(Don't) Drink, Sleep, and Be Happy

RSF Summer Camp Lecture

Frank Schilbach (MIT)

July 10, 2022

Original motivation

- Study (psychological and medical) factors that the poor are disproportionately exposed to:

Original motivation

- Study (psychological and medical) factors that the poor are disproportionately exposed to:
  - Sleep deprivation
  - Worries (about money and in general)
  - Anxiety and depression
  - Substance use (alcohol)
  - Physical pain
  - Loneliness and social exclusion
  - Lack of dignity and shame

Original motivation

- Study (psychological and medical) factors that the poor are disproportionately exposed to:
  - Sleep deprivation
  - Worries (about money and in general)
  - Anxiety and depression
  - Substance use (alcohol)
  - Physical pain
  - Loneliness and social exclusion
  - Lack of dignity and shame

- Broad questions:
  (1) How do these factors affect labor-market outcomes, decision-making, and thus poverty?
  (2) Can we better understand behavioral phenomena through this lens?

Broader motivation

- Experience sampling and day recollection methods (e.g. Kahneman et al. 2004; Kahneman & Deaton 2010). What are key predictors of affect?

Broader motivation

- Experience sampling and day recollection methods (e.g. Kahneman et al. 2004; Kahneman & Deaton 2010). What are key predictors of affect?
  - Sleep quality
  - Depression
  - Physical pain
  - Smoking
  - Being alone

Broader motivation

- Experience sampling and day recollection methods (e.g. Kahneman et al. 2004; Kahneman & Deaton 2010). What are key predictors of affect?
  - Sleep quality
  - Depression
  - Physical pain
  - Smoking
  - Being alone

- Key questions:
  (1) Which of these correlations reflect causal relationships (and in which direction)?
  (2) Are people making mistakes in (not) 'investing' in these factors?
  (3) Do these factors affect behavioral phenomena?

Today

- Will cover three topics/papers:
  (1) Alcohol
  (2) Sleep
  (3) Mental health

Today

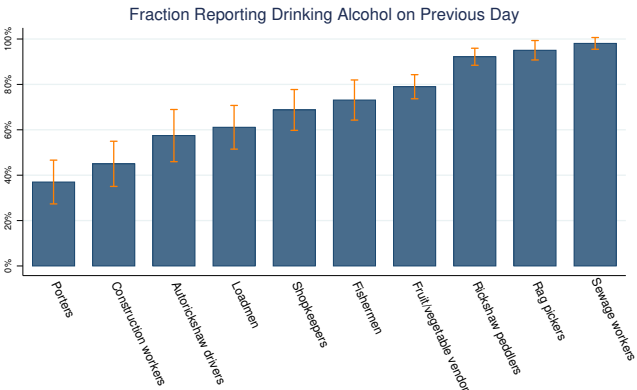
- Will cover three topics/papers:
  (1) Alcohol
  (2) Sleep
  (3) Mental health

- Some common themes:
  - Got interested in these topics by observing and talking to people about their lives
  - An important part of this work is novel measurement and documenting new facts
  - Some of this work raises more questions than it answers. So much left to be done!

Alcohol and Self-Control: A Field Experiment in India

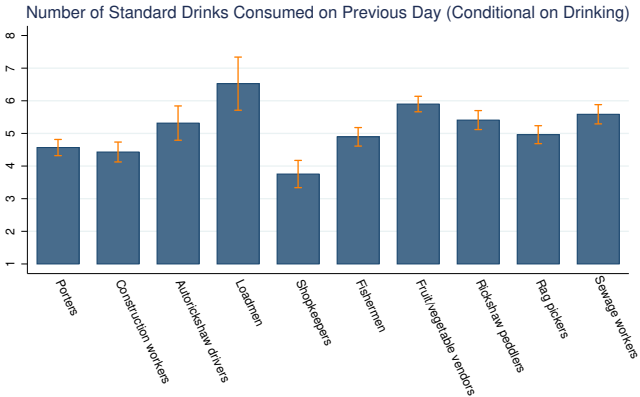
Frank Schilbach (MIT)

High prevalence of drinking among low-income workers in Chennai



- Heavy drinking among low-income men hard to miss while observing and talking to people
- Appears to be highly important predictor of (family) well-being

High prevalence of drinking among low-income workers in Chennai



- Heavy drinking among low-income men hard to miss while observing and talking to people
- Appears to be highly important predictor of (family) well-being
- Typical quantity is about 5 standard drinks per day
- 10 to 40 percent of household income spent on alcohol

Broad research questions on alcohol consumption (among the poor)

(1) What are the *economic* impacts of heavy drinking?
- Labor supply, earnings, and productivity; household outcomes
- Decision-making
- Is alcohol consumption a cause of poverty?

(2) Why are individuals drinking heavily?
- Do people want to change their drinking patterns?
- Does poverty increase demand for alcohol?
- Does physical and/or psychological pain increase demand for alcohol?

(3) Alcohol policy
- What policies might help people drink less if they would like to do so?
- Much-debated topic in developing countries
- Wide range of policy options across Indian states

This paper

(1) What are the *economic* impacts of heavy drinking?
- Labor supply, earnings, and productivity; household outcomes
- Decision-making: savings behavior
- Is alcohol consumption a cause of poverty?

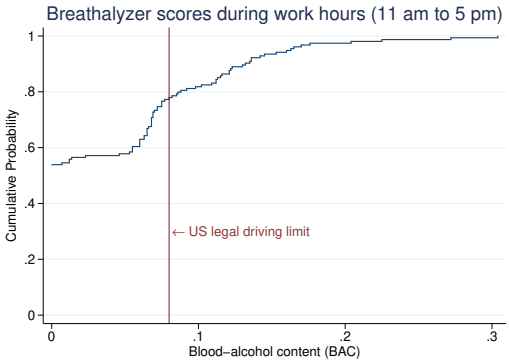
(2) Why are individuals drinking heavily?
- Do people want to change their drinking patterns?
- Does poverty increase demand for alcohol?
- Does physical and/or psychological pain increase demand for alcohol?

(3) Alcohol policy
- What policies might help people drink less if they would like to do so?
- Much-debated topic in developing countries
- Wide range of policy options across Indian states

Alcohol consumption among cycle-rickshaw drivers in Chennai

- Most cycle-rickshaw drivers drink heavily every day.
- Key reported reason why people drink: physical and psychological pain
- Physical pain appears to contribute to self-control problems related to alcohol. Why?
  - Alcohol is a powerful anesthetic.
  - Pain increases short-run benefits of drinking while leaving long-run costs unaffected.

Day drinking among cycle-rickshaw drivers in Chennai



- Cycle-rickshaw drivers are often inebriated during regular work hours
- Vast majority say they'd like to reduce their drinking and/or that they'd be happier if all liquor stores closed.
- Potential interventions
  - Painkillers
  - Antabuse
  - Incentives for negative breathalyzer tests

Experimental design

- Rickshaw drivers paid for 20 days of daily study office visits between 6 pm and 10 pm
- Measure blood-alcohol content (BAC) using breathalyzer test
- Short survey
  - Labor market outcomes
  - Alcohol consumption
  - Expenditure patterns
- Opportunity to save money at study office

Measure demand for incentives

- **Option A:** incentives for sobriety
  - Same payment structure as Incentive Group
  - Rs. 60 if BAC > 0, Rs. 120 if BAC $= 0$

Measure demand for incentives

- **Option A:** incentives for sobriety
  - Same payment structure as Incentive Group
  - Rs. 60 if BAC > 0, Rs. 120 if BAC $= 0$
- **Option B:** payment regardless of BAC

	Option A		**Option B**
	BAC > 0	BAC $= 0$	regardless of BAC
(1)	Rs. 60	Rs. 120	Rs. 90
(2)	Rs. 60	Rs. 120	Rs. 120
(3)	Rs. 60	Rs. 120	Rs. 150

Measure demand for incentives

- **Option A:** incentives for sobriety
  - Same payment structure as Incentive Group
  - Rs. 60 if BAC > 0, Rs. 120 if BAC $= 0$
- **Option B:** payment regardless of BAC

	Option A		**Option B**
	BAC > 0	BAC $= 0$	regardless of BAC
(1)	Rs. 60	Rs. 120	Rs. 90
(2)	Rs. 60	Rs. 120	Rs. 120
(3)	Rs. 60	Rs. 120	Rs. 150

Measure demand for incentives

- **Option A:** incentives for sobriety
  - Same payment structure as Incentive Group
  - Rs. 60 if BAC > 0, Rs. 120 if BAC $= 0$
- **Option B:** payment regardless of BAC

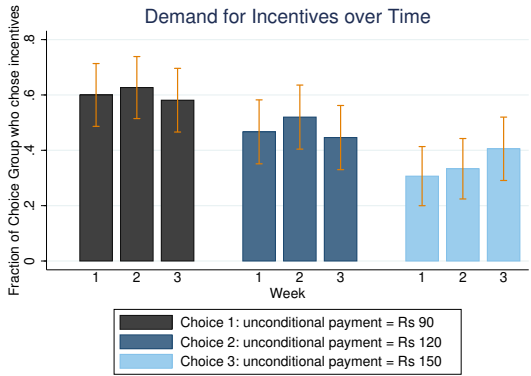
	Option A		**Option B**
	BAC > 0	BAC $= 0$	regardless of BAC
(1)	Rs. 60	Rs. 120	Rs. 90
(2)	Rs. 60	Rs. 120	Rs. 120
(3)	Rs. 60	Rs. 120	Rs. 150

Persistently high demand for commitment

- Sobriety incentives reduce day drinking
  - 1/3 reduction in day drinking
  - Mostly substitution to drinking later at nights
  - No impacts of on labor-market outcomes
  - Increased savings (beyond increased income from reduced drinking)

Persistently high demand for commitment

- Sobriety incentives reduce day drinking
  - 1/3 reduction in day drinking
  - Mostly substitution to drinking later at nights
  - No impacts of on labor-market outcomes
  - Increased savings (beyond increased income from reduced drinking)
- About 50% choose options that are dominated in study payments.
  - About 1/3 willing to forego 10% of daily earnings to receive incentives
  - Choices reveal self-control problems to a greater extent than found in most settings



Many open questions and opportunities

(1) What are the *economic* impacts of heavy drinking?
- Larger/more powerful intervention to study labor market effects
- Broader range of decision-making (including timing)
- Impact on families and poverty

(2) Why do people drink heavily and/or get addicted to other drugs?
- Limited self-control problems appear to matter greatly. But what is their underlying source?
- What is the role of physical or psychological pain?
- Does poverty cause demand for alcohol or other drugs (e.g. opioids)?

(3) Test other interventions and policies
- (Family) therapy (e.g. Murphy 2022), other interventions to improve psychological well-being
- Offer work that entails more dignity and/or less pain (or other ways to reduce physical pain)
- Evaluate large-scale, long-term natural experiments (e.g. prohibition in Indian states)

Use continuous sobriety measurement devices (wrist bracelets)?

The Economic Consequences of Increasing Sleep among the Urban Poor

Pedro Bessone (MIT) Gautam Rao (Harvard)

Frank Schilbach (MIT) Heather Schofield (UPenn) Mattie Toma (Harvard)

Sleep environments vary a lot across settings

Howard family, Colorado, US ($4,650/month)

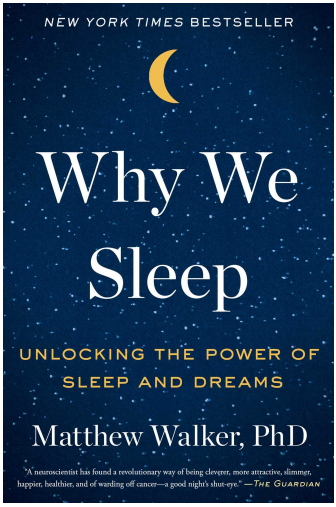
Shaw family, Calcutta, India ($48/month)

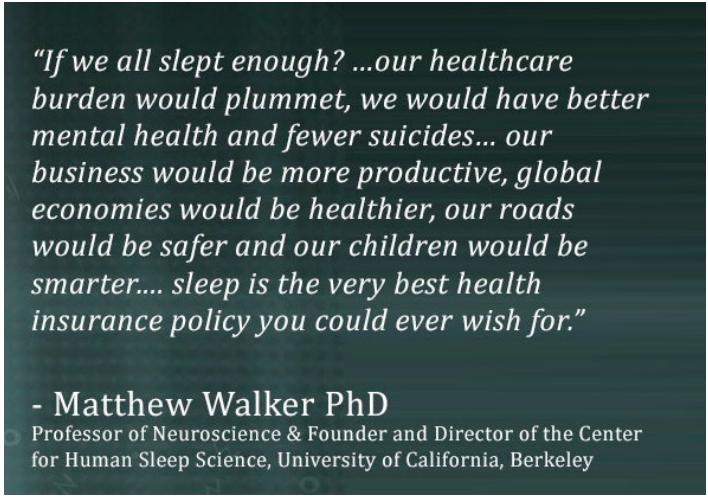
Source: Gapminder (Dollar Street)

Existing work on the effects of sleep

- Sleep is the most time-consuming activity of our lives.
- Doctors recommend 7-9 hours of sleep per night (Hirshkowitz et al. 2015)
  - Concern about an 'epidemic' of sleep deprivation in rich countries (Walker 2017)
- Large body of short-run lab experiments and observational studies show impacts on:
  - Cognition: attention, working memory Lim & Dinges 2010; Killgore 2010
  - Happiness and subjective well-being Dinges 1997; Strine and Chapman 2005
  - Health Banks and Dinges 2007
  - Wages Gibson and Shrader 2018
- Nearly all evidence from rich countries and from the lab

Sleep experts believe people under-invest in sleep (in rich settings)





This paper

(1) Objectively measure sleep in Chennai, India
- 452 participants hired to do data-entry work for one month each

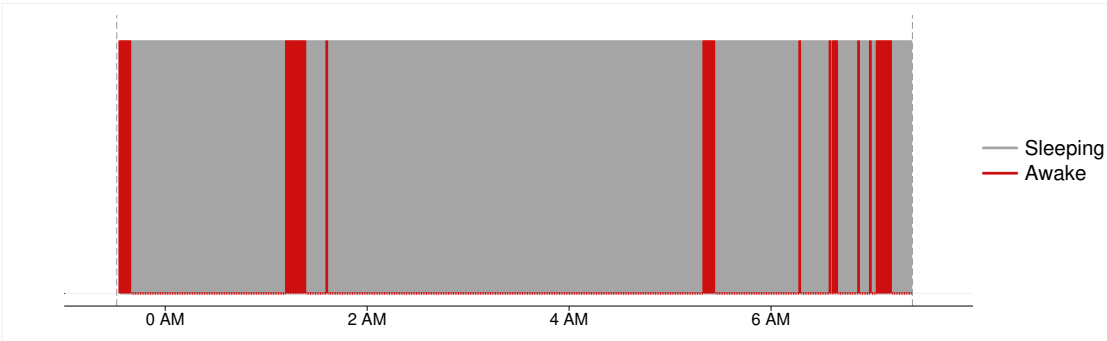
(2) Randomized interventions to increase sleep
- Encouragement/incentives to increase night sleep
- Afternoon naps

(3) Measure impacts of increased sleep
- Work outcomes
- Cognition (attention, working memory)
- Preferences and decision-making
- Well-being
- WTP to invest in sleep

Actigraphs: sleep measurement technologies allow for field studies

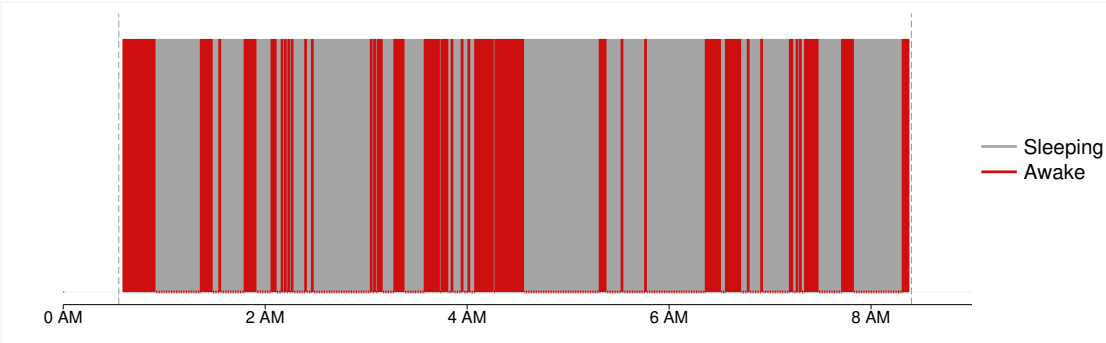
- Wrist-watch-like devices: infer sleep from motion
- 90% accurate relative to sleep-lab measures (Ancoli-Israel et al., 2003)
- Found to also perform well with problematic sleepers (e.g. sleep apnea)
- Primarily measure sleep quantity and sleep efficiency

What good sleep tends to look like



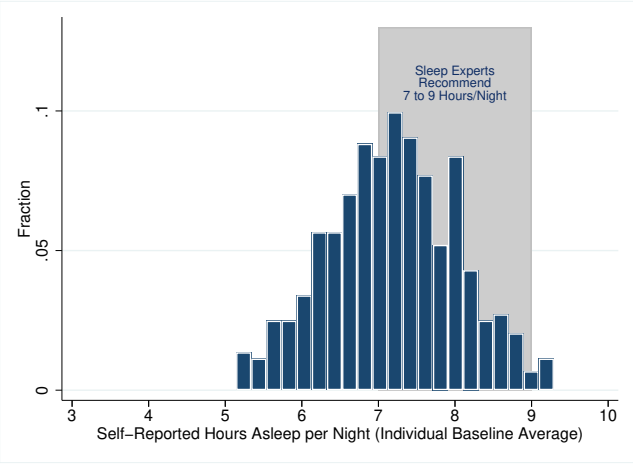
- Time in bed: 7 hr 53 mins; asleep 7 hr 8 mins
- Sleep efficiency (time asleep/time in bed) = 90%
- 9 (short) awakenings; longest sleep episode of 202 mins

A typical night of sleep in Chennai



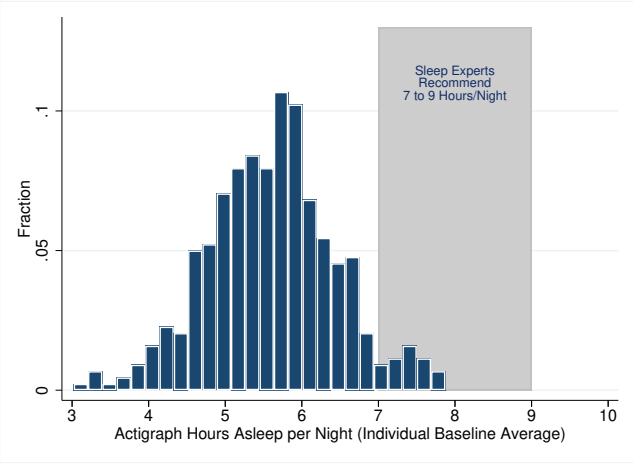
- Low quantity: in bed 7 hrs 45 mins, asleep 5 hrs 20 mins
- Sleep efficiency (time asleep/time in bed) = 69%
- Fragmented sleep: 31 awakenings, longest sleep episode of 45 mins

Finding 1: How much do the urban poor in Chennai sleep?



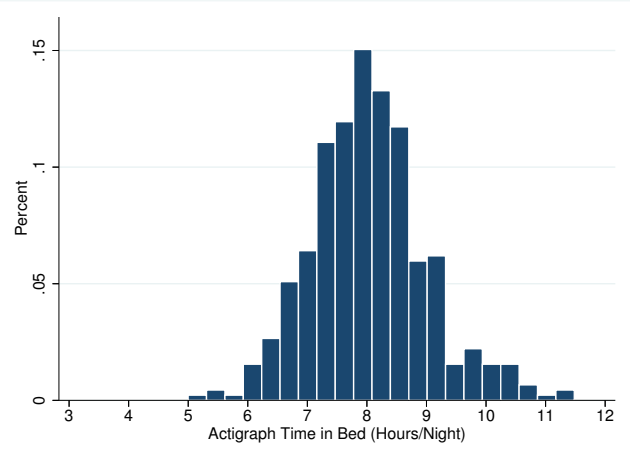
- Self-reported time asleep:
  - 7.2 hours in our study
  - Similar in US and India overall

Finding 1: How much do the urban poor in Chennai sleep?



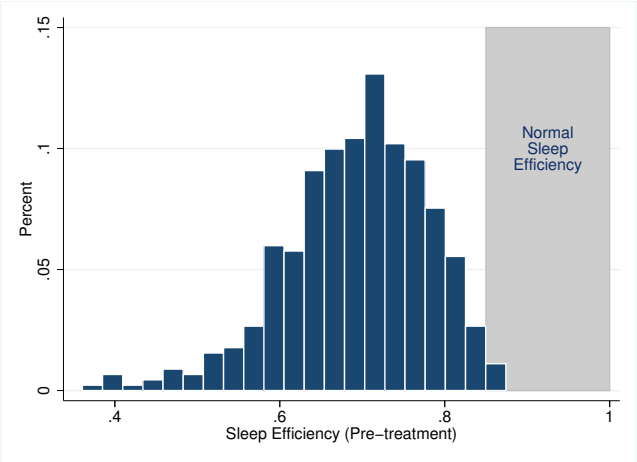
- Self-reported time asleep:
  - 7.2 hours in our study
  - Similar in US and India overall
- Objectively measured sleep
  - 5.6 hours in our study
  - 6.25 to 6.5 hours in US

Finding 1: How much do the urban poor in Chennai sleep?



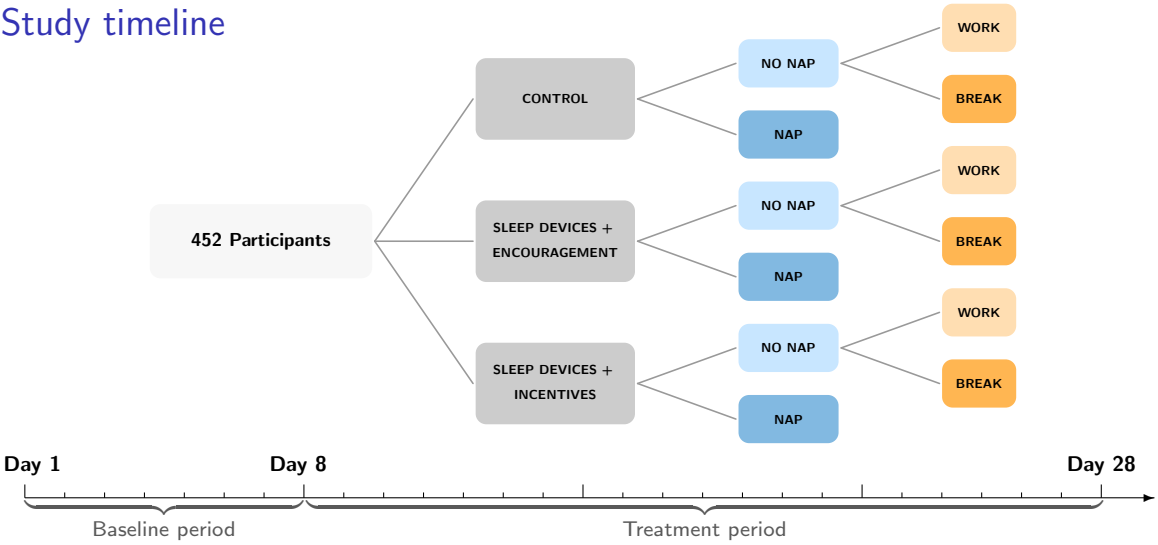
- Self-reported time asleep:
  - 7.2 hours in our study
  - Similar in US and India overall
- Objectively measured sleep
  - 5.6 hours in our study
  - 6.25 to 6.5 hours in US
- People spend plenty of time in bed
  - Actigraphs: 8 hours in bed/night
  - Self-reports: 7.9 hours in bed/night

Strikingly low sleep quality

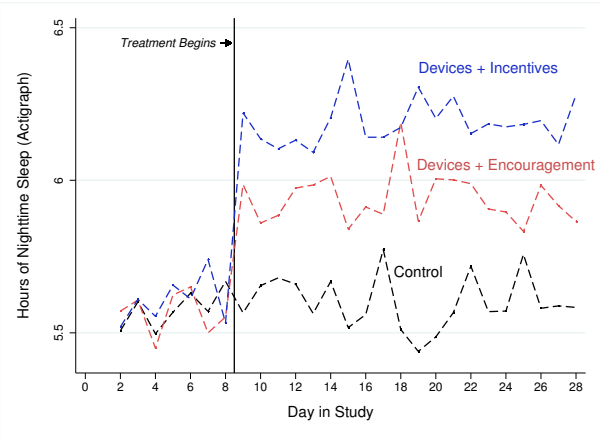


- Efficiency: (time asleep/time in bed)
  - 85 to 95% in US (Walker, 2017)
- 70% on average in our sample
  - Low even in middle of night
  - Lower than for people with sleep apnea or elderly populations
- Implications
  - Low quality of sleep
  - High opportunity costs of time

Study timeline

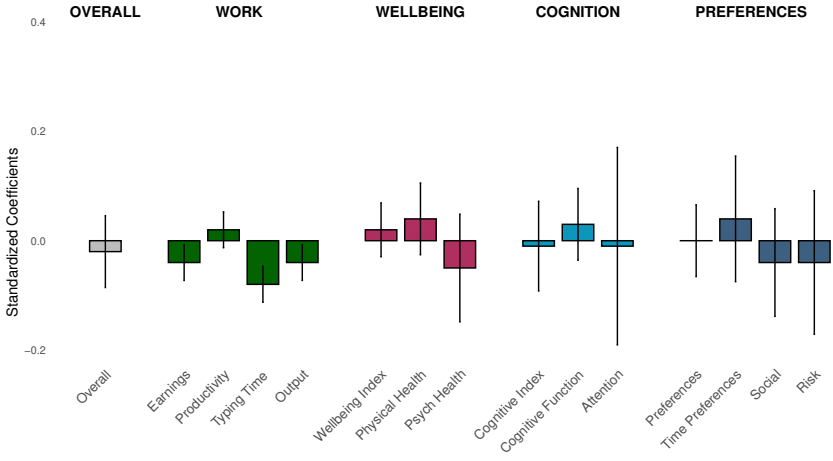


Finding 2: Night-sleep treatments increase sleep duration but not effciency

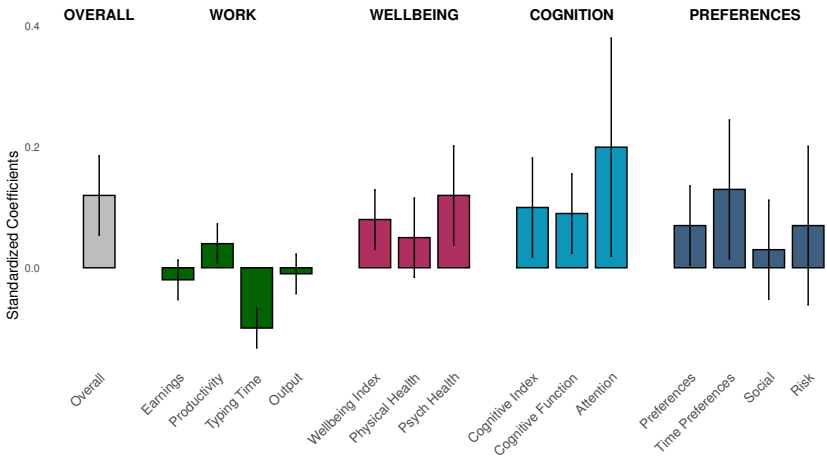


- Control Group sleeps 5.6 hours per night
- Sizable impacts on time asleep
  - 20 mins for Devices + Encouragement
  - 33 mins for Devices + Incentives
  - Large increases compared to sleeping pills
- No effects on sleep efficiency
- Nap group naps regularly
  - 90% sleep based on actigraphs
  - Median daily nap duration: 16 minutes

Finding 3: No discernible positive impacts of increased night sleep



Finding 4: Naps impact a range of outcomes



Discussion

- No average impact of increasing night sleep on a range of outcomes
  - Contrast to expert (and our own!) predictions and medical literature from rich countries
  - Maybe due to the very low quality of sleep we found
  - Or maybe the findings from sleep labs do not generalize to the field

- No evidence that people in our setting under-invest in night sleep
  - Low benefits and high opportunity costs
  - Although health effects could emerge over the longer run
  - Of course, benefits of higher-quality sleep could be higher

Discussion

- No average impact of increasing night sleep on a range of outcomes
  - Contrast to expert (and our own!) predictions and medical literature from rich countries
  - Maybe due to the very low quality of sleep we found
  - Or maybe the findings from sleep labs do not generalize to the field
- No evidence that people in our setting under-invest in night sleep
  - Low benefits and high opportunity costs
  - Although health effects could emerge over the longer run
  - Of course, benefits of higher-quality sleep could be higher
- Naps have impacts on a range of important outcomes
  - Proof that sleep can matter even in this setting
  - Nap reduce present bias (using Augenblick and Rabin 2018 effort discounting task)!
  - Could be due to higher quality or due to different timing (or both)

Many open questions (Rao et al. 2021)

- Effects of sleep in other field settings
  - In rich countries, especially low-income populations; in rural areas in developing countries
  - Using actigraphs, fitbits etc. (e.g. Handel and Kolstad 2017; Avery et al. 2019)
  - Short- vs. long-run effects, different types of work, etc.
  - Behavioral biases, beliefs, attention, etc.
- What are the impacts of improving sleep quality?
  - Cognitive Behavioral Therapy for Insomnia (CBT-I) shows promising results
  - Improving financial well-being (Duquennois & Jagnani 2022)
- Sleep and learning outcomes in children, e.g. Jagnani (2021)
- How do people decide how much to sleep? (Avery et al. 2021)
  - Beliefs about impacts of sleep
  - Present focus

Poverty, Depression, and Anxiety: Causal Effects and Mechanisms

Matthew Ridley (MIT) Gautam Rao (Harvard)

Frank Schilbach (MIT) Vikram Patel (Harvard)

What are depression and anxiety?[1]

- **Depression (Major Depressive Disorder)**
  - Constellation of symptoms including changes in psychomotor function, weight loss, oversleeping or under-sleeping, decreased appetite, fatigue, difficulty concentrating, extreme feelings of guilt or worthlessness, and suicidal ideation.
  - Diagnosis requires a set of these symptoms to be present over a two-week period

- **Anxiety (Generalized Anxiety Disorder)**
  - Characterized by long-lasting and excessive fear and worries over at least a six-month period, with three or more of the following symptoms: restlessness, fatigue, concentration problems, irritability, muscle tension, and problems with sleep.
  - Other definitions (e.g. ICD-10) require presence of at least one physical symptom such as heart palpitations, difficulty breathing, nausea or abdominal distress, dizziness, or numbness.

[1] American Psychiatric Association's Diagnostic & Statistical Manual of Mental Disorders (DSM-5)

How can we measure depression and anxiety?

- Gold standard: in-depth diagnosis by trained psychiatrist
  - Not feasible in many settings
- Short screening surveys
  - PHQ-9 survey for depression
  - GAD-7 survey for anxiety
  - Geriatric Scale for the elderly
  - Ali et al. 2016: overview of validated screening tools
- Phone surveys feasible but privacy concerns and possibly downward bias

How common are depression and anxiety?

- About 3 to 4% of the world's population suffers from each at any given time
  - Jointly responsible for 8% of years lived with disability globally
  - About 20% lifetime prevalence of clinical significant episode of depression in the US
  - Highly recurrent: 75% of depressed patients have more than one depressive episode;
  - 1/2 to 2/3 of people ever clinically depressed have an episode in any given year
- Who is most affected by depression and anxiety?
  - Higher prevalence among the poor in given location (about 1.5 to 3 times as high)
  - Higher prevalence among women (about twice as high)
- Beyond severe disorders, mental health affects a much broader share of population.
- Large treatment gaps, especially in low-income populations

Why study mental health as an economist?

Why study mental health as an economist?

- Mental ill-health makes people profoundly unhappy.
  - Remember our objective function: maximize well-being!

Why study mental health as an economist?

- Mental ill-health makes people profoundly unhappy.
  - Remember our objective function: maximize well-being!
- Mental health (and therapy to improve it) can affect economic behavior.
  - Potential for understanding some of the sources of behavioral biases
  - Power of therapy: possibility to change beliefs, self-esteem, attention, etc.
- Economic forces can affect mental health.

How might mental health affect economic outcomes?

- Labor market outcomes
  - Performance at work; might vary by type of work
  - Dealing with failure; job search
  - Labor supply, productivity, earnings
- Non-work outcomes
  - Health behavior (e.g. medical adherence; exercise) and health expenditures
  - Female empowerment (control over resources; IPV)
  - Human capital accumulation (schooling); inter-generational effects
- Economic primitives
  - Beliefs about self and the world (levels and updating)
  - Self-esteem, attention, memory, etc.
  - Time, risk, and social preferences
  - Decision-making (e.g. default effects, choice overload)

How might economic forces affect mental health?

- **Economic shocks:** e.g. unemployment, health shocks, death of a loved one
- **Volatility and uncertainty:** lack of insurance, social safety
- **Environmental factors:** e.g. sleeping conditions, pollution, heat
- **Early-life conditions:** e.g. recession, trauma, violence
- **Exposure to trauma, violence, and crime**
- **Social status:** relative vs. absolute poverty; shame and isolation

Increasing supply of mental health treatment

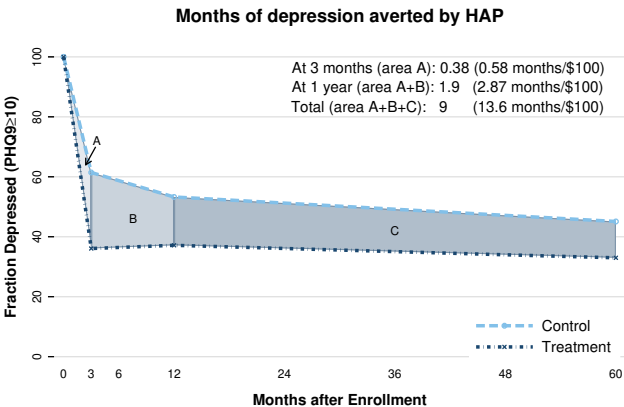
- Treatments (especially therapy) highly effective (Cuijpers et al. 2010; 2013)
  - But only few trained psychiatrists available in many settings
  - Pharmacotherapy can help but not broadly available (Angelucci and Bennett 2021)
- Alternative 1: Inexpensive and scalable psychotherapy interventions can effectively treat depression and anxiety in low-income contexts (Singla et al. 2017)
- Alternative 2: New technologies using internet, apps
  - Promising results but mostly in efficacy trials (Cuijpers et al. 2019)
  - Key issues: take-up and adherence

Bhat et al. 2021: Long-run follow-up of two RCTs in Goa, India

- Long-run follow-up study of behavior activation intervention
  - Healthy Activity Program (Patel et al. 2017)
  - Highly effective intervention in the short-run

- Three broad sets of outcomes:
  (1) Mental health (depression)
  (2) Economic well-being (consumption, labor supply, earnings)
  (3) Preferences and beliefs
    - Time, risk, and social preferences
    - Beliefs (levels and updating)

Long-run mental health effects of therapy in India (Bhat et al. 2022)



- Inexpensive therapy (6 to 8 sessions), about $70 per person
- Large and persistent effects on depression five years after the intervention
- $7/month of depression averted; including long-run effects more than quadruples cost effectiveness
- Treatment group is also more optimistic about effectiveness of therapy.

Bhat et al. 2022: main results

- Brief psychotherapy for depression can improve mental health for 5 years
  - Inexpensive (about $70 per person) and scalable intervention!
  - Averted 9.1 months of depression over 5 years at $7.25 per month averted

- Therapy had lasting effects on people's beliefs about themselves
  (1) Reduced likelihood of seeing themselves as a failure or feeling bad about themselves.
  (2) Reduced over-optimistic belief updating in response to feedback and thus reduced overconfidence.
  (3) Increases in self-evaluated patience and altruism

Bhat et al. 2022: main results

- Brief psychotherapy for depression can improve mental health for 5 years
  - Inexpensive (about $70 per person) and scalable intervention!
  - Averted 9.1 months of depression over 5 years at $7.25 per month averted
- Therapy had lasting effects on people's beliefs about themselves
  (1) Reduced likelihood of seeing themselves as a failure or feeling bad about themselves.
  (2) Reduced over-optimistic belief updating in response to feedback and thus reduced overconfidence.
  (3) Increases in self-evaluated patience and altruism
- Experiencing therapy makes people more optimistic about its efficacy.
  - May ex-ante underestimate effective treatments
  - Potential case for information interventions
- No effects on employment or consumption

Economic benefits of improving mental health more widely

- Improving mental health can be have benefits beyond addressing severe mental distress.
- Shreekumar and Vautrey (2022) evaluate app-based mindfulness meditation
  - Large mental health benefits of offering inexpensive app ($13/month).
  - Increased performance in proofreading task and more consistent decision-making
- Kaur et al. (2022) reduce financial strain among low-income workers in India
  - Paying people earlier increases worker productivity.
  - Improving workers' financial well-being could have productivity benefits.
- Things to explore:
  - 'Real-world' settings (e.g. firm, university)
  - Measure other benefits of meditation and/or therapy (e.g. self-image, financial choices)?
  - Preventative measures (e.g. to avoid burnout, reduce loneliness)?

Some open questions (I)

(1) How exactly does mental health affect economic outcomes?
- Precise measurement of income, labor supply, earnings
- Preferences, beliefs, decision-making

(2) How should we think about mental health in terms of economic models?
- How does mental health affect economic fundamentals?
- Disentangle effects of depression vs. anxiety vs. trauma

(3) Can online tools effectively improve mental health and economic well-being?
- Potential impacts on education, job search, health behaviors
- Can AI/bot-based approaches work?

(4) Can interventions to increase take-up of mental health tools improve outcomes?
- Financial or other incentives
- Interventions tackling stigma, social norms, or perceived effectiveness

Some open questions (II)

(5) Impacts of different economic interventions relative to cash
- Insurance and social safety programs; employment programs (vs. cash)
- When and why does work improve psychological well-being (Hussam et al. 2022)?

(6) Impacts of relative vs. absolute poverty
- Does inequality harm mental health?

(7) Optimal mix of economic and mental health interventions
- Longer-run effects of anti-poverty programs: what is the role of mental health?
- Can mental health interventions help people escape poverty traps?
- Comparative effects of cash vs. therapy (Haushofer et al. 2021; Bossuroy et al. 2022)

(8) Social media and mental health
- What are the mechanisms behind the harmful effects of social media on mental health?
- Can we use apps (e.g. meditation) to improve mental health (Shreekumar & Vautrey 2022)?

Brief summary

- Observe the world and study issues that are important in people's lives!
- Lots of room to be creative and novel topics to be studied
  - Loneliness
  - Dignity
  - Physical pain
  - Religion
  - Aging
  - ...
- Some topics are easier to study than others.
  - Examples: noise (Dean 2021), meditation (Shreekumar & Vautrey 2022)
- Develop economic models of mental health (depression, anxiety, etc.)

How does therapy affect beliefs about oneself?

- We study the causal effect of psychotherapy on self-confidence
- And how self-confidence evolves in response to feedback
  - Optimistic belief-updating in response to feedback
    Eil & Rao 2011; Mobius et al. 2014; Zimmermann 2020
- Alternative hypotheses:
  (1) **'Sadder but wiser'**: Treating depression generates more overconfidence
  Korn et al. 2014; Alloy & Abramson 1979
  (2) **'Protective optimism'**: Therapy → more accurate view of self; less need for over-confidence
  Dunning and Story 1991; Blanton et al. 2001; Sherman and Cohen 2006

Paradigm, adapted from Möbius et al. (2021)

(1) Participants perform a "self-image relevant" task
   - Making bracelets – mimics realistic jobs

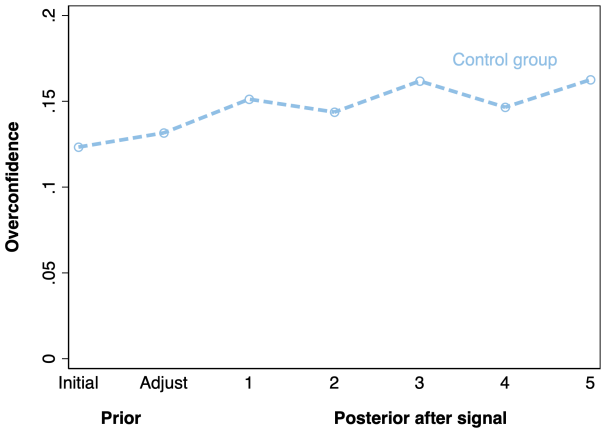
(2) Elicit prior on relative performance
   - Probability of above-median performance

(3) Provide noisy signal of truth

(4) Repeat ...

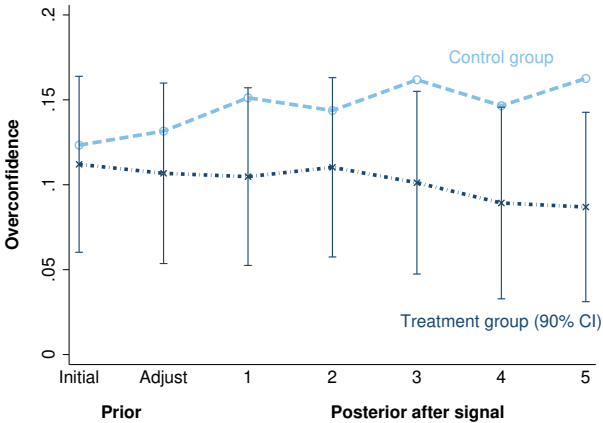
Benchmark: **Bayes' rule**

Overconfidence in the control group



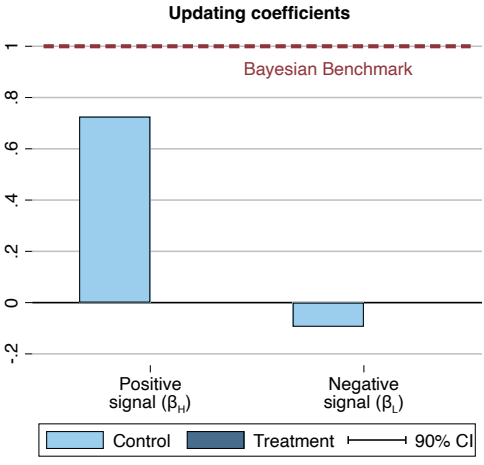
- Overconfidence: beliefs compared to full-information benchmarks Details
- Before feedback, control group is overconfident by 13 ppts.
- Feedback further increases initial overconfidence.
- Implies optimistic updating

Psychotherapy causes people to update *less* optimistically



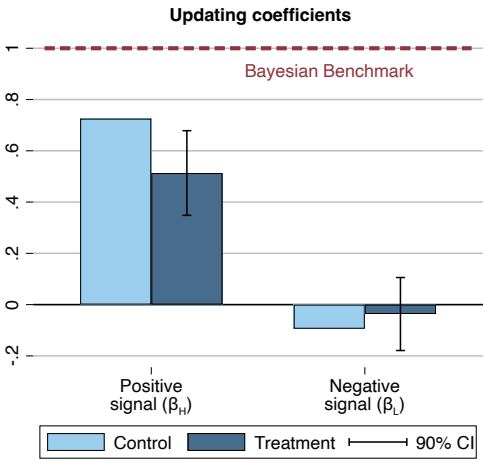
- Treatment group updates their beliefs **less** optimistically
- Final beliefs are significantly less overconfident than control group's.
- Suggest that therapy makes people "happier *and* wiser"

Belief updating relative to Bayesian benchmark



- Control group is close to Bayesian for positive signals; entirely ignores negative signals.
- Implies over-optimistic belief updating

Belief updating relative to Bayesian benchmark

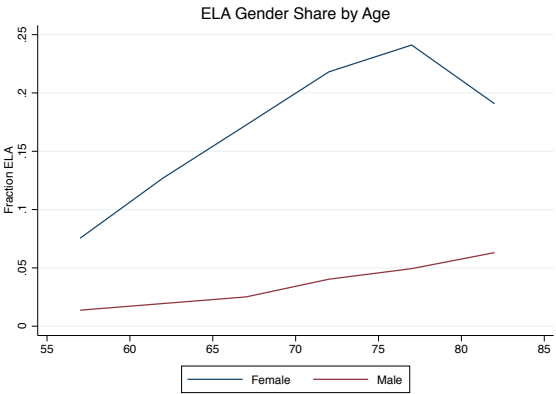


- Control group is close to Bayesian for positive signals; entirely ignores negative signals.
- Implies over-optimistic belief updating
- Treatment group reacts less to positive signals; also ignores negative signals.
- Implies reduced asymmetry in updating in the treatment group

Loneliness, social connections, and mental health

- Large fractions of people are profoundly lonely (Cacioppo & Patrick, 2019)
  - How does this impact their lives?
  - Why are they lonely?
- Loneliness strong predictor of cognition, health, well-being (Hawkley & Cacioppo 2013)
  - Do these correlations reflect causal effects?
  - Can interventions reduce loneliness and improve outcomes?
- Why are people not connecting more?
  - Costs? Externalities? Low self-esteem? Biased beliefs?
- Combination of increased access of connections with some other boosts to self-esteem (e.g. therapy) might alleviate loneliness and in turn have downstream effects

Loneliness and depression among the elderly (in Tamil Nadu)



- Significant shares of the elderly (mostly women) in Tamil Nadu live alone
- High fractions of the elderly experience loneliness and depression, especially when living alone.
- In ongoing work, we evaluate different interventions to improve well-being and health (e.g. pensions, therapy)