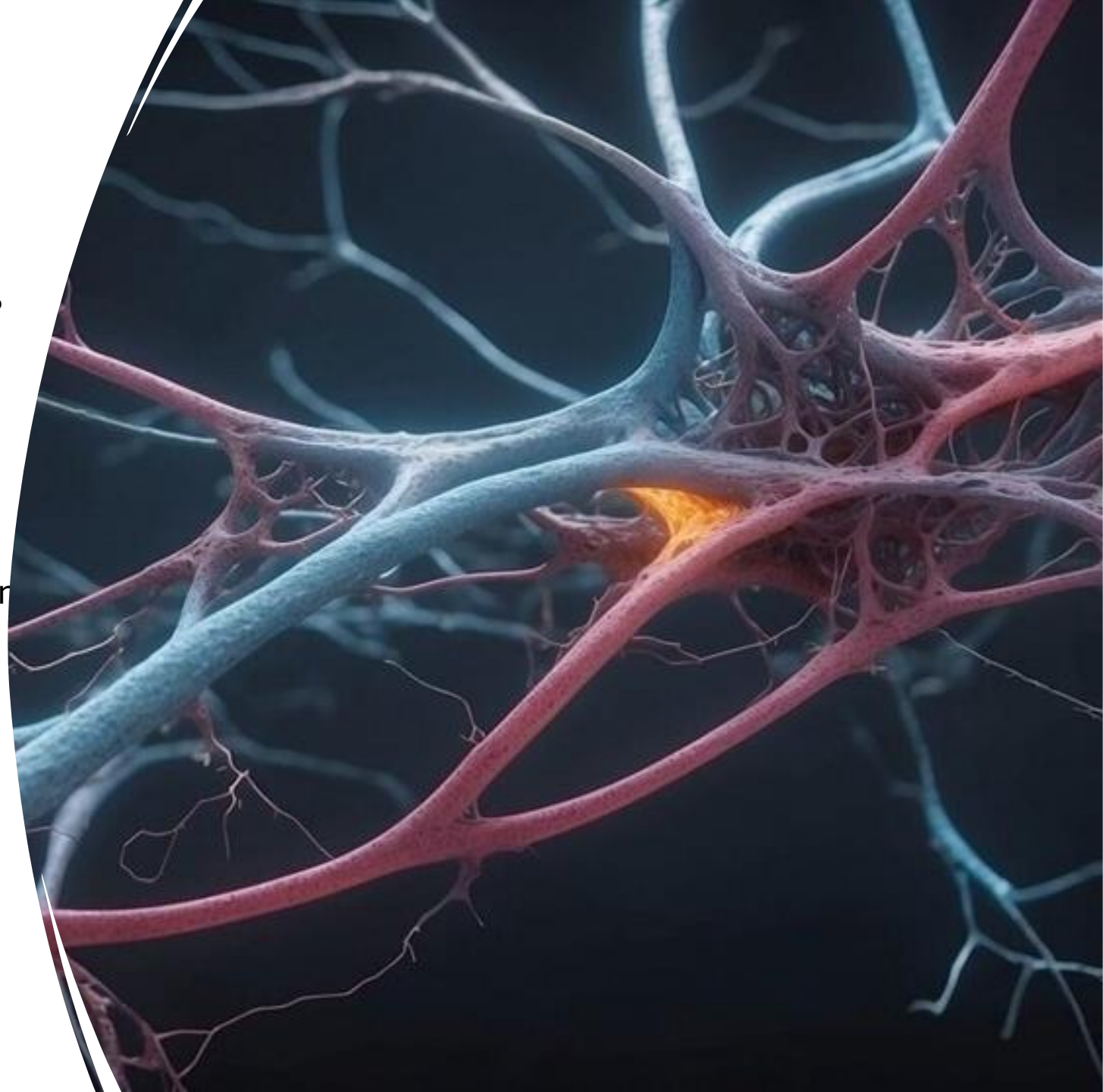


OUTLINE

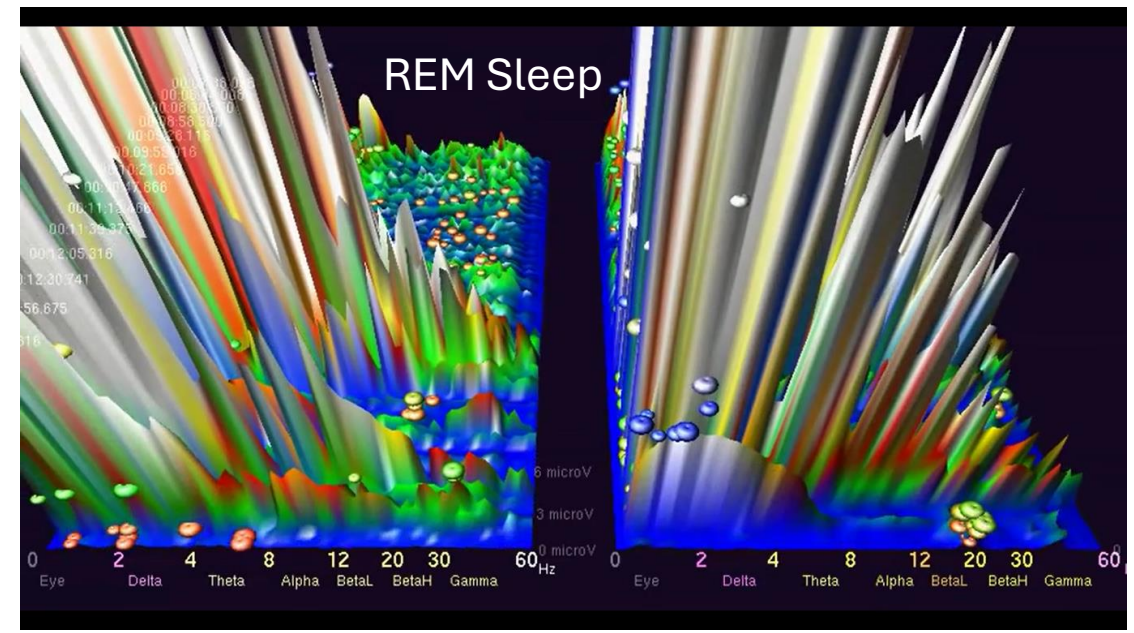
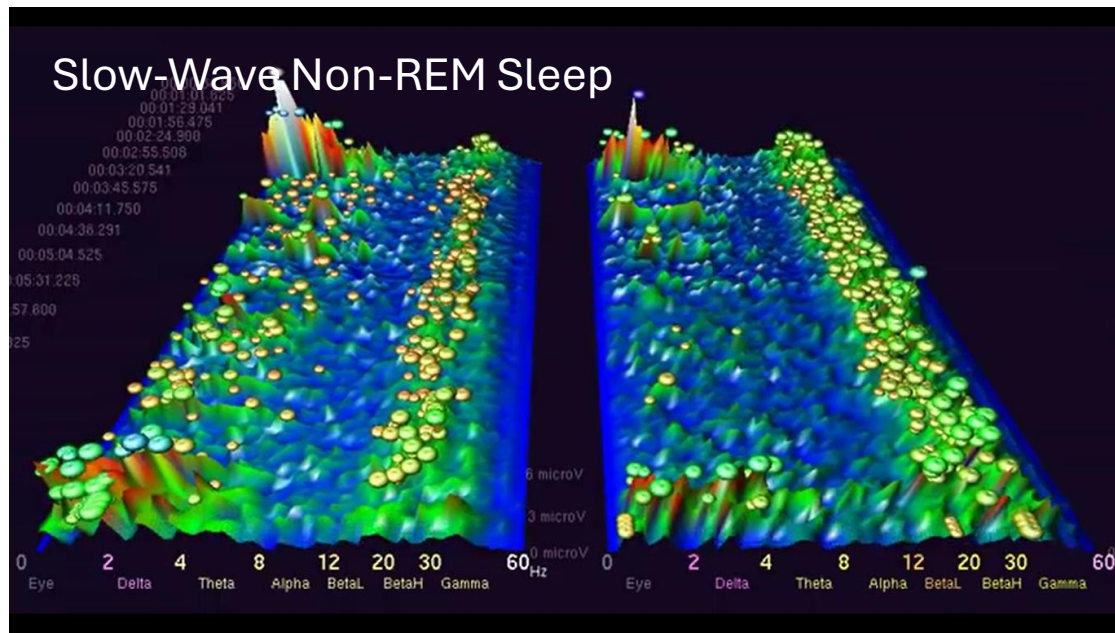
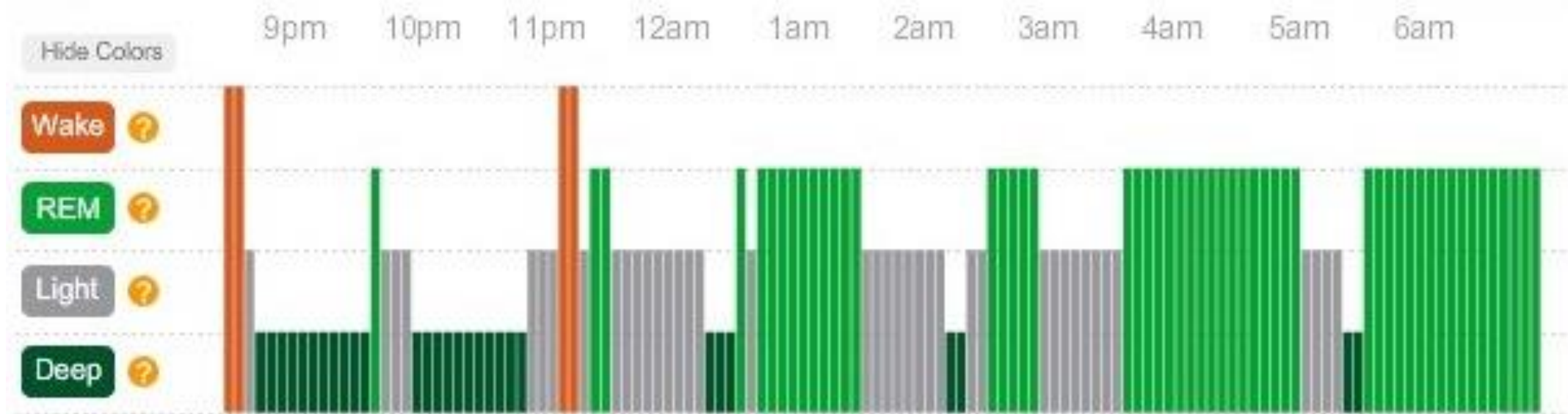
- Science of Sleep Overview
- Sleeping, dreaming, mental health
- Demographic data: who sleeps well in college?
- Sleep health promotion

LEARNING OBJECTIVES

1. Describe the sleep disturbances most common in college students
2. Understand the bidirectional relationship between sleep and mental health
3. Improve screening and support for students with sleep disturbances



Sleep Stages: Light NREM, Deep Slow Wave NREM, and REM



The Roles of Dreams



**Consolidate
memories**



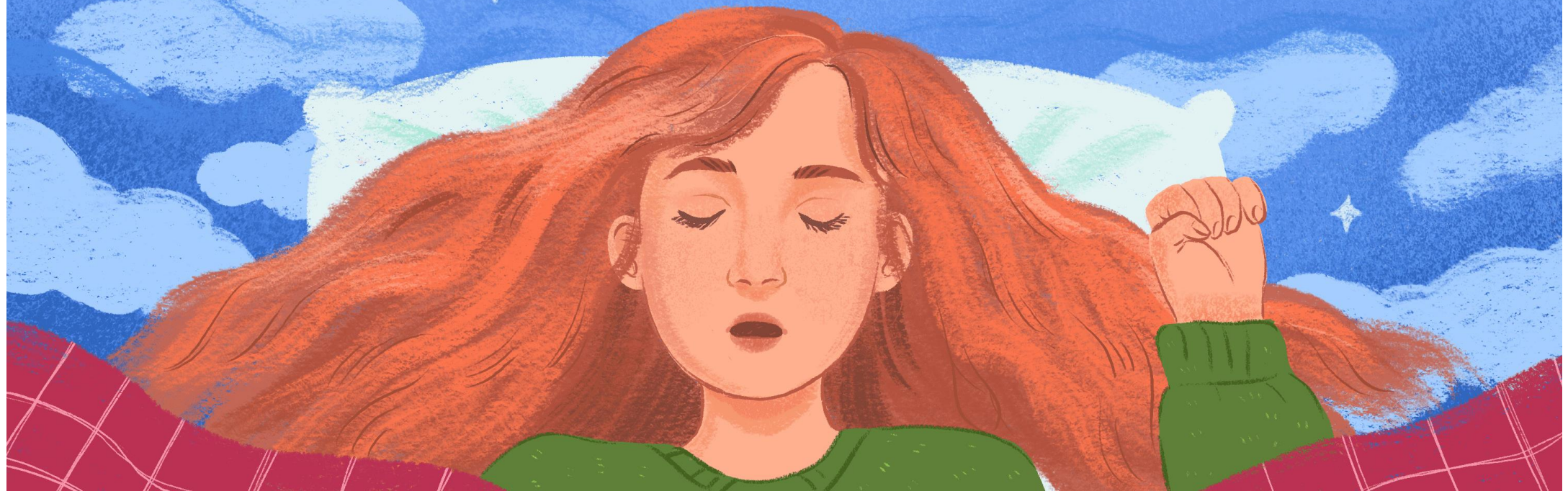
**Process
emotions**



**Express deep
desires**



**Practice confronting
potential dangers**

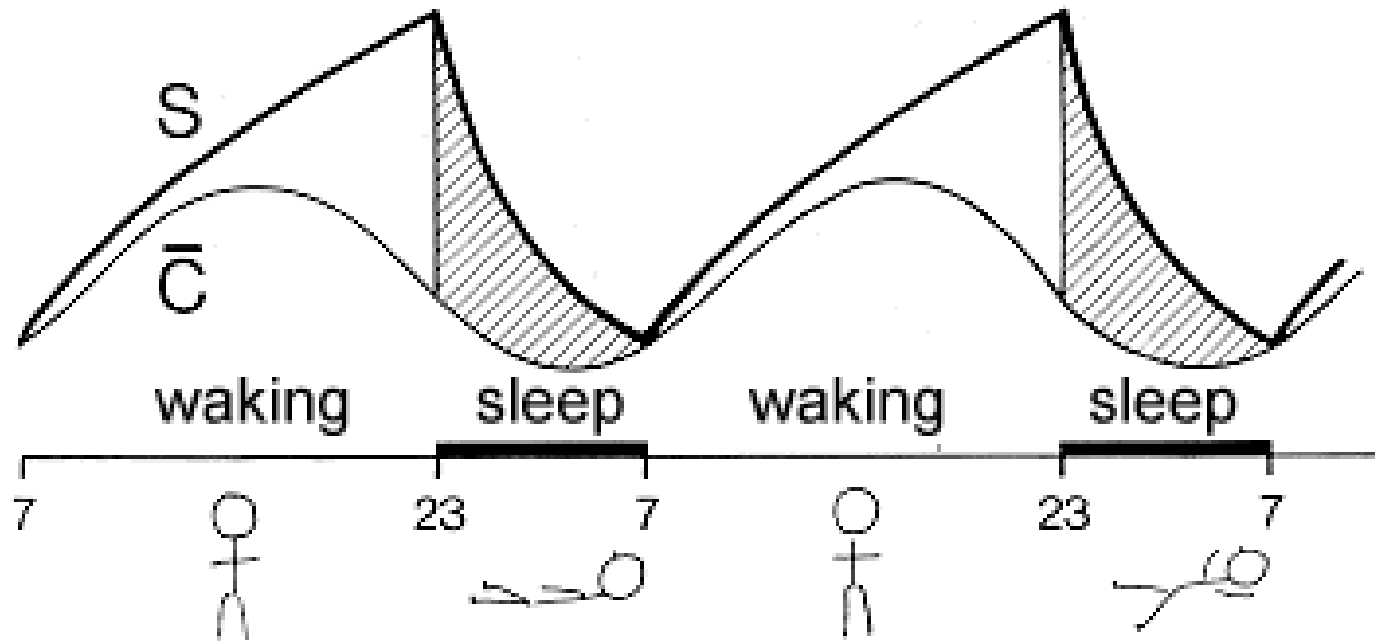


What controls when we sleep?

1. How Tired You Are

2. Circadian Rhythm

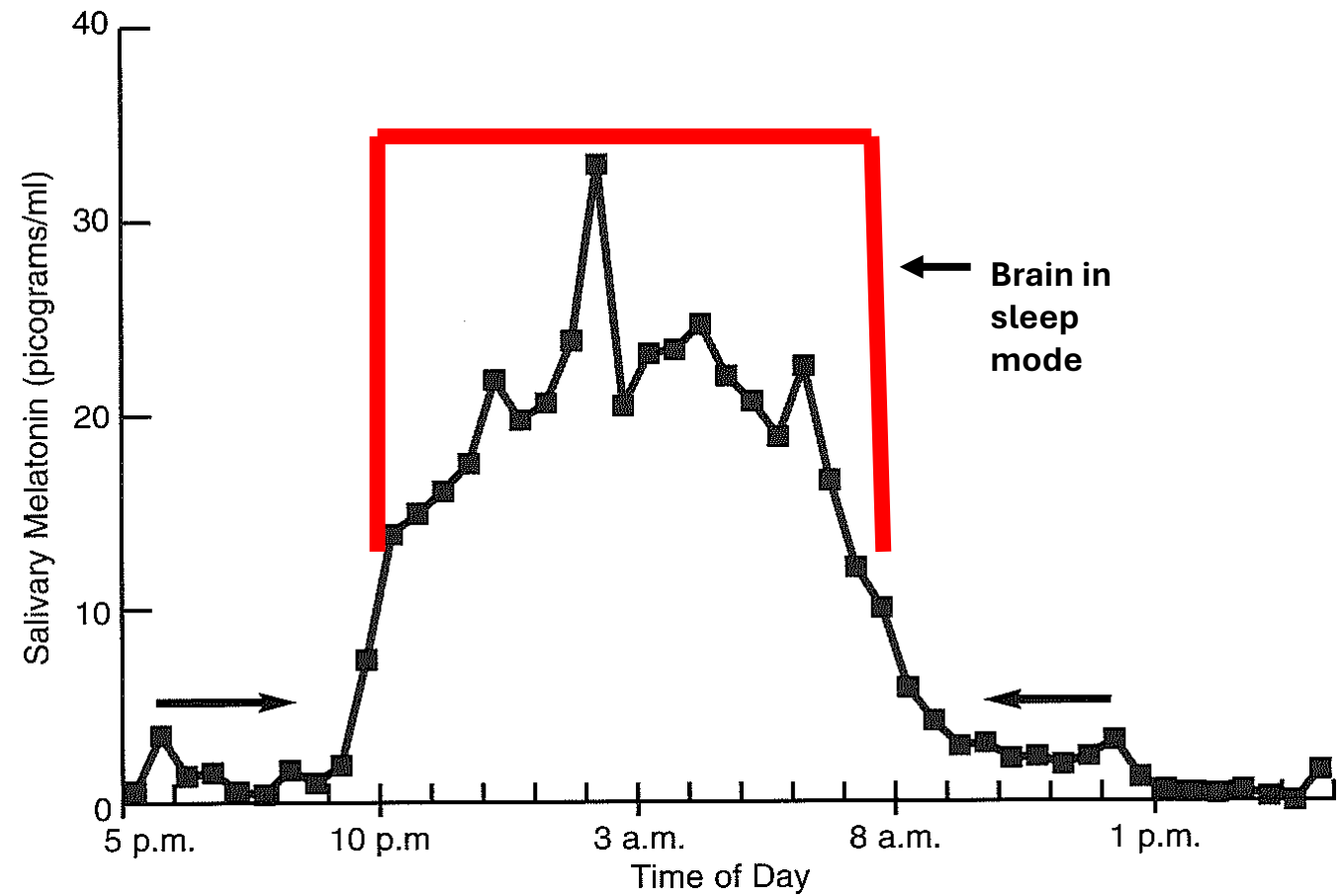
Sleep - Waking Cycle



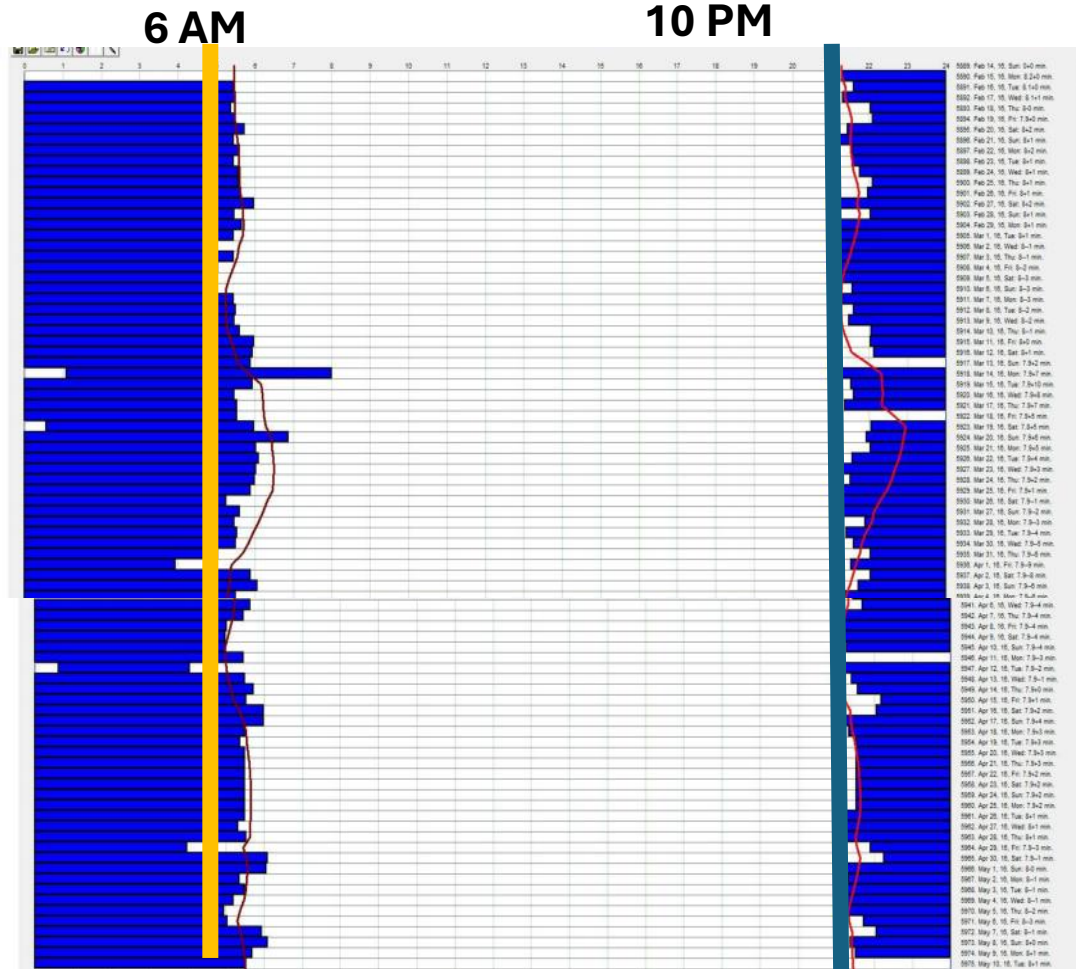
3. Zeitgebers

4. Psychoactive substances

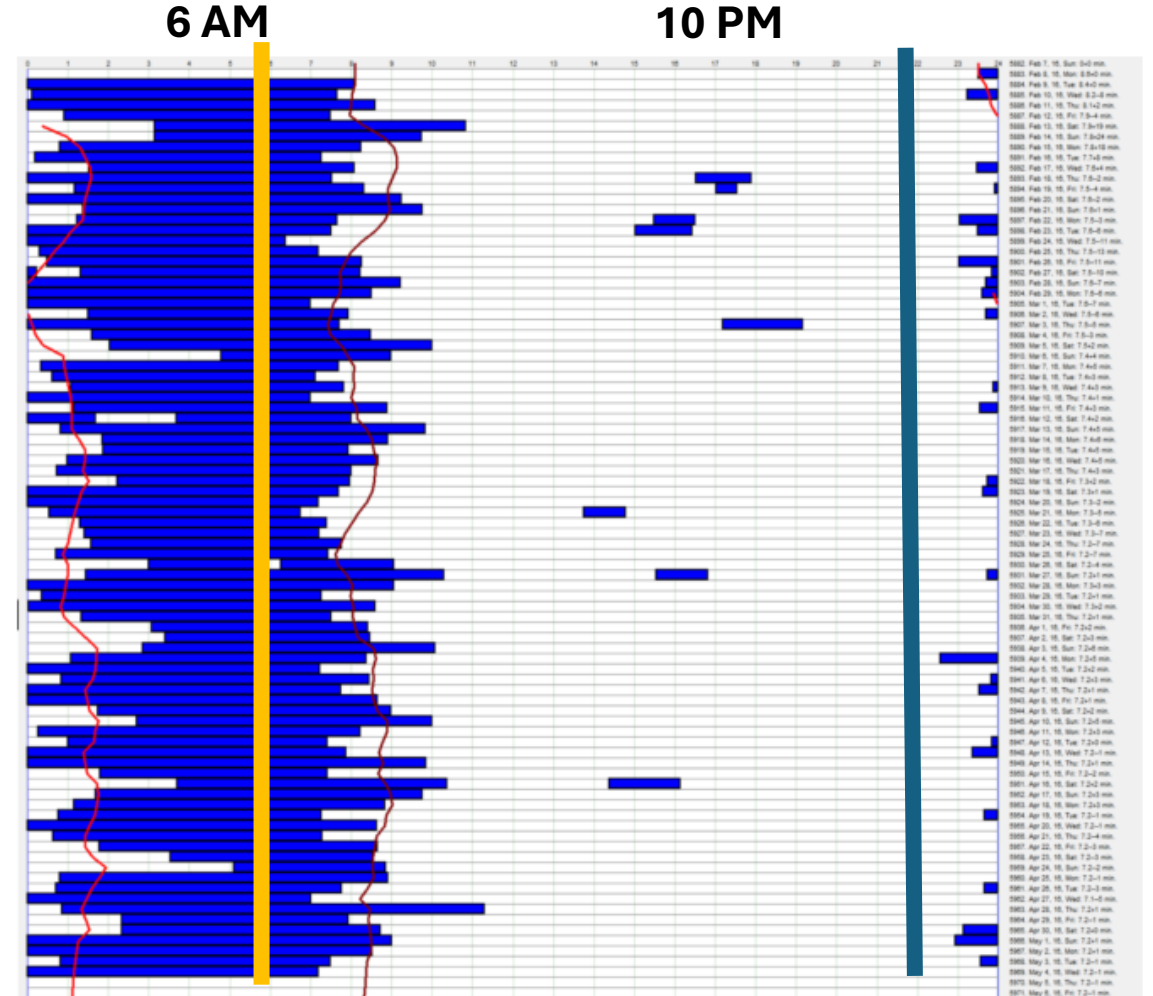
Circadian Rhythm



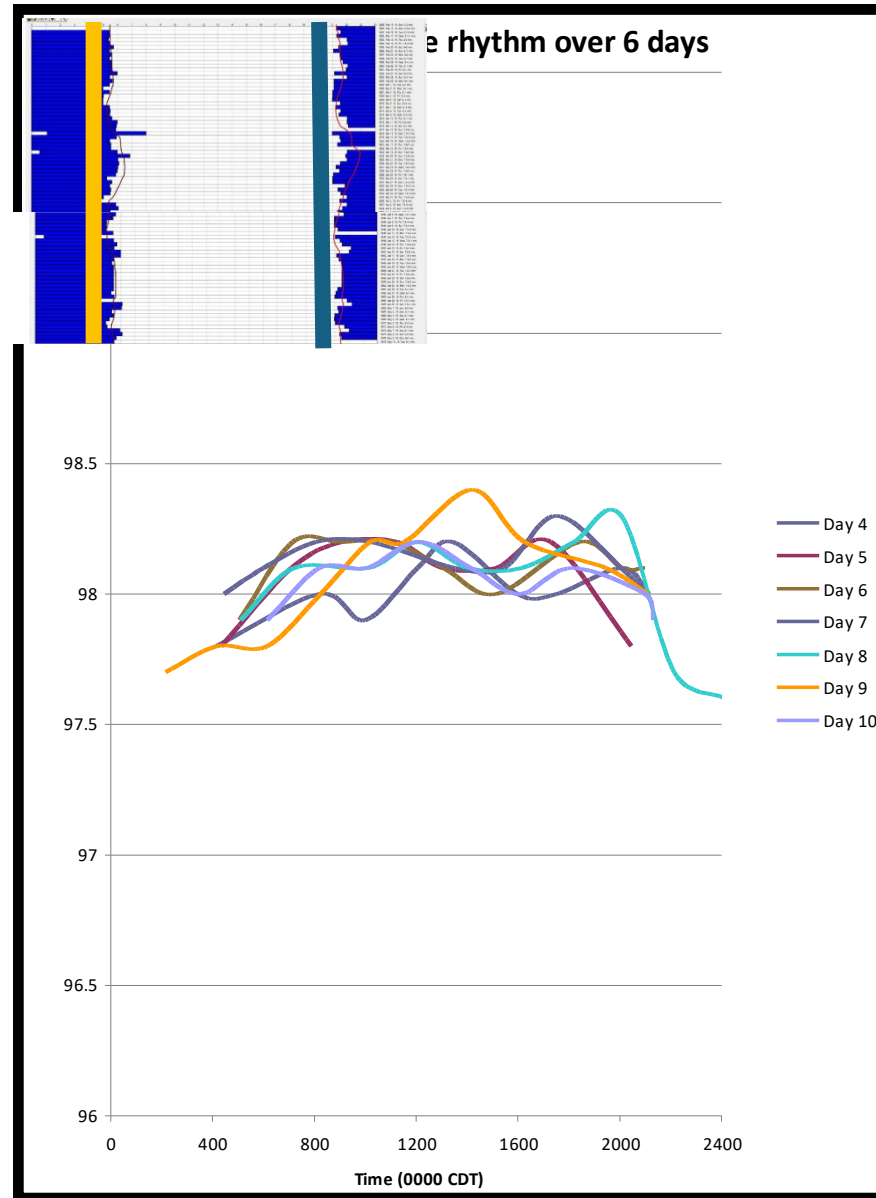
Circadian Activity Rhythm: Structured Schedule



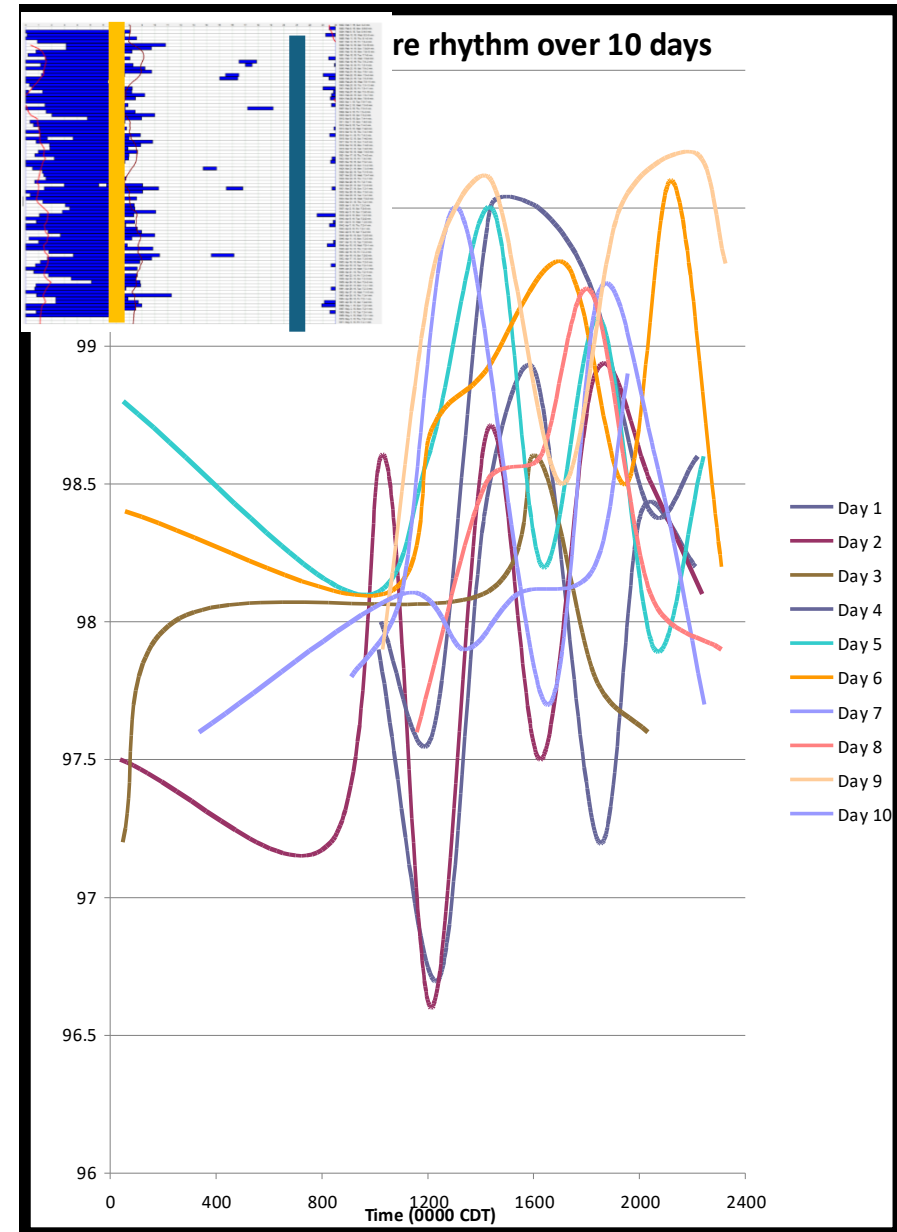
Circadian Activity Rhythm: Erratic Schedule



Circadian Temperature Rhythm: Structured Schedule

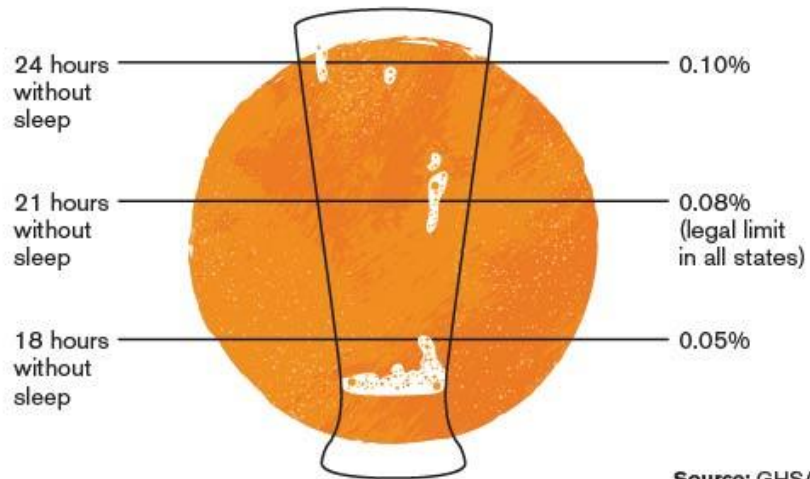


Circadian Temperature Rhythm: Erratic Schedule



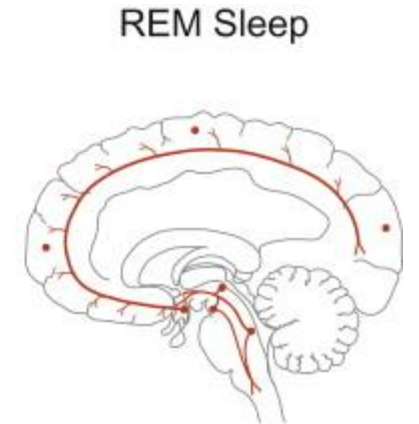
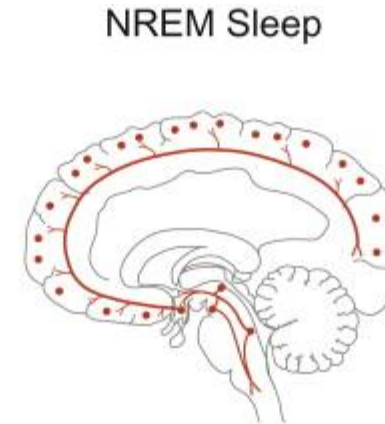
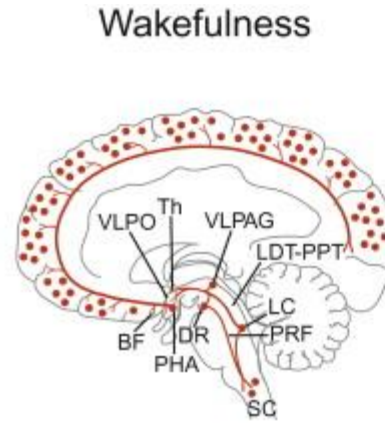
Neurotransmitter concentration varies wildly depending on sleep and circadian state.

Lack of sleep mimics blood alcohol concentration

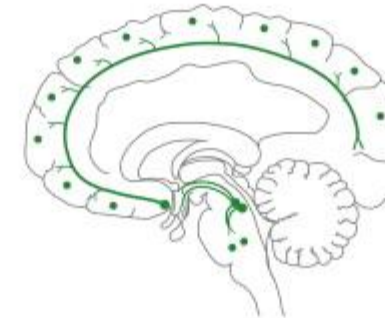
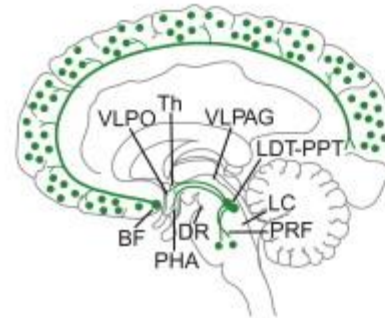


Source: GHSA

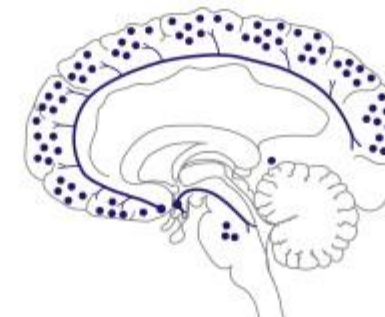
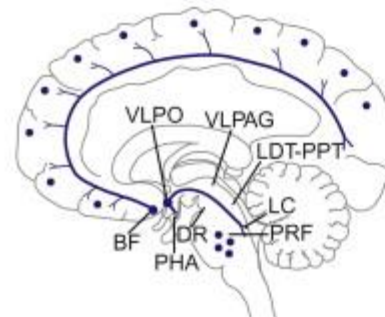
Monoamines



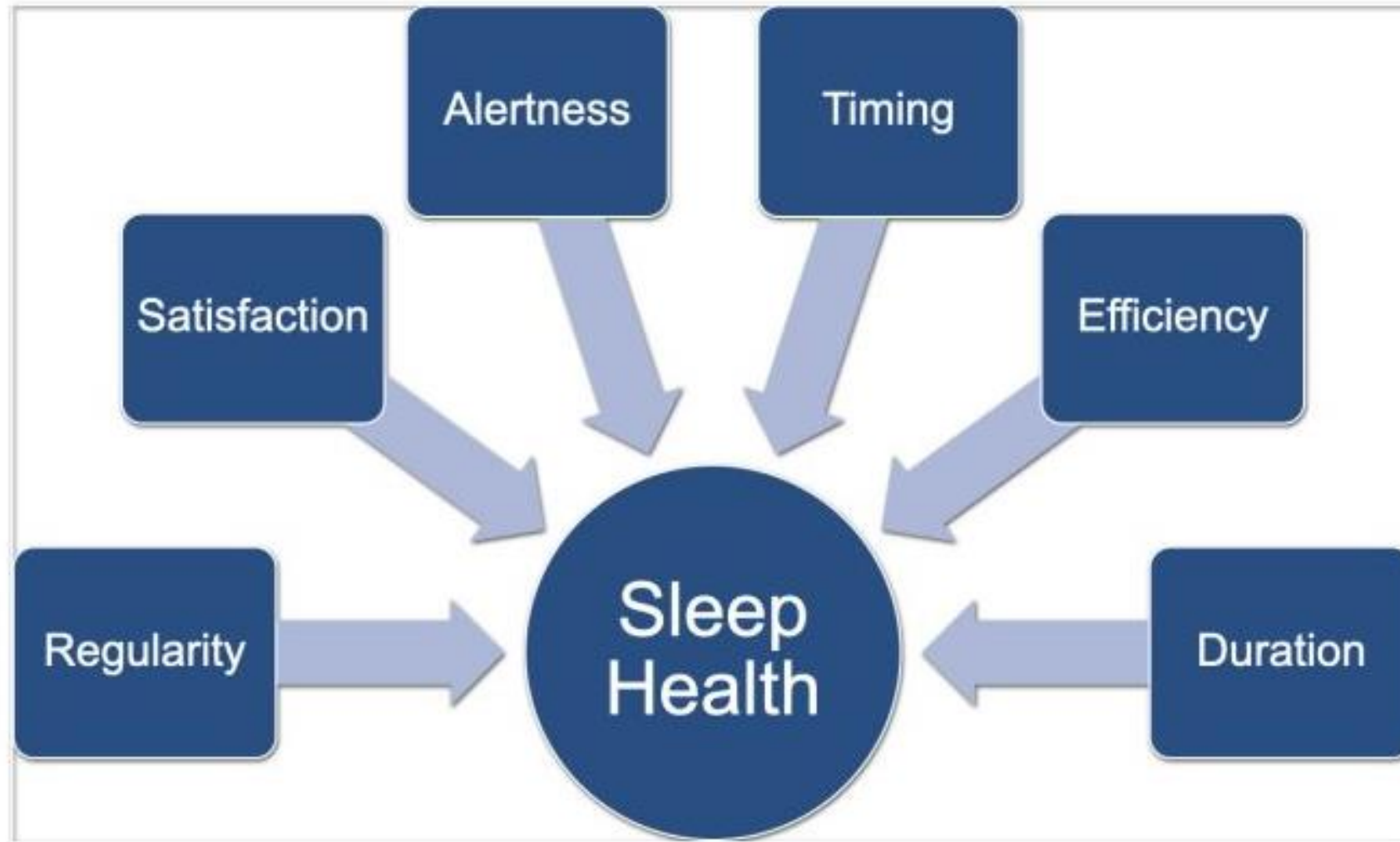
Acetylcholine



GABA



R(U)SATED? Six Dimensions of Sleep Health



What do we mean by 'good' sleep?



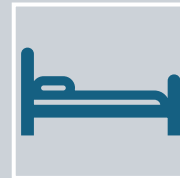
Duration: 7-9 hours. Ideally, you don't need an alarm clock to wake up



Timing: Your sleep schedule matches your circadian tendency



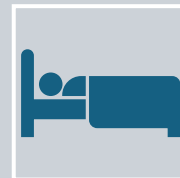
Regularity: Rise time and bedtimes don't vary much



Efficiency: The majority (85% or more) of your time in bed is spent sleeping



Satisfaction: You feel rested upon awakening



Alertness: You spend almost all of your waking day feeling alert. You're not excessively sleepy.

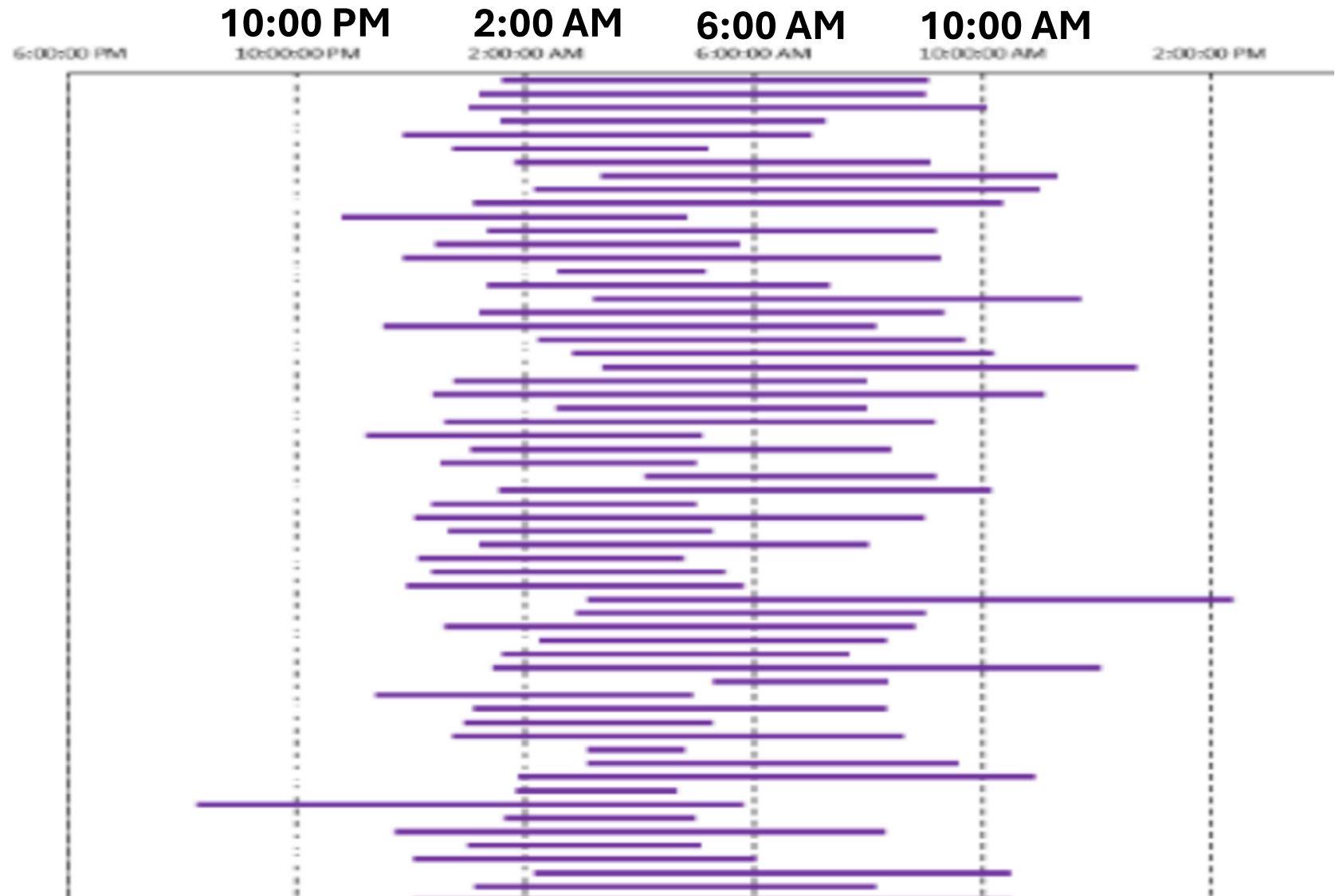
RUSATED (Buysse)

		Rarely/never (0)	Sometimes (1)	Usually/always (2)
Regularity	Do you go to bed and get out of bed at about the same times (within one hour) every day?			
Satisfaction	Are you satisfied with your sleep?			
Alertness	Do you stay awake all day without dozing?			
Timing	Are you asleep (or in bed) between 2:00 a.m. and 4:00 a.m.?			
Efficiency	Do you spend less than 30 min awake at night? This includes the time it takes to fall asleep plus awakenings during sleep			
Duration	Do you sleep between 6 and 8 h per day?			

Items of RUSATED (regularity, satisfaction, alertness, timing, efficiency, duration) questionnaire by Buysse

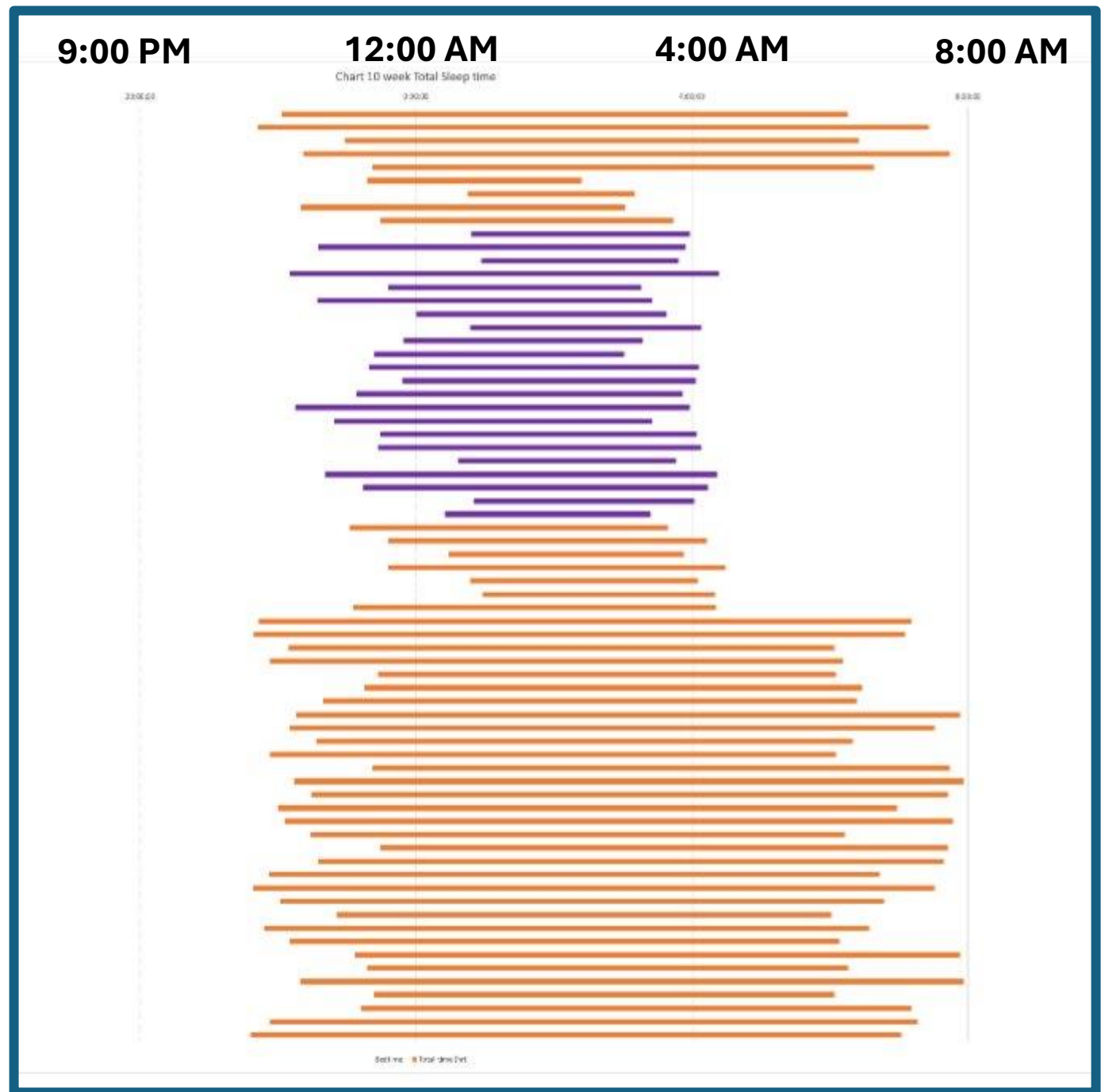
Consider the student who seems sleepy and distracted in class.

You ask about his sleep. He pulls out his apple watch app and shows you that his average is 7:13 for the semester.



Consider the student who starts the semester fully engaged, prepared, and upbeat.

Then as midterm approaches, the attendance alerts, missing assignments, concerned about student mental health alerts start flying in.



2. Sleep, Dreams & Mental Health

IX of Swords, 15th C Tarot



Original article

Sleep Patterns and Predictors of Disturbed Sleep in a Large Population of College Students

Hannah G. Lund, B.A.^a, Brian D. Reider, B.A.^b, Annie B. Whiting, R.N.^c,
and J. Roxanne Prichard, Ph.D.^{b,*}

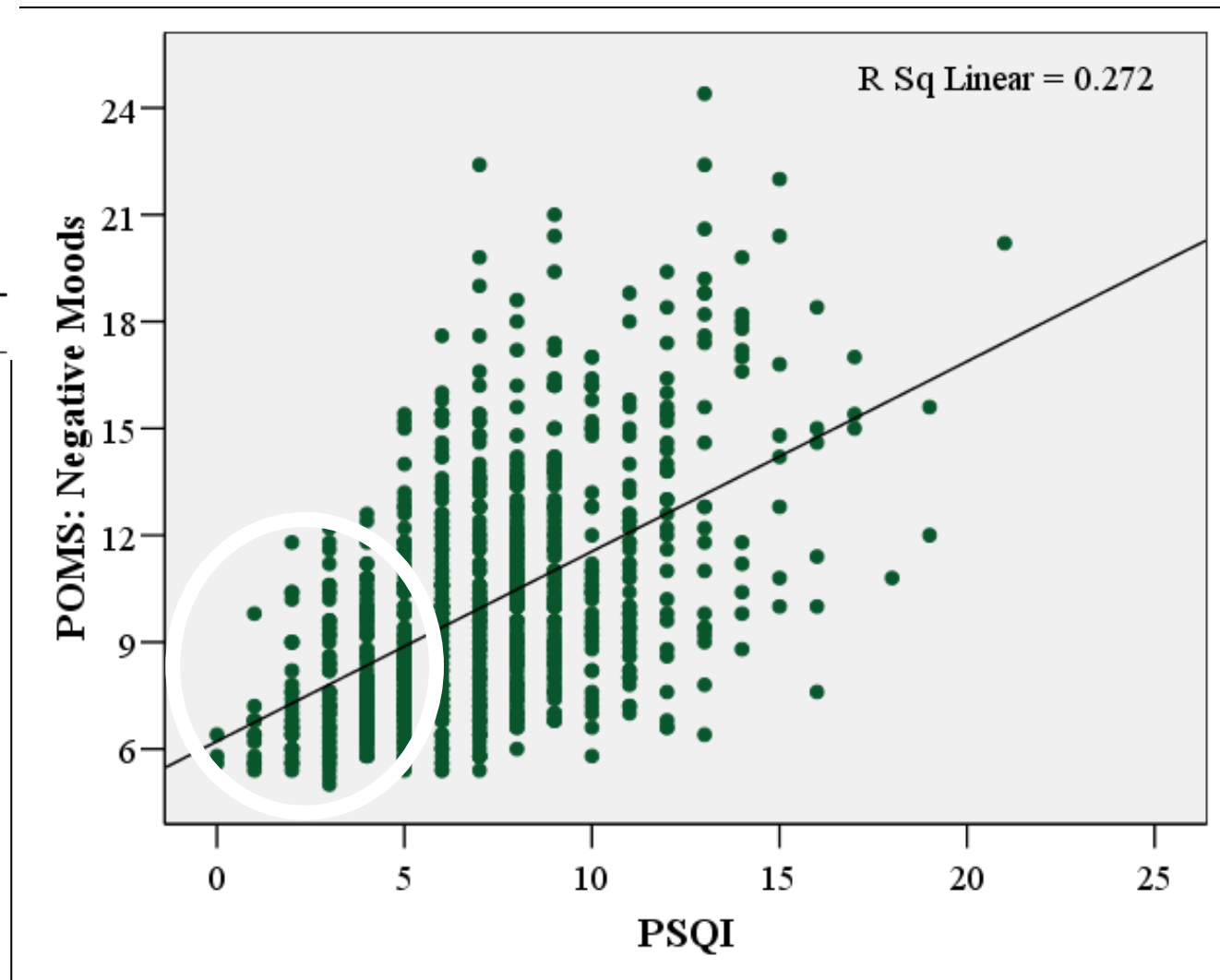
^aDepartment of Psychology, Virginia Commonwealth University, Richmond, Virginia

^bDepartment of Psychology, University of St. Thomas, St. Paul, Minnesota

^cMassachusetts General Hospital, Boston, Massachusetts

Manuscript received March 26, 2009; manuscript accepted June 16, 2009

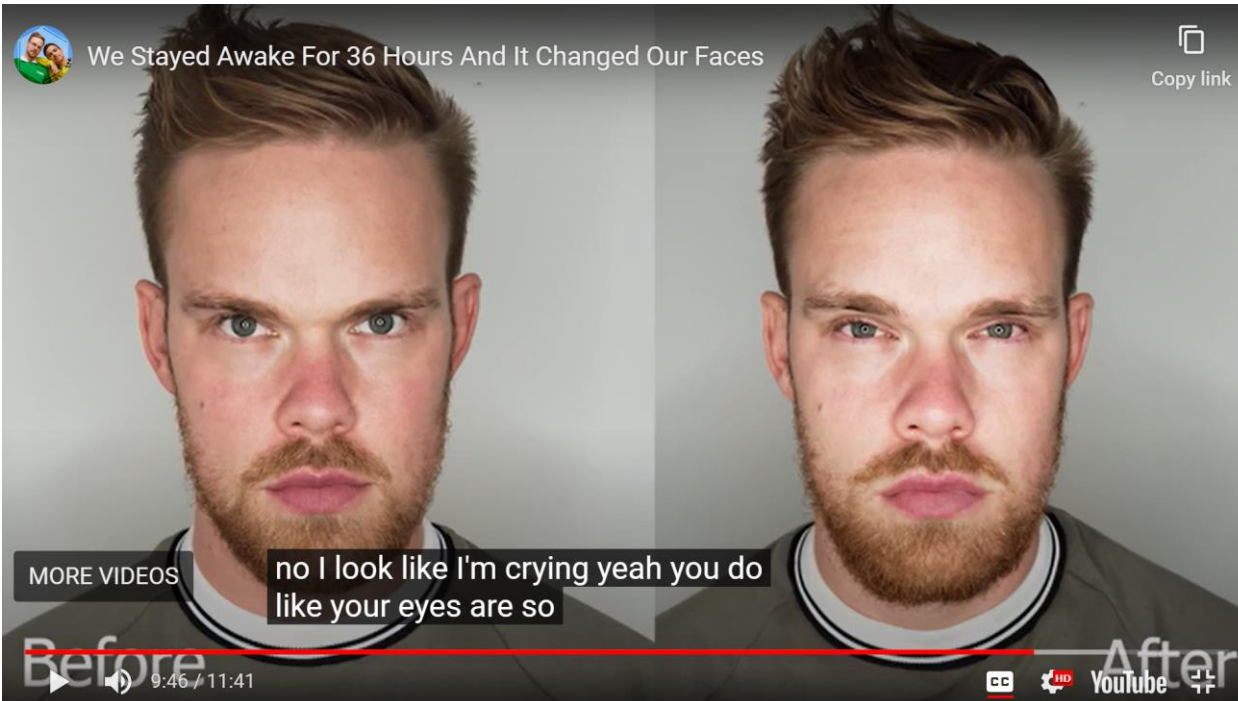
See Editorial p. 97



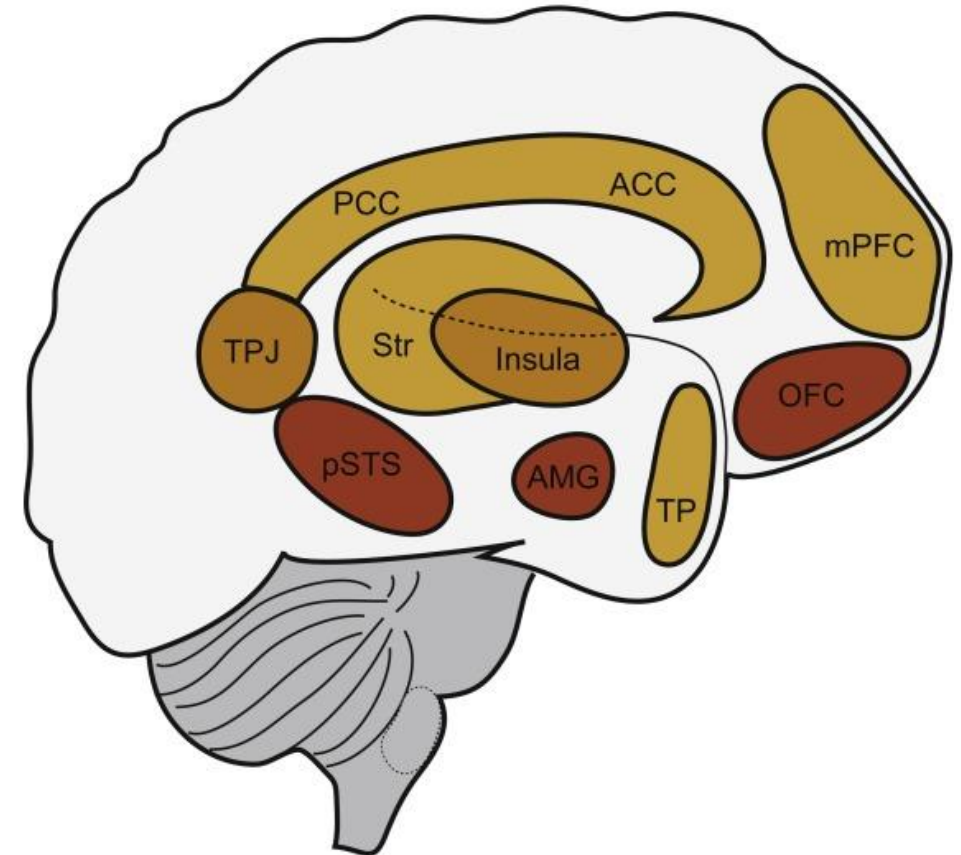
Bad sleep increases feelings of loneliness - and it may be contagious

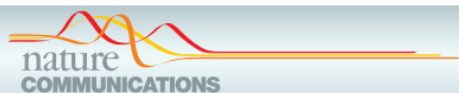
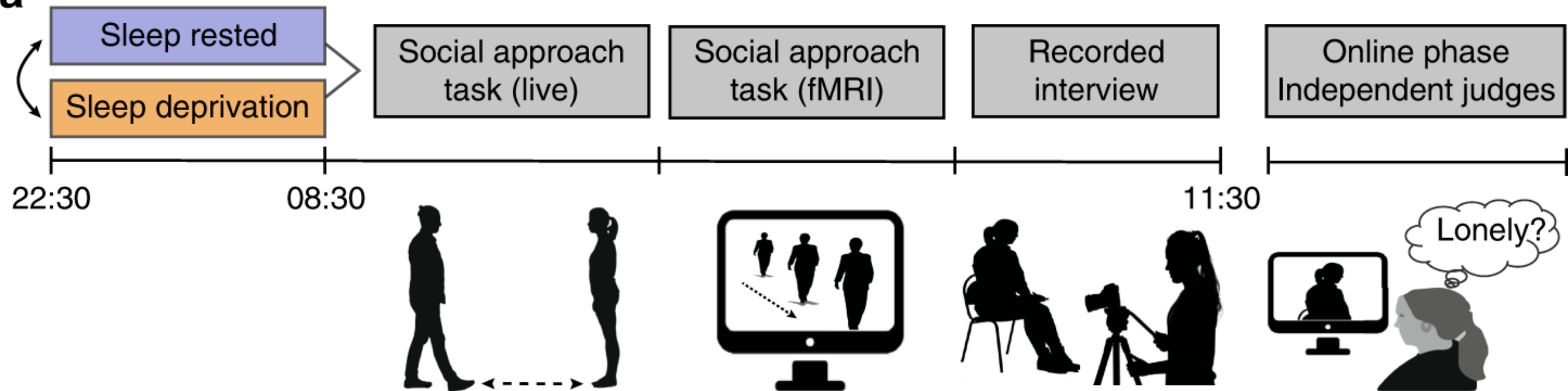


Rich Haridy | August 15th, 2018



Cognitive Social Brain



a

ARTICLE

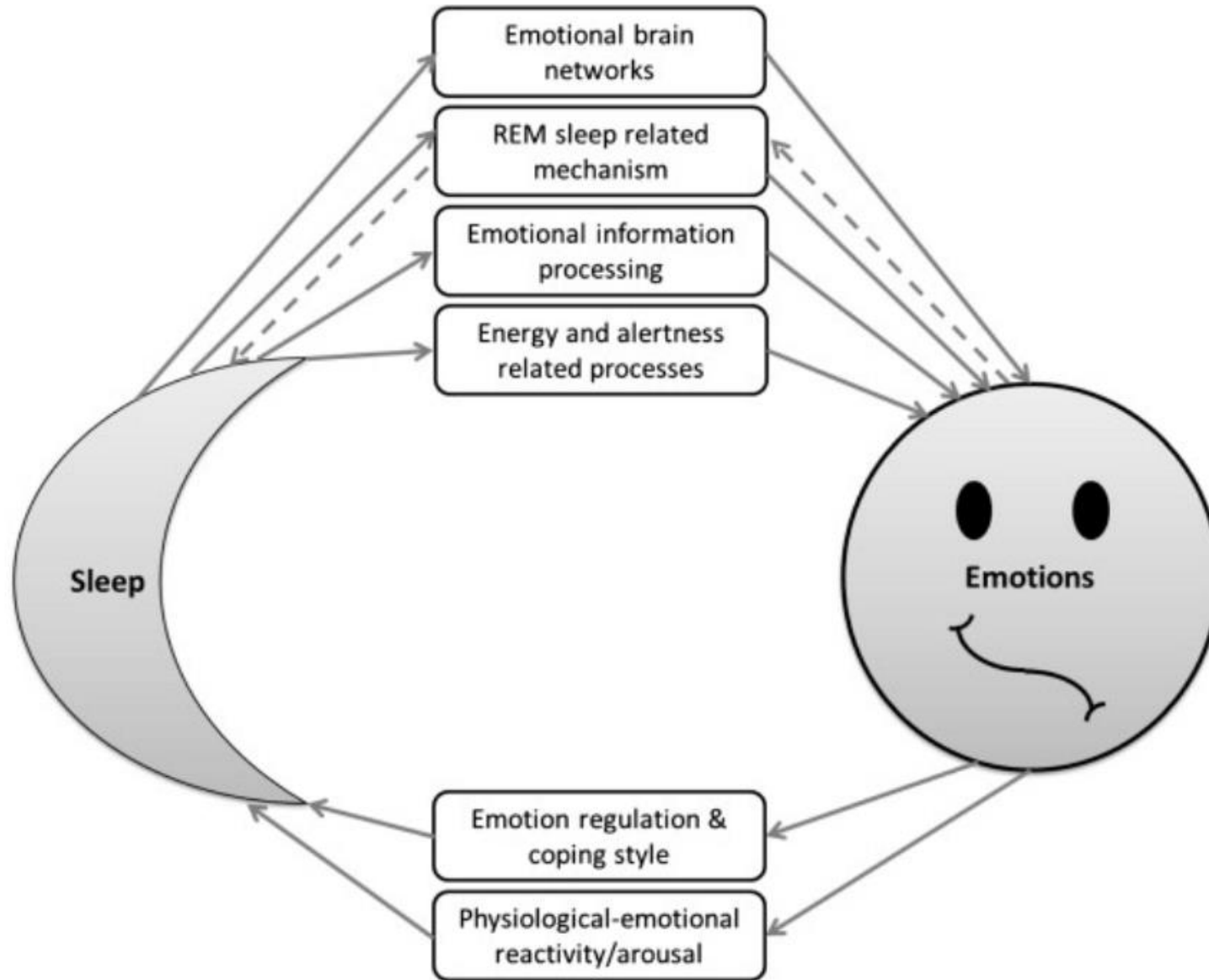
DOI: 10.1038/s41467-018-05377-0

OPEN

Sleep loss causes social withdrawal and loneliness

Eti Ben Simon¹ & Matthew P. Walker^{1,2}

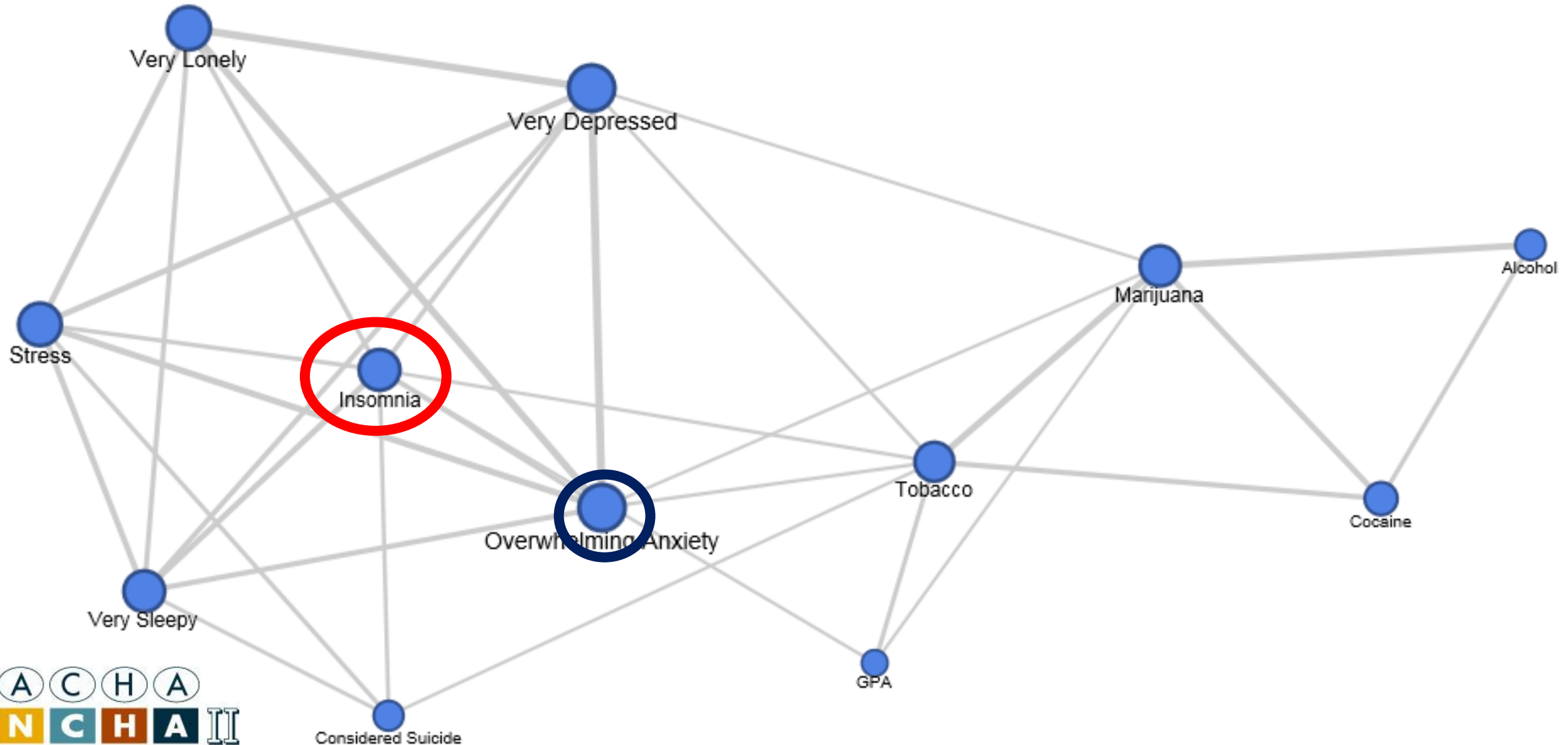
Loneliness and social isolation markedly increase mortality risk, and are linked to numerous mental and physical comorbidities, including sleep disruption. But does sleep loss causally trigger loneliness? Here, we demonstrate that a lack of sleep leads to a neural and behavioral phenotype of social withdrawal and loneliness; one that can be perceived by other members of society, and reciprocally, makes those societal members lonelier in return. We propose a model in which sleep loss instigates a propagating, self-reinforcing cycle of social separation and withdrawal.



Sleep and emotions: Bidirectional links and underlying mechanisms

<https://www.sciencedirect.com/science/article/pii/S0167876013001475>

Modifiable Risk Factor Cluster Analysis



How Sleep & Mental Health are Intertwined

Depression

- Long Sleep Latency
- Too much REM sleep early in the night
- Decrease in slow wave sleep = restless
- Less potent cortisol awakening
- Fatigue but often without sleepiness

* Antidepressants decrease REM Sleep

Anxiety

- Long Sleep Latency accompanied by pre-sleep cognitive arousal
- Light sleep with frequent awakenings
- Tiredness
- Nightmares

* Medications increase drowsiness and decrease REM sleep

ADHD

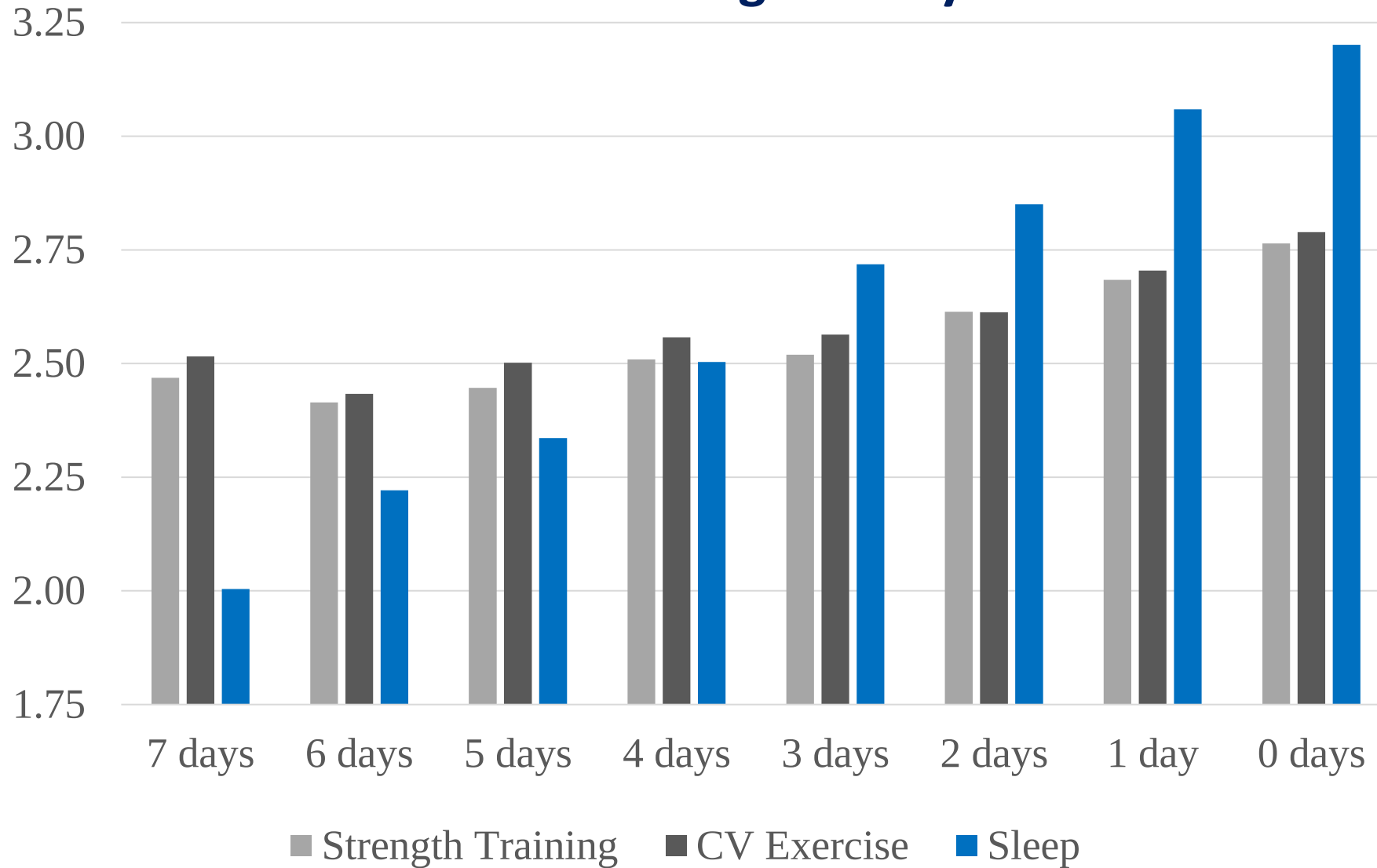
- Problems with time management makes keeping a schedule bedtime challenging
- One study showed half of patients ADHD's diagnoses resolved with sleep disorder treatment
- Sleep deprivation make attention problems worse

* Stimulant medications make it very difficult to fall and stay asleep

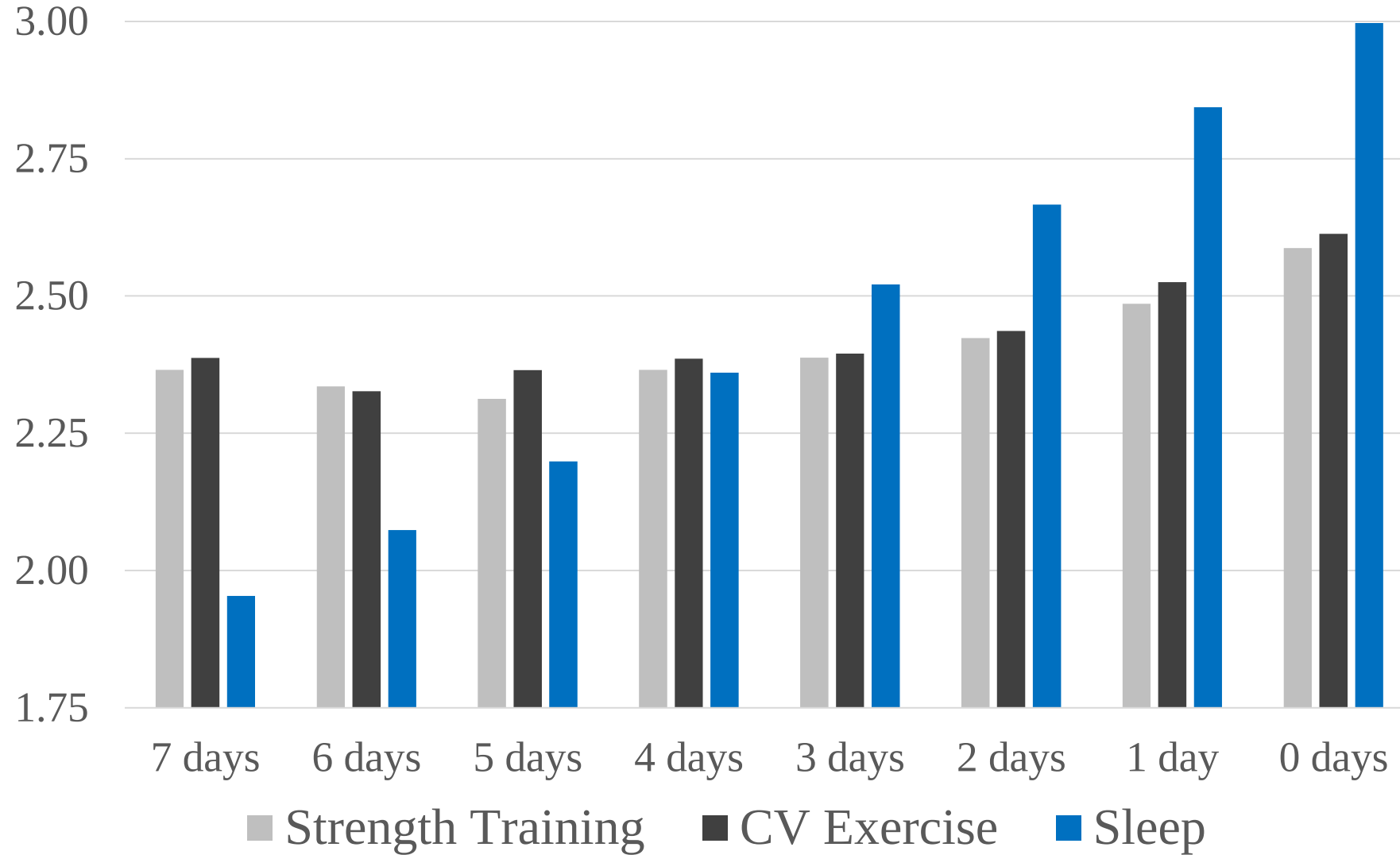
Y-axis: Have you ever felt...

- Overwhelming anxiety
 - That things were hopeless
 - So depressed it was difficult to function
- 1 = no, never
 - 2 = not in the last year
 - 3 = yes, in the last year
 - 4 = yes, in the last 30 days
 - 5 = yes, in the last 2 weeks

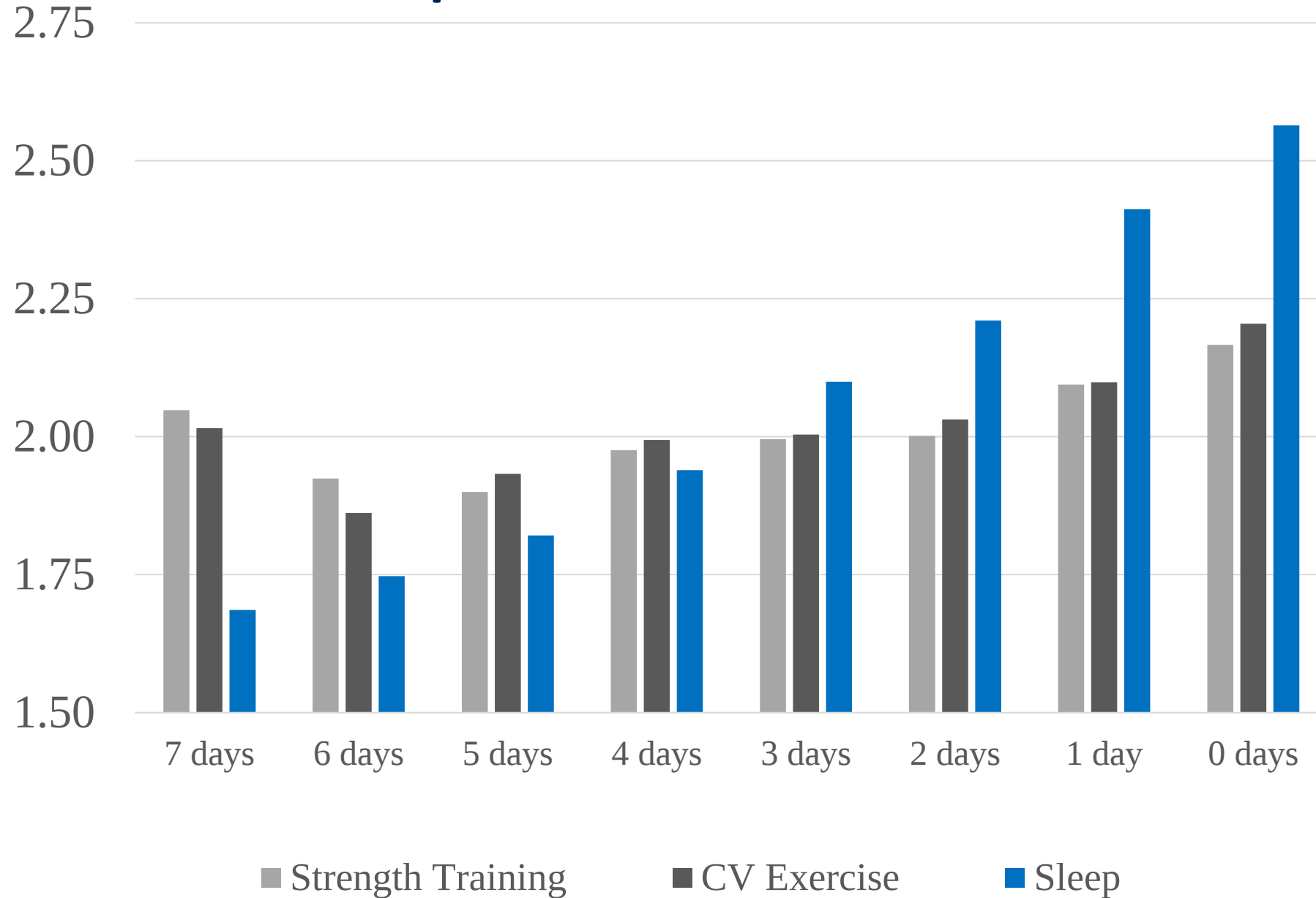
Felt Overwhelming Anxiety



Felt like Things Were Hopeless



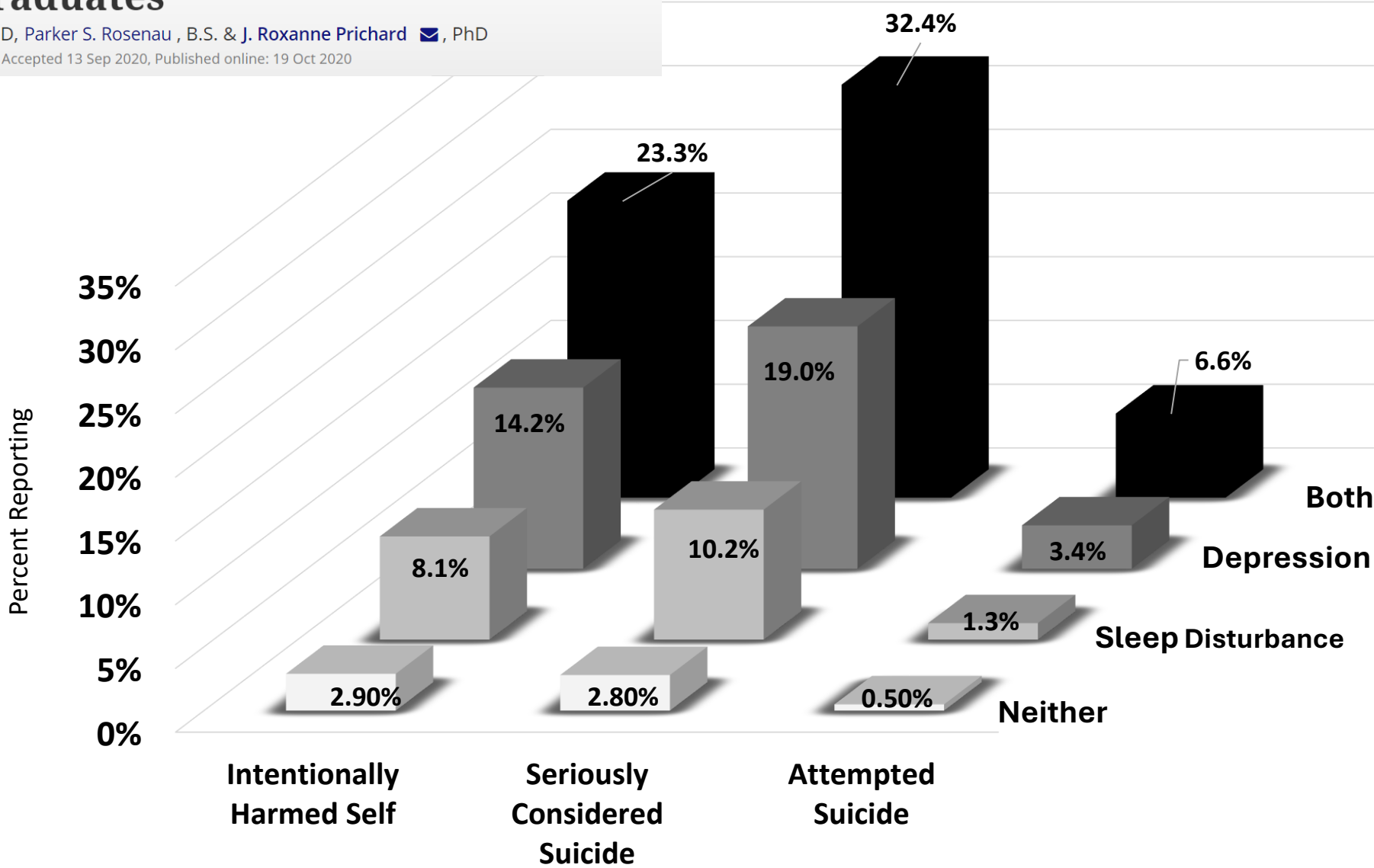
Felt So Depressed it's Difficult to Function



Sleep quality mediates the relationship between traumatic events, psychological distress, and suicidality in college undergraduates

Sergey S. Berg, PhD, Parker S. Rosenau, B.S. & J. Roxanne Prichard, PhD

Received 04 May 2020, Accepted 13 Sep 2020, Published online: 19 Oct 2020



3. Sleep Demographics

To sleep well, one must feel physically and psychologically safe.

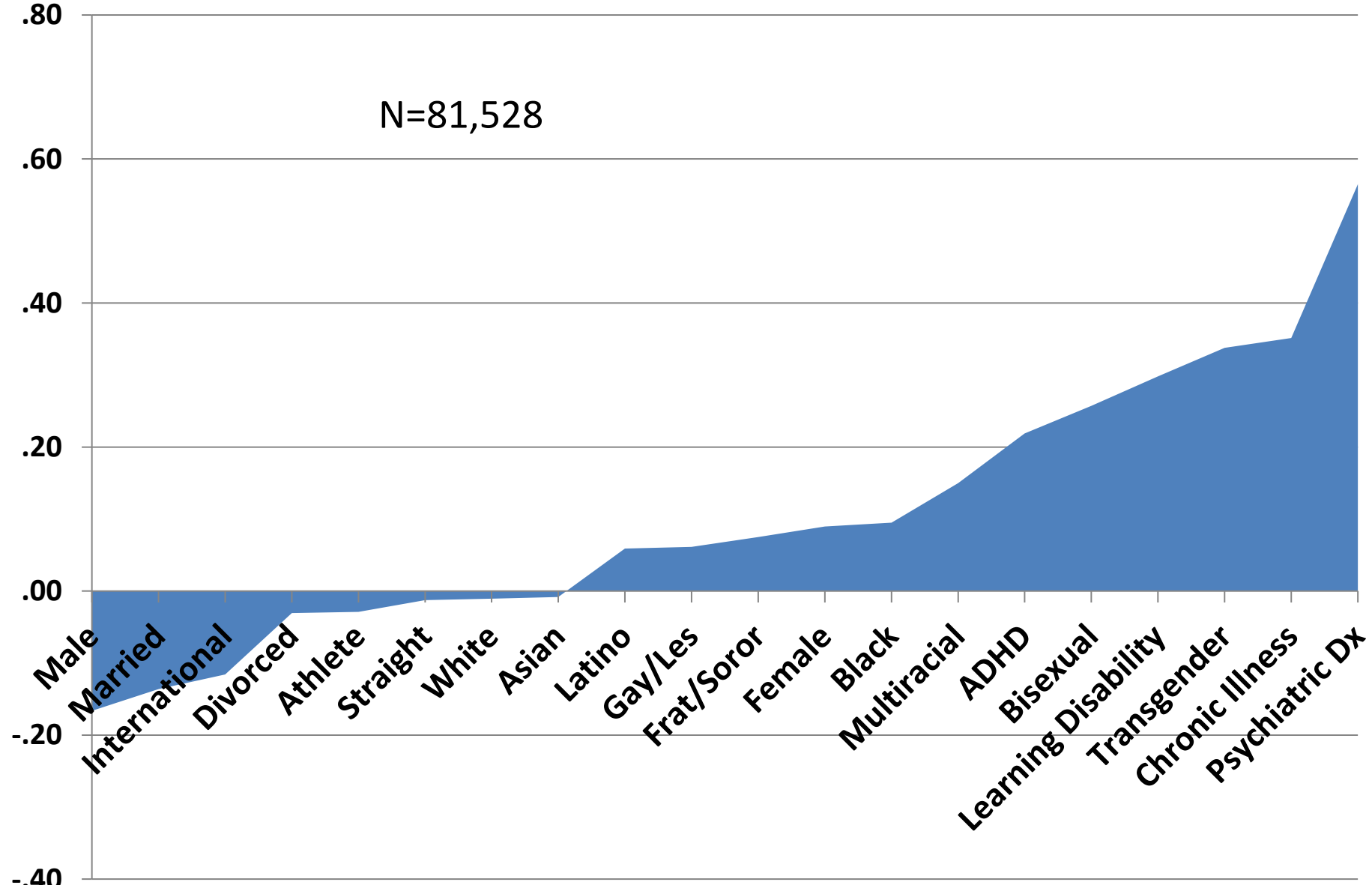


Blue Monday by Annie Lee, 1985

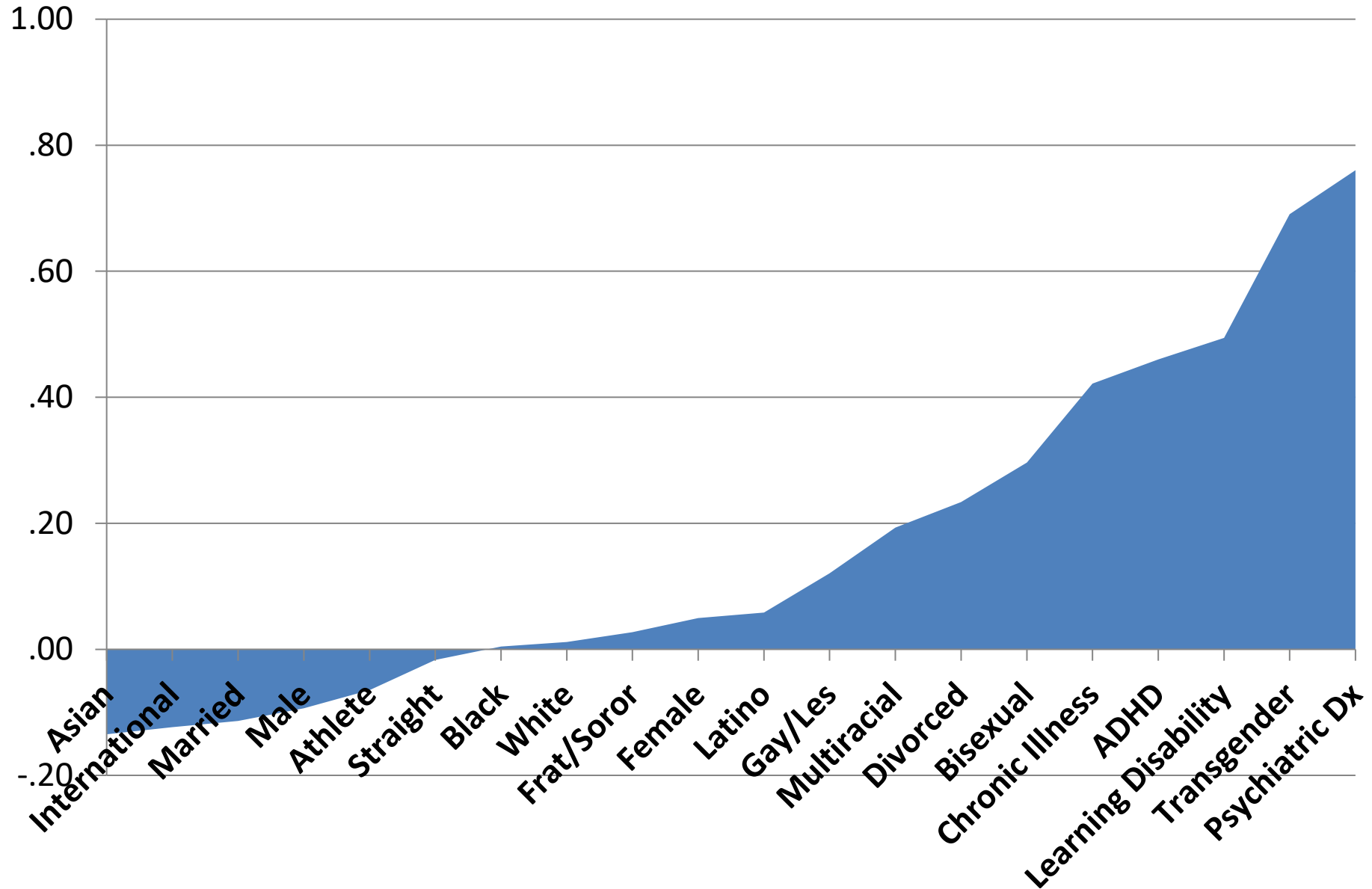
Who sleeps well in college?

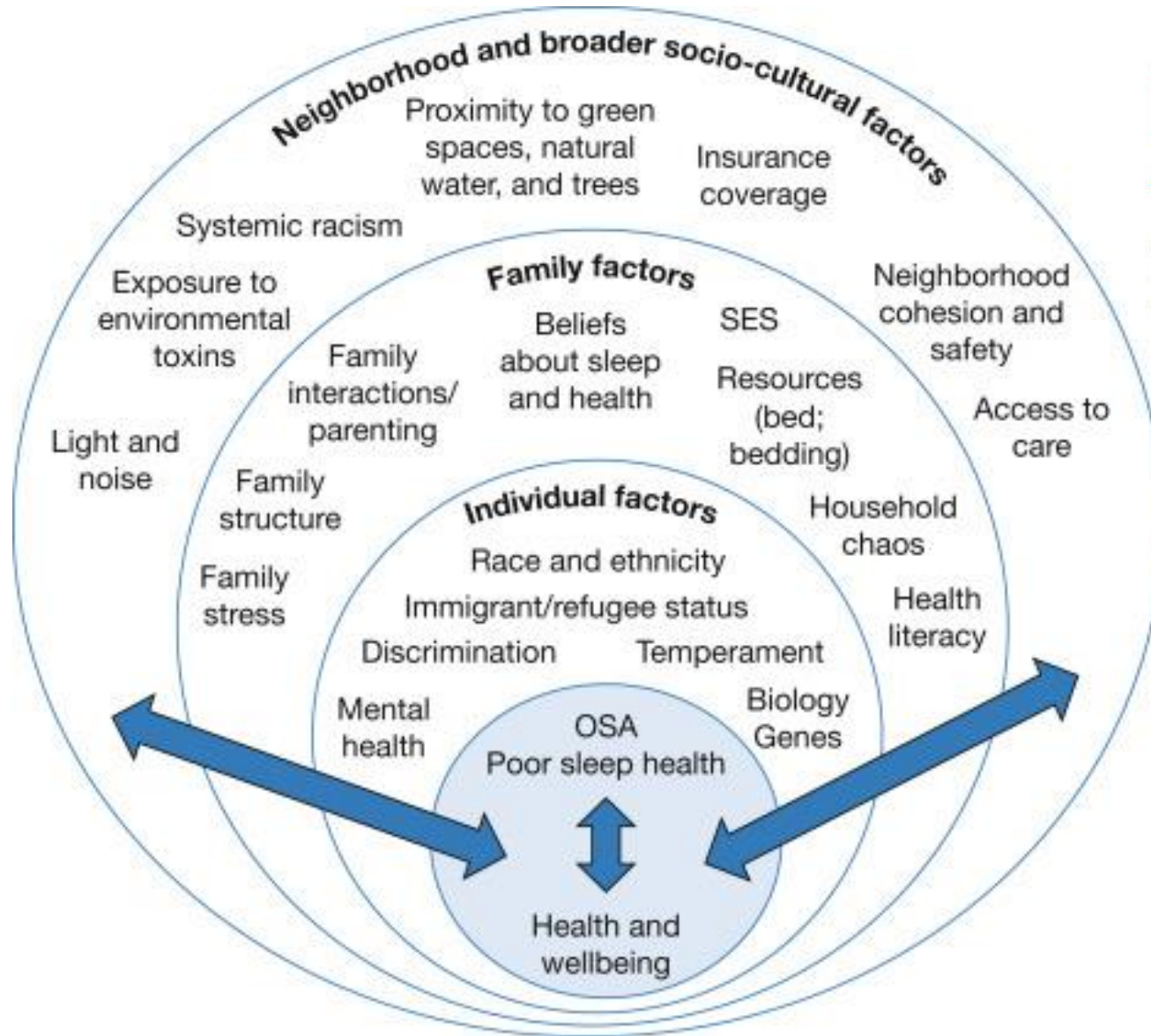
1. Last 12 months diagnosed/treated: Insomnia
2. Last 12 months diagnosed/treated: Other sleep disorder
3. Last 12 months difficult to handle: Sleep difficulties
4. Academic performance negatively affected by sleep difficulties
5. Last 7 days: Enough sleep to feel rested
6. Last 7 days: Problem with sleepiness
7. Last 7 days: Awakened too early
8. Last 7 days: Felt tired/sleepy during the day
9. Last 7 days: Gone to bed because could not stay awake
10. Last 7 days: Extremely hard time falling asleep
11. Ever - Felt exhausted

Excessive Sleepiness by Demographic



Sleep Timing & Maintenance Problems





Disparities in Sleep Health and Potential Intervention Models

A Focused Review

[Check for updates](#)

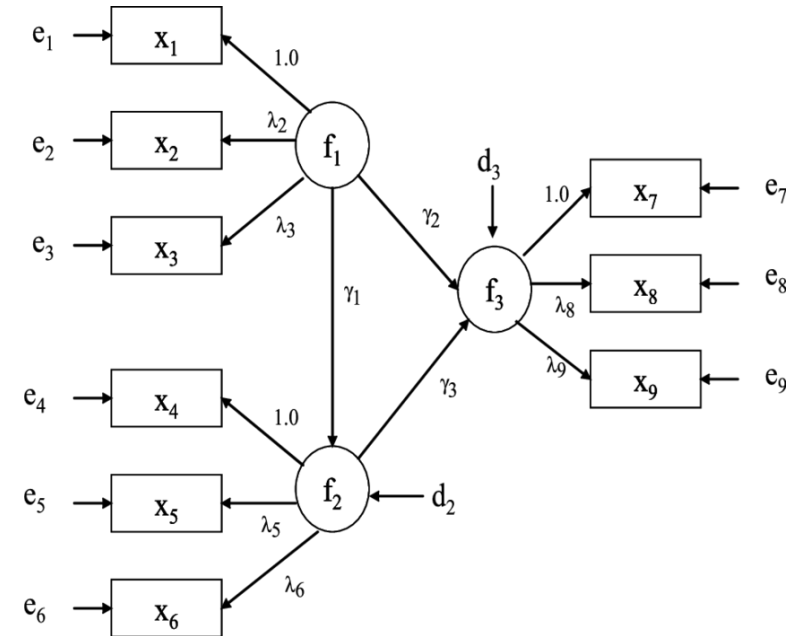
Martha E. Billings, MD; Robyn T. Cohen, MD, MPH; Carol M. Baldwin, PhD; Dayna A. Johnson, PhD; Brian N. Palen, MD; Sairam Parthasarathy, MD; Sanjay R. Patel, MD; Maureen Russell, PhD; Ignacio E. Tapia, MD; Ariel A. Williamson, PhD, DBSM; and Sunil Sharma, MD, FCCP

What's upstream of these sleep problems?

Socioecological model of Higher Ed



Structural Equation Modeling



Statistical method for representing, estimating, and testing a network of relationships between variables

2020: Wave of Anti-Asian rhetoric & violence



Original article

Psychological Well-Being in Asian and Asian American University Students: Impacts of Discrimination During the COVID-19 Pandemic

Ana G. Rivera Juarez ^a, J. Roxanne Prichard, Ph.D. ^{a,*}, and Sergey S. Berg, Ph.D. ^b

^a Department of Psychology and Program in Neuroscience, University of St. Thomas, St. Paul, Minnesota

^b Department of Computer and Information Sciences, University of St. Thomas, St. Paul, Minnesota

Article history: Received July 26, 2022; Accepted April 11, 2023

Keywords: Suicide; Mental health; Discrimination; College students; Asian and Asian American; Sleep

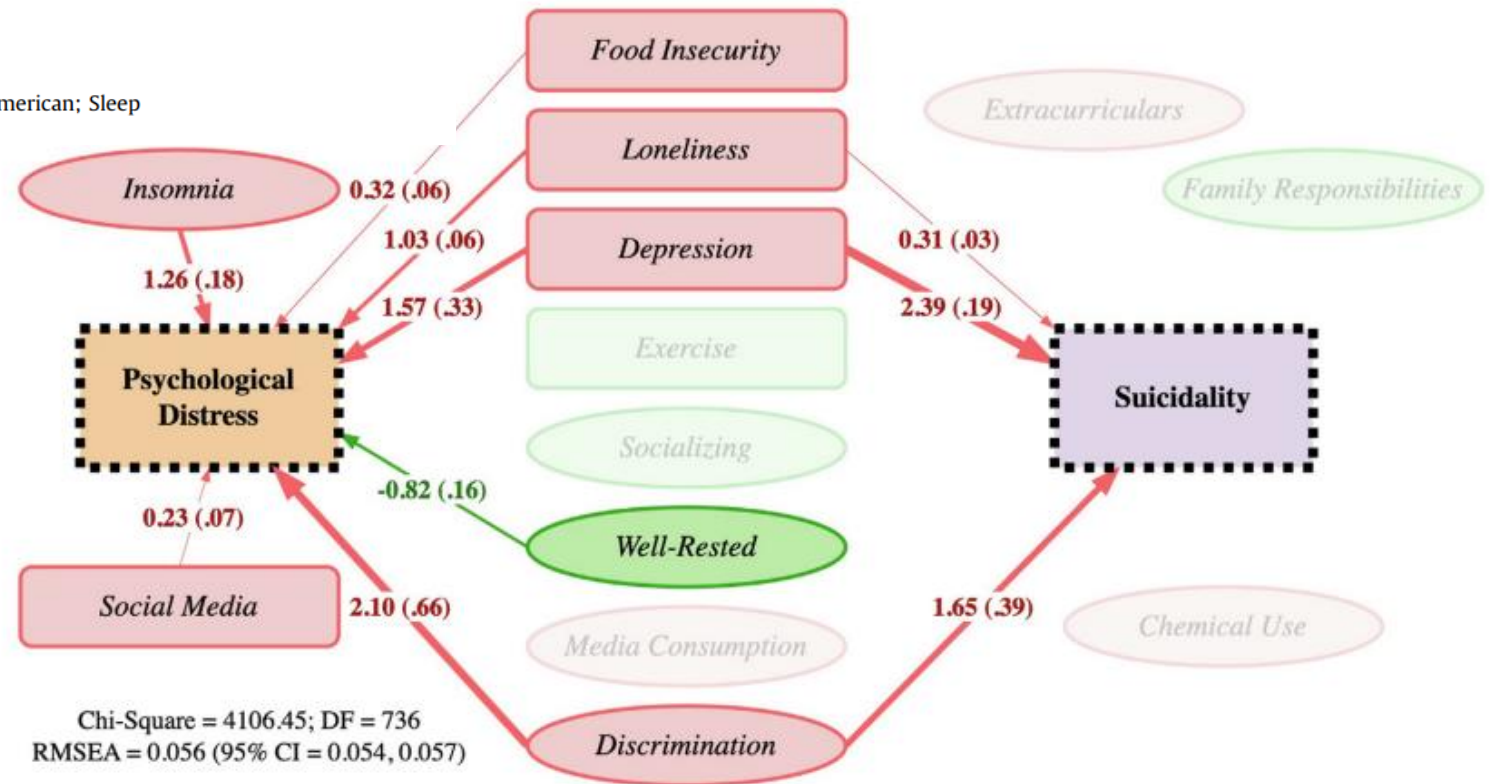


Figure 1. Path diagram and regression coefficients (means and standard errors) for the structural equation model used to describe the effects of various interpersonal, sociological, clinical, and behavioral variables on psychological distress and suicidality in Asian and Asian American college students in 2019 (top) and 2020 (bottom). Measured and latent variables are depicted as squares and circles, respectively, with risk factors in red and protective factors in green. Only variables with significant effects in either 2019 or 2020 are included, with the width of each arrow being proportional to the magnitude of the effect.

"Essential... Rest is a necessary step in reclaiming our power to resist systemic oppression."
—IBRAM X. KENDI, author of *How to Be an Antiracist* and *Stamped from the Beginning*

REST IS RESISTANCE

A MANIFESTO

TRICIA HERSEY

FOUNDER OF
THE NAP MINISTRY

"I judge success by how many naps I took in a week, and how many times I told somebody no; how many boundaries I upheld."

Tricia Hersey, founder of the Nap Ministry, sees rest as a revolutionary way to push back on the obsession with productivity in the U.S.

"This is about more than naps. Rest is anything that allows you to connect your body with your mind."

LGBTQ: Sleep Quality Differences

	Prioritize Sleep in Schedule	Suddenly Awaken with Anxiety	Very Restless Sleeper
Heterosexual	67.6%	17.6%	23.5%
Gay/Lesbian	51%	44.9%	40.8%
Bisexual/Other	38.1%	55.6%	46%

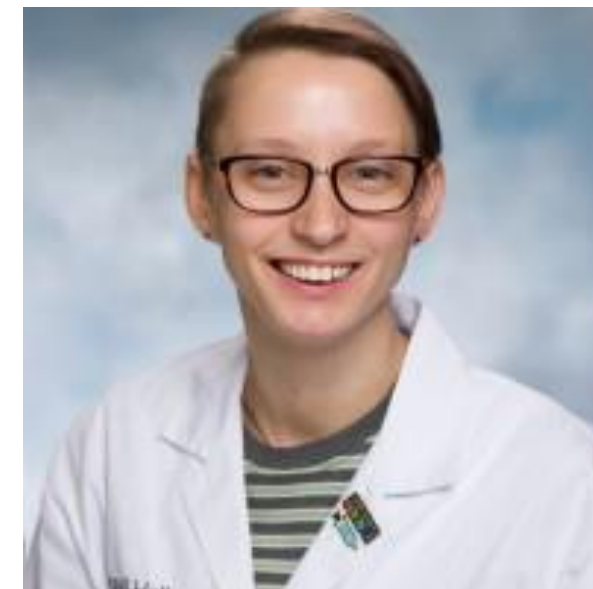
MAJOR ARTICLE



University housing reinforces the negative relationship between interpersonal violence, psychological distress, and suicidality in undergraduates, particularly among gender diverse students

Abigail T. Heller, BS^a, Sergey S. Berg, PhD^b, and J. Roxanne Prichard, PhD^c

^aNeuroscience, Child Health Institute of New Jersey, New Brunswick, New Jersey, USA; ^bComputer and Information Sciences, University of St. Thomas, St. Paul, Minnesota, USA; ^cPsychology, University of St. Thomas, St. Paul, Minnesota, USA



ABSTRACT

Objective: To compare academic and mental health outcomes across diverse gender identities in the context of interpersonal violence and campus housing.

Participants: 45,549 students from 124 self-selected post-secondary institutions.

Methods: Various academic and health measures from the National College Health Assessment Spring 2017 dataset were analyzed for differences across five gender identities (cis women, cis men, trans-

ARTICLE HISTORY

Received 30 June 2020

Revised 18 December 2020

Accepted 8 January 2021

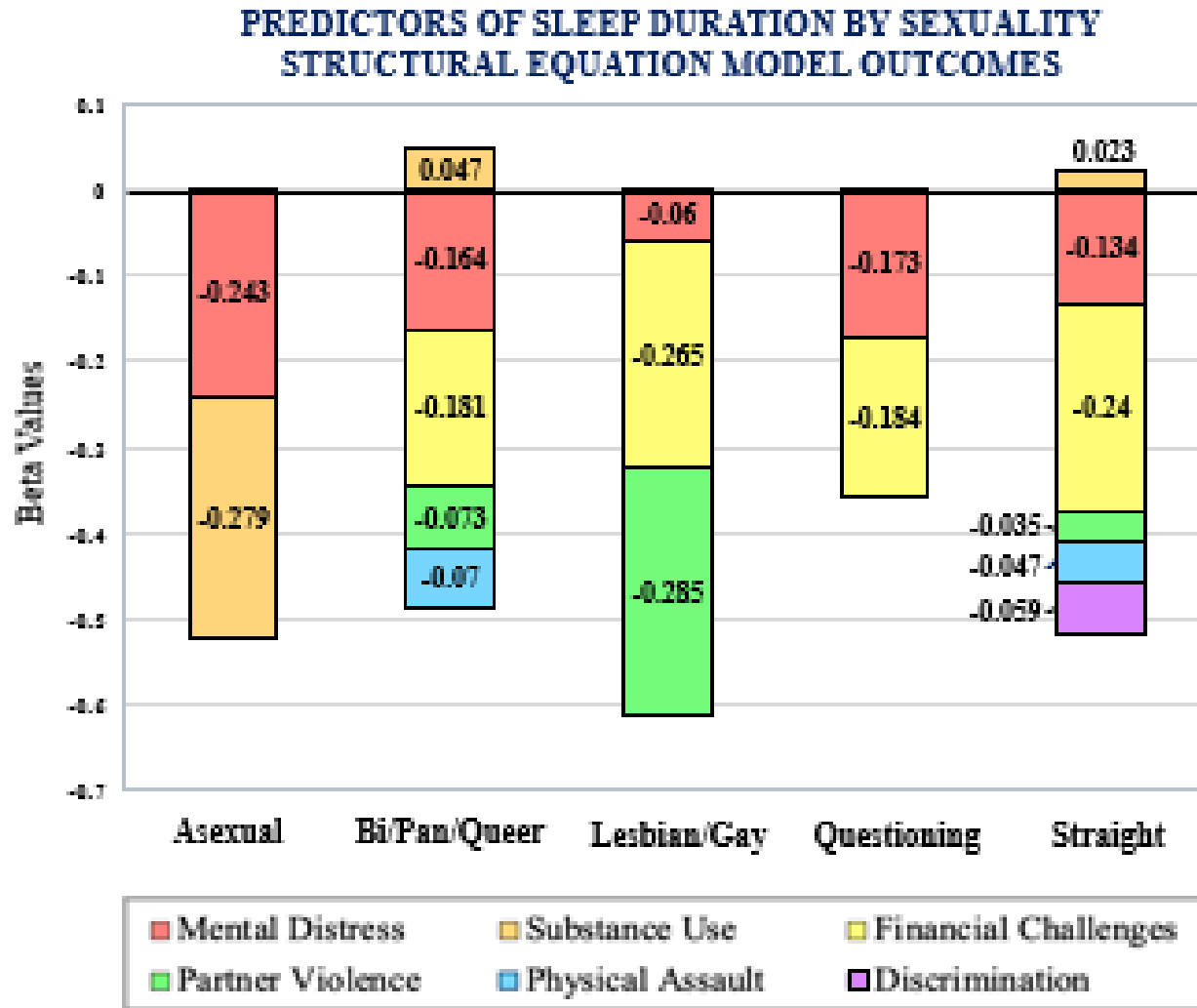
KEYWORDS

Academic success; gender

Table 3. Percent of individuals by gender who reported experiences of interpersonal violence in the last 12 months.

	Cisgender women (n = 30,887)	Cisgender men (n = 14,003)	Trans women (n = 20)	Trans men (n = 75)	Genderqueer individuals (n = 564)
Physical fight	2.3%	8.7%	30.0%	4.0%	6.6%
Physical assault	2.4%	3.6%	30.0%	5.3%	6.7%
Verbal threat	15.8%	23.8%	30.0%	34.7%	33.2%
Sexual assault	13.0%	4.3%	25.0%	6.7%	22.7%
Attempted rape	5.4%	1.1%	15.0%	4.0%	8.9%
Rape	3.5%	0.7%	15.0%	2.7%	6.2%
Stalking	6.5%	2.4%	20.0%	5.3%	11.2%
Feels unsafe on campus during day	0.9%	1.1%	10.0%	4.0%	3.7%
Feels unsafe on campus at night	18.8%	6.1%	20.0%	16.0%	21.5%
Feels unsafe in the surrounding community during day	8.4%	5.9%	10.0%	9.3%	9.9%
Feels unsafe in the surrounding community at night	46.1%	26.6%	35.0%	40.0%	48.0%

What are the predictors of poor sleep in queer students?



Across sexualities, **mental health** and **financial stress** are the major drivers of poor sleep health. **Partner violence** impacts varies by **sexuality**.



What happens when the bed is associated with trauma?

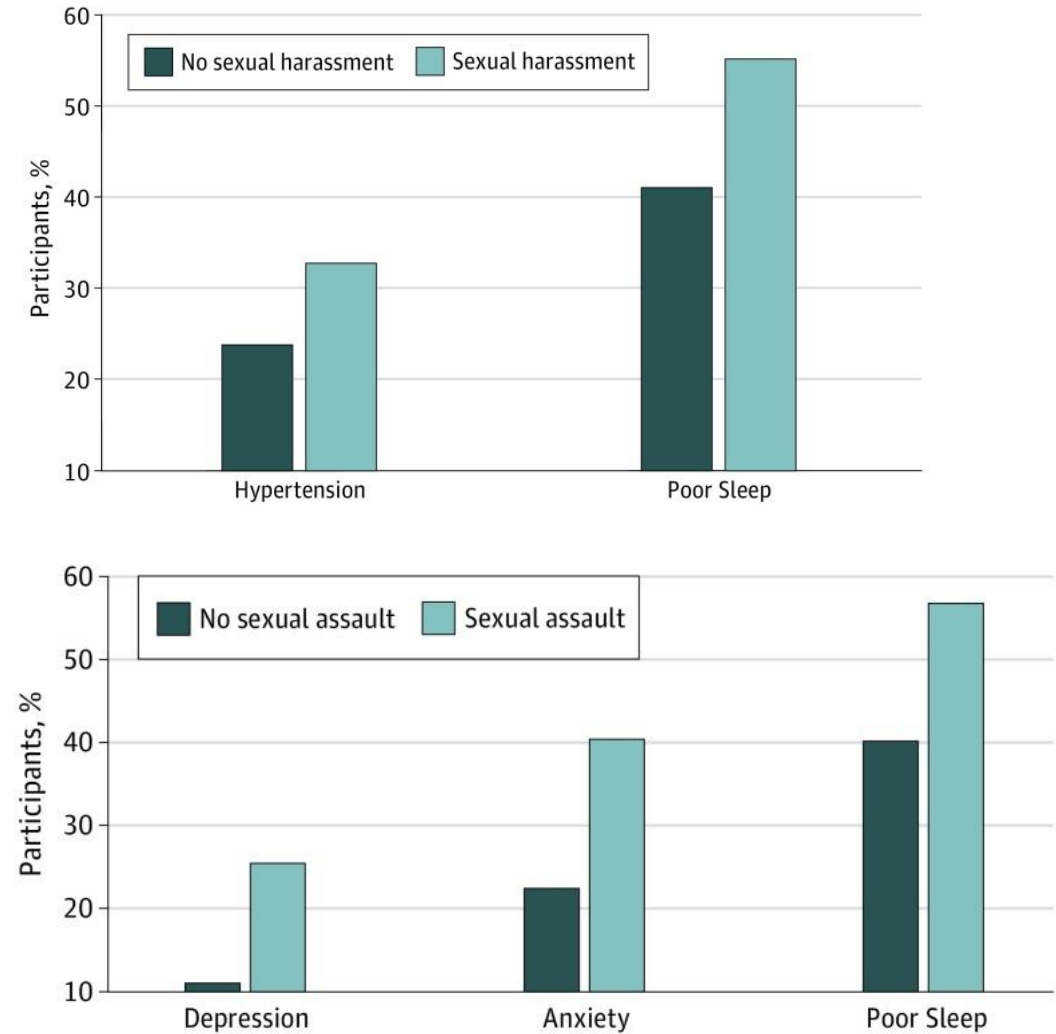
Association of Sexual Harassment and Sexual Assault with Midlife Women's Mental and Physical Health

Participants: 304 nonsmoking women 40 - 60 free of clinical cardiovascular disease.

19% reported a history of workplace sexual harassment

22% reported a history of sexual assault

Thurston, Chang, Koenen, et al.
JAMA Intern Med. 2019 Jan;
179(1): 48–53



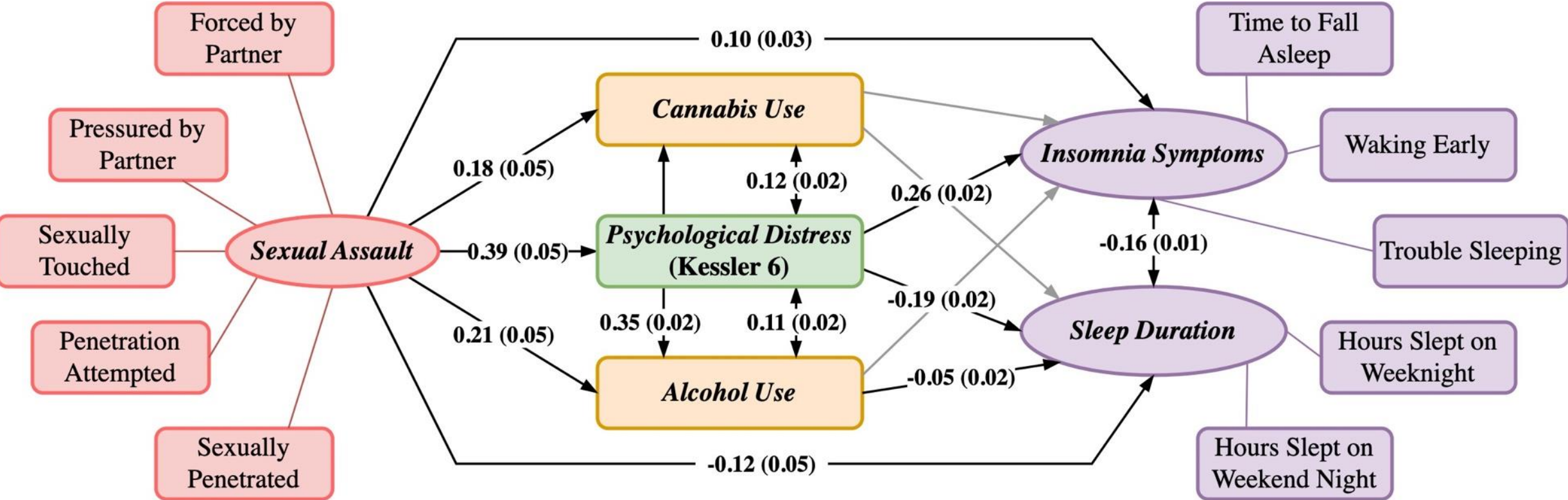
Hypertension models were adjusted for age, race/ethnicity, education, and BMI among women not using antihypertensive medications; Sleep models were adjusted for age, race/ethnicity, education, BMI, snoring, use of sleep medication, and nightshift work. Depression and anxiety models were adjusted for age, race/ethnicity, education, BMI, use of antidepressants, and use of anxiolytics.

Varsity Athletes	Female	Male
Brownout drunk in last year	32.0%	26.0%
Blackout drunk in last year	14.0%	15.0%
IPV Verbal abuse	11.0%	7.6%
Microaggression	10.2%	7.7%
Sexual Harassment	9.1%	3.2%
Sexual Assault	7.8%	4.2%
IPV Controlling Contacts	7.4%	7.7%
Verbally Threatened	6.7%	14.1%
Discrimination	6.0%	6.4%
Stalking in last 12 months	4.6%	2.4%
IPV Sexual Pressure	3.2%	2.7%
IPV Physical Violence	2.4%	3.2%
Sex w/o my consent	2.1%	1.7%
IPV Sexual Violence	1.4%	2.0%
Physical Fight	1.3%	8.0%
Abusive Hazing	1.0%	2.7%

Student Athletes show higher rates of high-risk alcohol use & associated sequelae than the general student population.

Sexual assault predicts gender-specific sleep problems in varsity student athletes.

Hankins, Berg, Prichard (under review)



Chi-Square = 858.19, DF = 60, AGFI = 0.92, RMSEA = 0.07

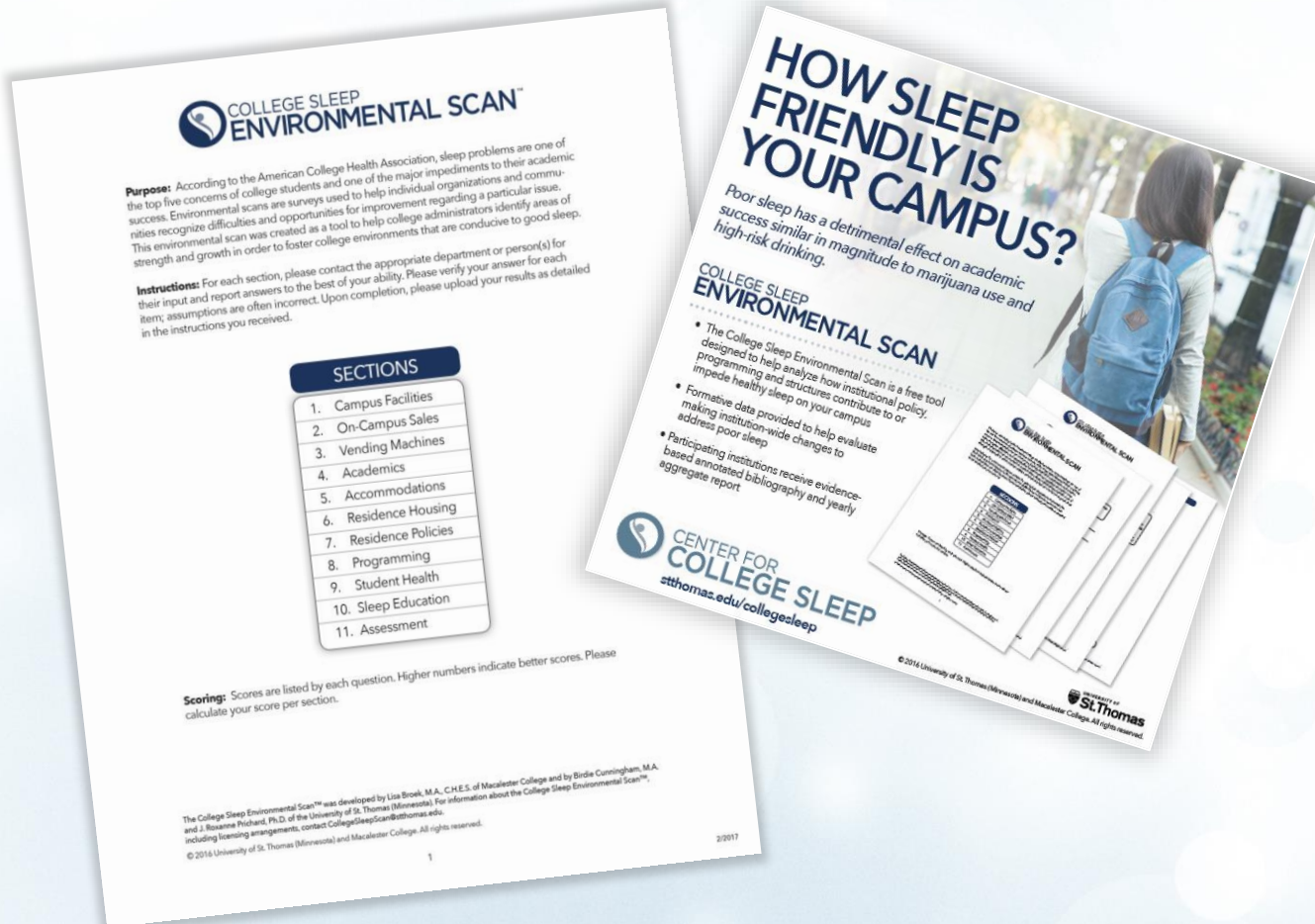
4.

**Identify ways to
assess and
promote sleep
health across
multiple
departments.**



**The Course of Empire: Destruction
Cole Thomas 1836.**

College Sleep Environmental Scan™ &



YOUR LOGO HERE

Name: _____ Date: _____

COLLEGE SLEEP QUESTIONNAIRE | RESULTS

Students can share this pdf report with academic counselors and healthcare providers.

YOUR WEEKLY SLEEP

	8 pm	9 pm	10 pm	11 pm	12 am	1 am	2 am	3 am	4 am	5 am	6 am	7 am
MONDAY EVENING												
TUESDAY EVENING												
WEDNESDAY EVENING												
THURSDAY EVENING												
FRIDAY EVENING												
SATURDAY EVENING												
SUNDAY EVENING												

SUGGESTED SLEEP TIME: [Yellow bar] RECORDED SLEEP TIME: [Blue bar] RECORDED NAP TIME: [Red bar]

SUGGESTED NAP TIME: Based on your circadian preference, we recommend napping as needed for no longer than 30 minutes around 4 pm.

SLEEP SCHEDULE

Note how the sleep schedule you reported differs from the sleep schedule recommended for your circadian preference. Irregular sleep schedules are linked to decreased academic performance, increased stress, and more illness. Going to bed and waking up at approximately the same time (within an hour) every night, even on the weekends, helps you fall asleep faster, stay asleep through the night, and wake up feeling more refreshed.

YOU REPORTED:

- Taking a long time to fall asleep
- Not feeling alert when you wake up
- Having an inconsistent sleep schedule

RECOMMENDATIONS:

- Make a plan for your sleep
- Include your sleep time into your schedule
- Set an alarm one hour before bedtime as a reminder

TOTAL SLEEP TIME

Most college students need between 8 and 9 hours of sleep a night to feel fully rested. Needing an alarm to wake up is a sign that you're not getting enough sleep.

Last week, you reported getting 7 hrs, 15 min. of sleep on average, 85% of the recommended daily amount.

YOUR AVERAGE HOURS OF SLEEP

ACTUAL SLEEP: [Blue bar] RECOMMENDED AVERAGE SLEEP: [Yellow bar]

EXCESSIVE SLEEPINESS

Feeling sleepy throughout the day is a sign of sleep deprivation and/or non-restorative sleep. If you experience excessive sleepiness, please review these results to see what changes you can make to improve your sleep.

YOU REPORTED:

- Frequently feeling tired during the day
- Dangerous behaviors like drowsy driving

MILD MODERATE EXCESSIVE

CENTER FOR COLLEGE SLEEP

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College Sleep Environmental Scan

HOW SLEEP FRIENDLY IS YOUR CAMPUS?

Poor sleep has a detrimental effect on academic success similar in magnitude to marijuana use and high-risk drinking.

COLLEGE SLEEP ENVIRONMENTAL SCAN

- The College Sleep Environmental Scan is a free tool designed to help analyze how institutional policy, programming and structures contribute to or impede healthy sleep on your campus
- Formative data provided to help evaluate making institution-wide changes to address poor sleep
- Participating institutions receive evidence-based annotated bibliography and yearly aggregate report



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Section	Your Score	Best Score	Percentage
I. Residence Housing		36	
II. Residence Policies		22	
III. Campus Facilities		36	
IV. On-campus Sales		27	
V. Vending Machine Sales		8	
VI. Programming		17	
VII. Student Health		6	
VIII. Accommodations		3	
IX. Assessment		3	
X. Academics		8	
XI. Sleep Education		17	

- **Health Promotion Office**
- **Residence Life**
- **Athletics**
- **Campus Programing**
- **Student Health**
- **Student Counseling**
- **Academics & Retention**
- **Accommodations**
- **Campus Facilities**
- **Libraries**
- **Student Employment**
- **On-Campus Sales**

University-wide Sleep Assessment

What sleep and health promotion programs are implemented on your campus?

Take Home Message

- Sleep is a powerful predictor of well-being and retention.
(Look for it in your institutional data!)
- Sleep health is a complex factor and includes timing, quality, regularity & satisfaction. (RUSATED)
- Sleep health disparities reflect social inequities.
- Institutional sleep health change can be done, but it requires extensive collaboration.