

# 404 sleep not found

needfinding report

cmpsc 185  
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# meet the team



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mill valley, ca



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san jose, ca



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thousand oaks, ca

domain selection:

designing for  
well-being (sleep!)

1. we all like to sleep
2. sleep is important for your health. SUPER!
3. many adults struggle getting enough sleep

domain refinement:

young adults who  
struggle with  
sleep

1. we are young adults
2. the struggling people  
have the strongest pain

# finding additional participants

1. workers with late work schedule
2. local employees (young adults)



# past interviews



**john sleep**  
sleep expert

a worker at an anonymous mattress store! well-trained within the world of mattresses and sleeping (went to sleep information trainings)



**gemini**  
insomniac

an anxious, data-driven perfectionist, needs a sleep routine that distracts its active brain without judging their performance, so that it can let go of the day without feeling out of control



**buddha**  
clinical psychologist

write a brief bio mentioning their background, area of expertise, and what their role in this partnership will be.



# new interviews



**the real john sleep**  
sleep sufferer

pizza worker who has a very  
inconsistent sleep schedule



**z**  
former graveyard shifter

ucsb student that chose to  
work at slodoco from 8 pm -  
4 am for the bread

# previous learnings

1



## habits and discipline.

important habits and discipline surrounding sleep matters the most.

▽

2

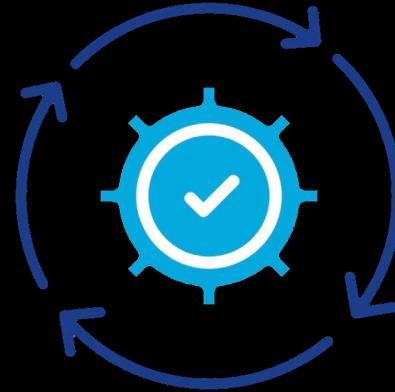


## external factors.

other factors in life general get in the way of quality sleep.

▽

3



## consistency.

consistency is better than optimizing every little thing.

▽

our participants

# the real john sleep

"it [pineapple] is not that  
bad [on pizza]"



**occupation:** pizza worker

**interview length:** 15 mins

**location:** his place of work

say

"No, i'm not happy. i'd say a zero rating my sleep schedule."

"i never liked the taste of coffee... i don't really drink energy drinks."

"i usually play basketball, but yeah, sometimes that's like still not... it doesn't tire me out."

The middle of the night is the only time i actually get to be alone without anyone bothering me.

if i take a nap now, i'm just going to wake up feeling groggy and gross.

"i think i sleep at random times and if i don't have something to do in the morning, i'll wake up at random times."

"i used to track my sleep. i had like a little ring, smart ring... [but] i've been kind of lazy... before i go sleep."

"i saw more information... Tracks like my heart rate and my sleep. Everything too. So that was cool."

"i hate taking naps... i feel like i take a nap... [I] feel even worse after."

"if you told me to go sleep by 8 PM again i just can't."

"i think a lot at night because at night is when i'm finally alone"

Prioritizes social connection (talking with friends) over sleep consistency

Routinely stays awake until 2:00-4:00 AM playing video games or on his phone

Didn't see an improvement in his sleep even when using a sleep tracker.

Purchased and used an Oura Ring to track sleep metrics but stopped using it due to "laziness" or lack of immediate improvement.

do

physically pulls the covers over his head to block out car headlights from the parking lot outside his window.

abstains from coffee and energy drinks

Plays basketball every other day, though he notes it rarely exhausts him enough to induce sleep.

Works service shifts that can start at 3:15 PM or end at 12:30 AM (closing shift), impacting his ability to wind down.

Sets an alarm for 10:00 AM on weekdays but allows himself to sleep in until 12:00 PM on weekends.

Knows good sleep is important but doesn't actively try to improve his sleep.



My work schedule is so random that there's no point in trying to have a consistent bedtime.

Trying to fix this is more stressful than just being tired

Standard "wellness" advice doesn't work on me

Data is cool to look at, but knowing how bad i'm sleeping doesn't actually help me fix it.

Staying up is the only way to "extend" my time

Sleep is a debt i can pay off in bulk on the weekends

Resigned to the fact he is just a "bad sleeper" and can't / won't do anything about it

unwilling to sleep when he should because of social obligations

Trapped by a cycle of late nights and inconsistent work shifts

Validated in his skepticism about common fixes/ solutions

Okay with his current inconsistent routine

think

feel

say

"No, i'm not happy. i'd say a zero [rating my sleep schedule]."

don't really drink energy drinks."

"i usually play basketball, but yeah, sometimes that's like still not... it doesn't tire me out."

"i think i sleep at random times and if i don't have something to do in the morning, i'll wake up at random times."

"i used to track my sleep. i had a little ring, heart ring... [but] i've been kind of lazy... before i go to sleep."

"Last night i was with my girl. We were just talking a lot."

"i think a lot at night because at night is when i'm finally alone"

"i hate taking naps... i feel like i take a nap... [I] feel even worse after."

Prioritizes social connection (talking with friends) over sleep consistency

Routinely stays awake until 2:00-4:00 AM playing video games or on his phone

do

**Didn't see an improvement in his sleep even when using a sleep tracker.**

physically pulls the covers over his head to block out car headlights from the parking lot outside his window.

from food and drinks

Plays basketball every other day, though he notes it rarely exhausts him enough to induce sleep.

Purchased and used an Oura Ring to track sleep metrics but stopped using it due to "laziness" or lack of immediate improvement.

works service shifts that can start at 3:15 PM or end at 12:30 AM (closing shift), impacting his ability to wind down.

Sets an alarm for 10:00 AM on weekdays but allows himself to sleep in until 12:00 PM on weekends.

Knows good sleep is important but doesn't actively try to improve his sleep.

The middle of the night is the only time i actually get to be alone without anyone bothering me.

it's pointless to lay in bed if i'm not tired; i might as well play Valorant or s

Data is cool to look at, but knowing how bad i'm sleeping doesn't actually help me fix it.

Staying up is the only way to "extend" my time

**Trying to fix this is more stressful than just being tired**

if i take a nap now, i'm just going to wake up feeling groggy and gross.

My work schedule is random that there's no point in trying to have a consistent bedtime.

is a debt i pay off in on the ends

standard wellness" advice doesn't work on me

**Resigned to the fact he is just a "bad sleeper" and can't / won't do anything about it**

obligations

Frustrated at being physically untried when he should be, unable to wind down

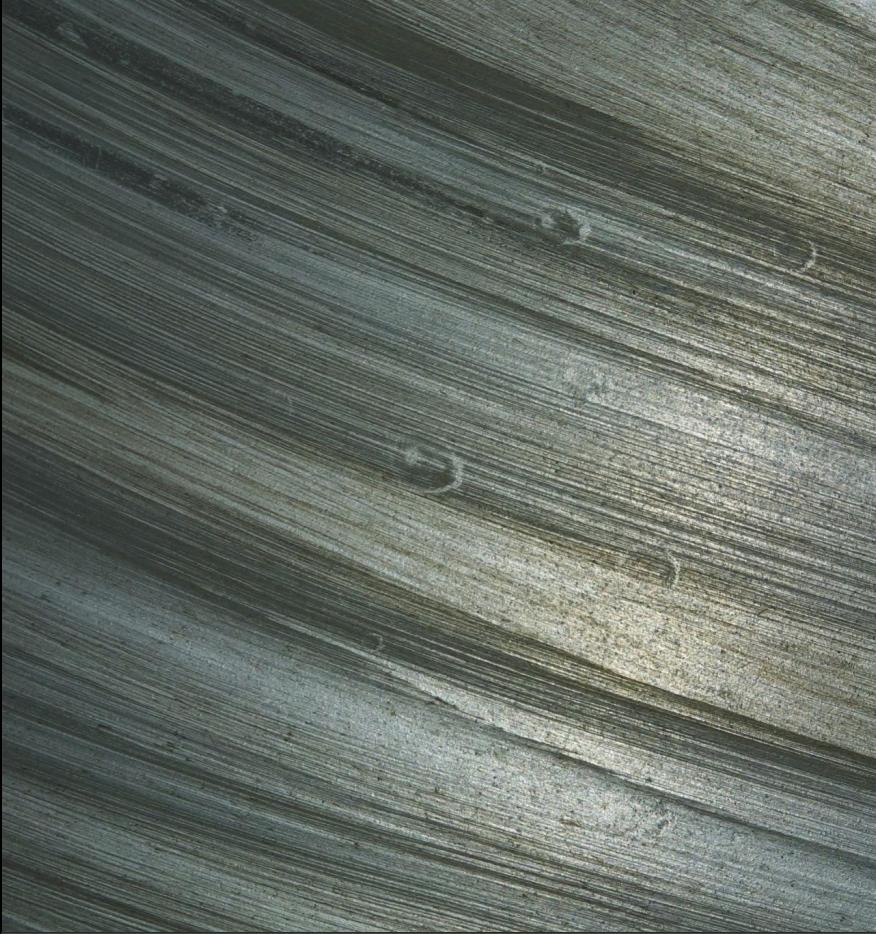
Trapped by a cycle of late nights and inconsistent work shifts

Validated in his skepticism about common fixes/ solutions

Okay with his current inconsistent routine

think

feel



insight/need

**insight:**

**need:**

our participants

Z

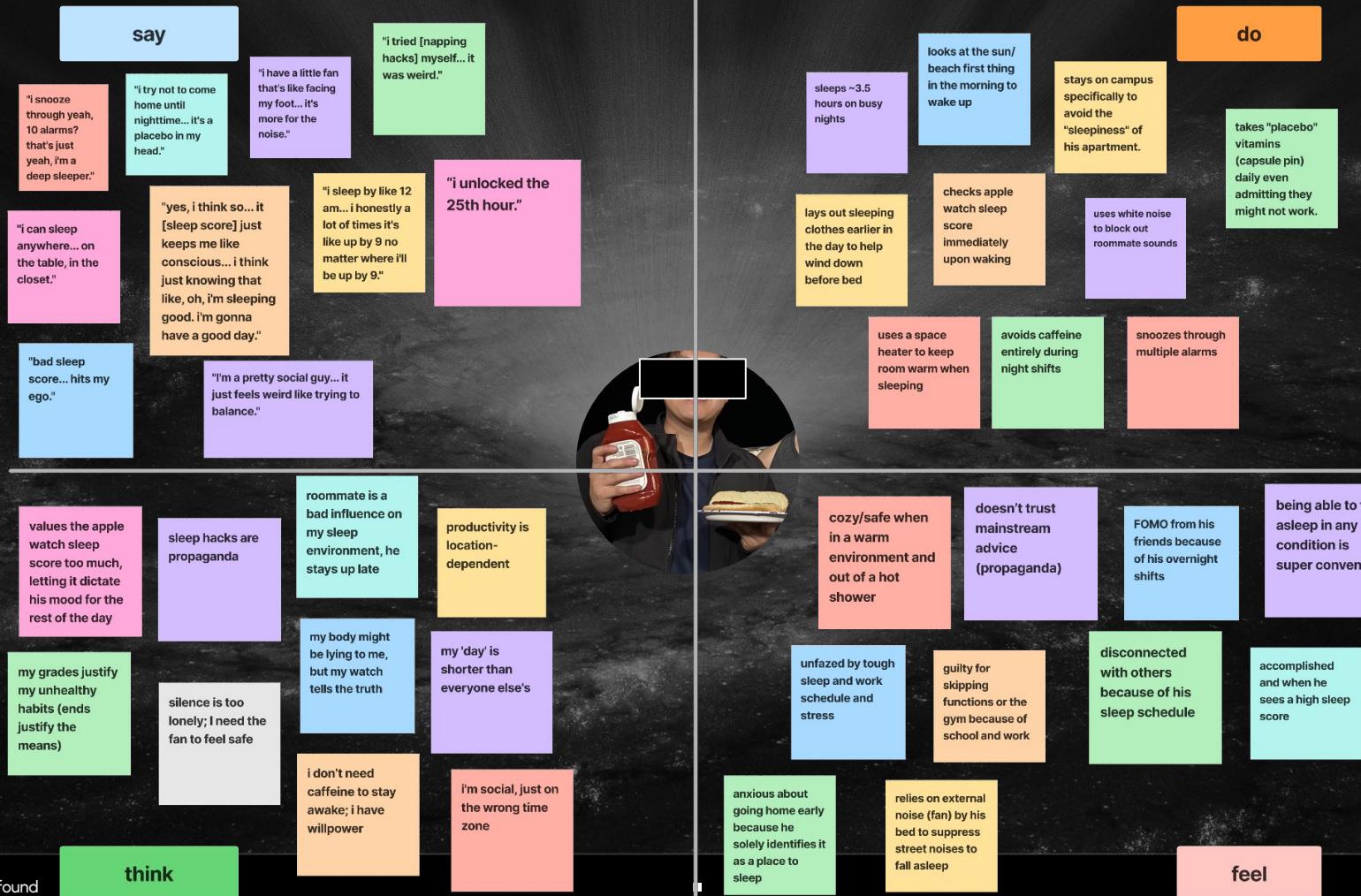
"i unlocked the 25th hour."



**occupation:** donut tosser

**interview length:** 25 mins

**location:** pizza pub



say

"i try not to come home until nighttime... it's a placebo in my head."

"i have a little fan that's like facing my foot... it's more for the noise."

"i tried [napping hacks] myself... it was weird."

"i am the  
cl"

"bad sleep score... hits my ego."

"I'm a pro  
just feel  
balance"

"i unlocked the  
ith hour."

"yes, i think so... it [sleep score] just keeps me like conscious... i think just knowing that like, oh, i'm sleeping good. i'm gonna have a good day."

values the apple watch sleep score too much, letting it dictate his mood for the rest of the day

means)

fan to feel safe

roommate is a bad influence on my sleep environment, he stays up late

productivity is location-dependent

my body might be lying to me, but my watch tells the truth

my 'day' is shorter than everyone else's

i don't need caffeine to stay awake; i have willpower

i'm social, just on the wrong time zone

think

do

takes "placebo" vitamins (capsule pin) daily even admitting they might not work.

stays on campus specifically avoid the "sleepiness his apartment

uses w  
to bloc  
roomm

looks at the sun/ beach first thing in the morning to wake up

sleeps ~3.5 hours on busy nights

lays out sleeping clothes earlier in the day to help wind down before bed

checks apple watch sleep score immediately upon waking

uses w  
to bloc  
roomm

uses a space heater to keep room warm when sleeping

avoids caffeine entirely during night shifts

multiple alarms

FOMO from his being able to fall asleep in any convenient

accomplished and when he sees a high sleep score



cozy/safe when in a warm environment and out of a hot shower

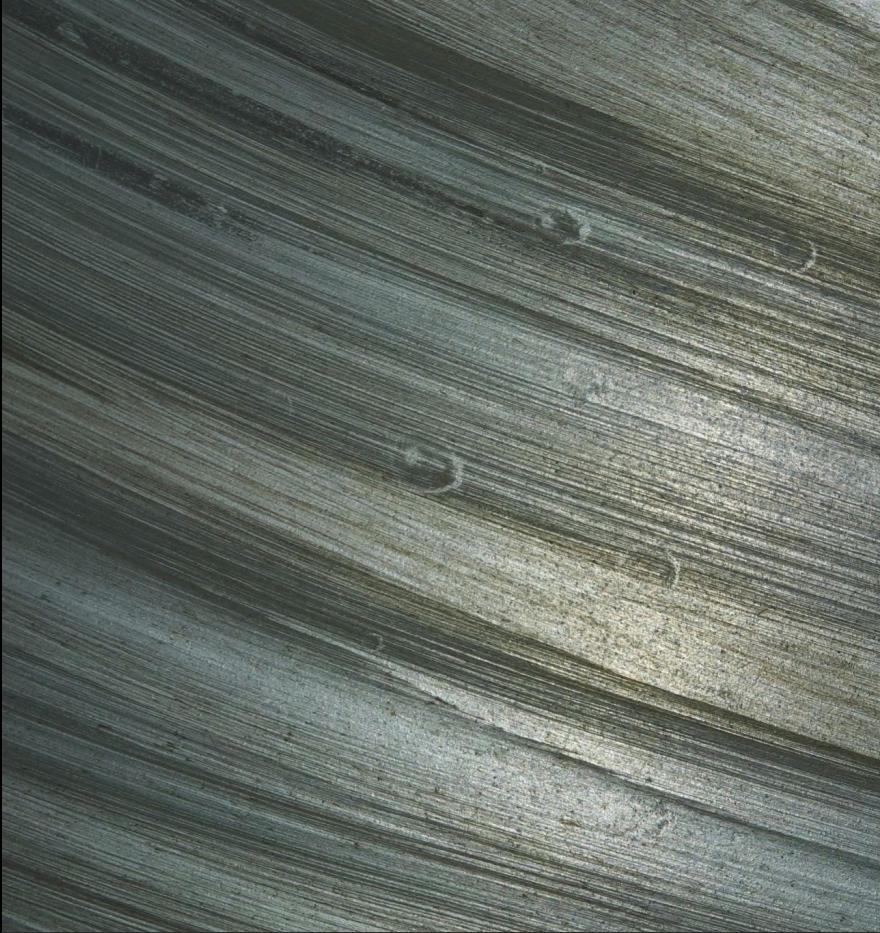
unfazed by tough sleep and work schedule and stress

guilty for skipping functions or the gym because of school and work

anxious about going home early because he solely identifies it as a place to sleep

relies on external noise (fan) by his bed to suppress street noises to fall asleep

feel



insight/need

**insight:** average bad sleeper knows what they are doing is wrong but does not have the willpower to fix it

**need:** people who struggle with sleep habits often **need** better discipline

Our mission

pov development + hmw's

our participants

# the real john sleep



## **we met....**

a pizza worker with irregular work schedule, social time, and late-night activities who struggles to sleep

## **we were surprised to realize...**

despite having access to tracking tools, sleep assistance, and a good environment, they have not actively tried to change their habits because they are used to poor sleep. "I've always been like, 'oh, I can't sleep,' and it's just like whatever — I gotta deal with it."

## **we wonder if this means...**

nightly events can make sleep feel uncontrollable instead of something that can change

## **it would be game-changing...**

they felt empowered/incontrol of their sleep with simple realistic strategies

assist those with inconsistent sleep schedule

change the outlook that some have that they can't do anything about their poor sleep

reduce late night distractions

turn sleep related information into motivation rather than just awareness

encourage those who don't immediately see results

use consistency cues to replace rigid sleep schedules

## how might we

build confidence in those struggling for years to change their sleep

design routines for non-fixed sleep schedules (work and social events)

help people who don't see poor sleep as a problem

support those sensitive to their environment without moving them into a new space

build micro-routines that don't revolve around bed times

our participants

Z



### **we met....**

a nocturnal third-year econ student who worked overnight shifts

### **we were surprised to realize...**

he values the data on his apple watch more than his body, allowing a "bad sleep score" to dictate his mood for the rest of the day

### **we wonder if this means...**

health tracking technology intended for wellness and empowerment creates a psychological burden that exhausts users instead

### **it would be game-changing...**

they felt empowered/incontrol of their sleep with simple realistic strategies

help those who are most productive at night

use small cues to signal rest

reduce the fear of missing out when one decides to sleep rather than go out

maintaining healthy sleep without requiring strict routines or set bed times

## how might we

design sleep for those who like freedom over structure

frame sleep tracking as a supportive tool rather than a source of pressure or anxiety

help people mentally end their day when their days end differently across the week

push people to care about fixing their sleep without making it urgent or alarming

assist users with managing energy across the day without relying heavily on caffeine

# top 3 hmw's

1



2

**design routines for non-fixed  
sleep schedules shaped by  
work and social commitments**



3



**help people mentally end their  
day when their days end  
differently across the week?**

**maintain healthy sleep without  
requiring strict routines or set  
bedtimes?**

The background of the slide is a dark, textured image that looks like a close-up of a star field or a distant celestial body. It has a grainy, high-contrast appearance with various shades of gray and black, punctuated by small white specks that suggest stars or distant light.

Our mission

# solutions & prototypes

# brainstorming

- HMW help people mentally end their day when their days end differently across the week
- Short "off-ramp" that works day as complete
  - Guided reflection time helps users "park" lingering thoughts
  - Action that closes day (not a specific time)
  - Sensory cues (light, sound, bump)
  - Rest vs productive day time blockers
  - Tool/app for transition from social → alone so not much cut off
  - Nightly decompression prompt
  - NSDR routines
  - Talk to app for thoughts
  - App blocking communication & other app access.
  - Block w/ w/ photo!

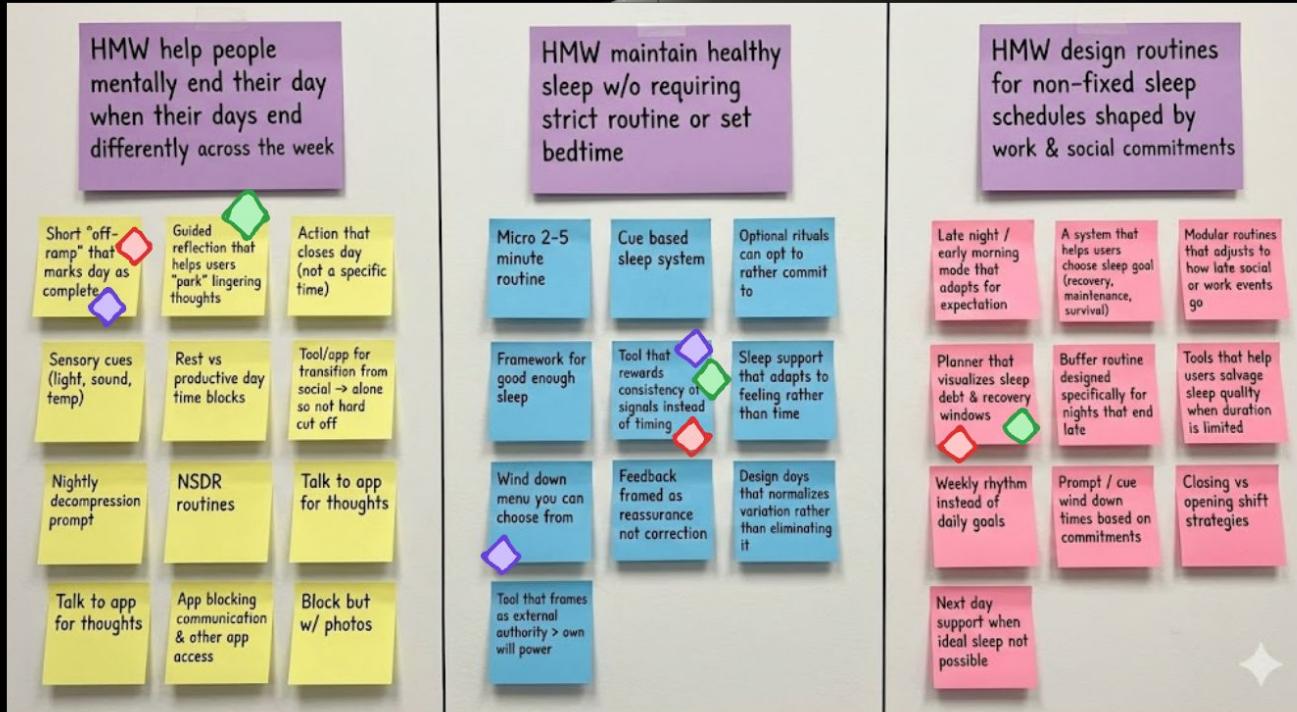
HMW design routines for non-fixed sleep schedules shaped by work & social commitments

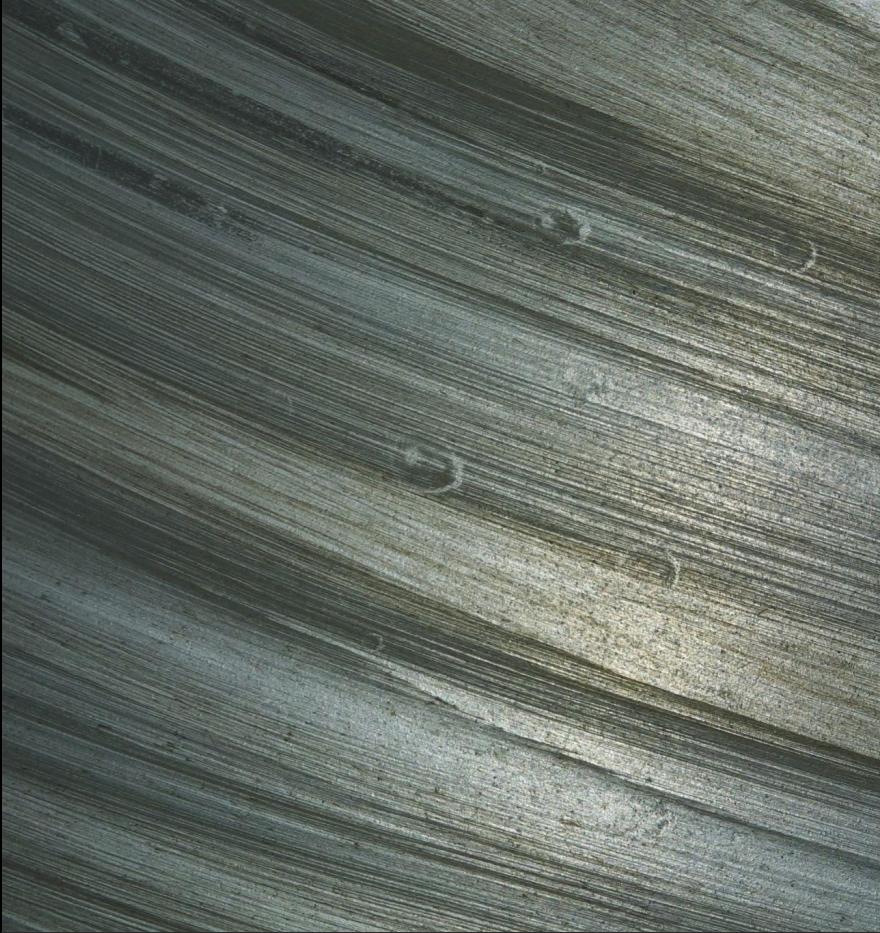
- late night/ early morning mode tool adapts for expectation
- A system that helps users choose sleep goal (recovery, maintenance, survival)
- Modular routines that adjusts to how late social or work events go
- planner that visualizes sleep debt & recovery windows
- buffer routine designed specifically for nights that are later
- Tools that help users salvage sleep quality when duration is limited
- Weekly rhythms instead of daily goals
- Prompt/cue wind down times based on commitment
- Closing vs opening shift strategies
- Next day support when ideal sleep not possible

HMW maintain healthy sleep w/o requiring strict routine or set bedtimes

- Micro 2-5 minute routines
- cue based sleep system
- Optional routines can opt to rather commit to
- Framework for good enough sleep
- Tool that sounds confusing or signals instead of timing
- Sleep support that adapts to family nature time times
- Wind down menu you can choose from
- Feedback framed as reassurance don't corrections
- Design days that normalize variation rather than claiming it
- Tool that focuses on external authority > own will power

# narrowing





hmw: help people mentally end their day when their days end differently across the week?

**solution:**

**Short “off ramp” that marks day as complete**

provides users with a “save point” to help conclude their day and pick up the next day

# "off ramp" prototype

## Critical Assumption:

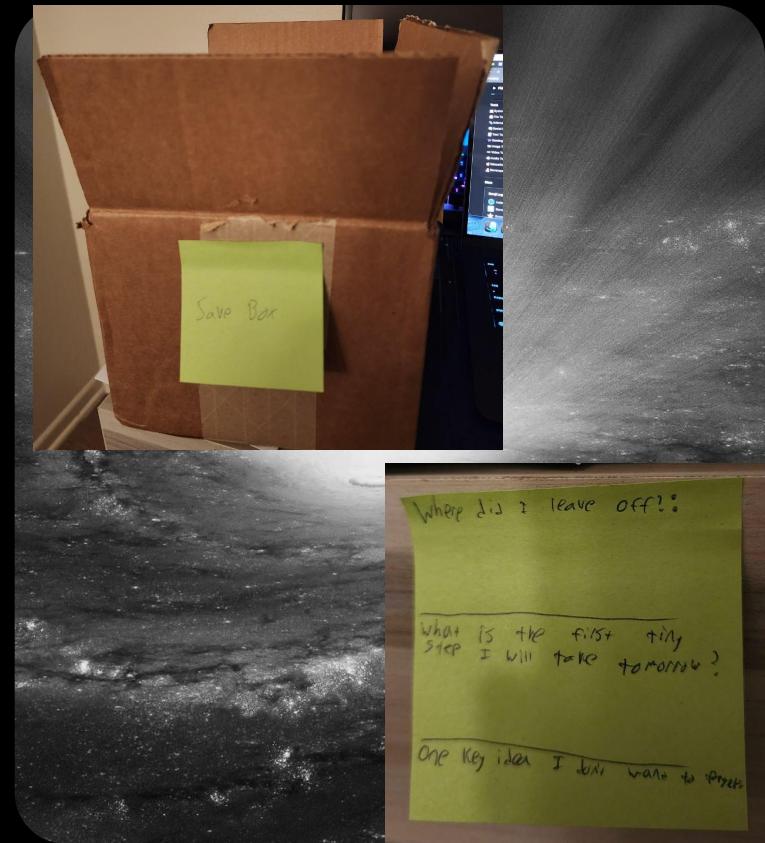
- the primary barrier to ending the day is the fear of losing mental progress. Users will only mentally disconnect if they physically "offload" their open loops into a trusted container

## Description:

- location:** a desk where the participant is working
- props:**
  - a save box (cardboard box) and a save card/paper (piece of paper with three prompts)
    - Where exactly did I leave off? | What is the very first tiny step I will take tomorrow? One key idea I don't want to forget.
- execution:**
  - have participants get deep into a complex task (plan a trip to Japan including flights, hotels,
  - interrupt participants, "the day is over." don't try and finish, save here
  - physically shut the box and put it under the desk/out of sight, move
  - after distracting participants with another task, if they thought about their original task, and if they felt "safe to stop"

## Participants:

- residents recruited around apartment complex (similar sleep schedules)
- 404 sleep not found



# results

## what worked?

- "What is the first tiny step for tomorrow?" prompt; participants reported it instantly lowered the barrier to stopping.
- writing down the "one key idea to not forget" successfully neutralized the fear of losing a "mental tab."

## new learnings

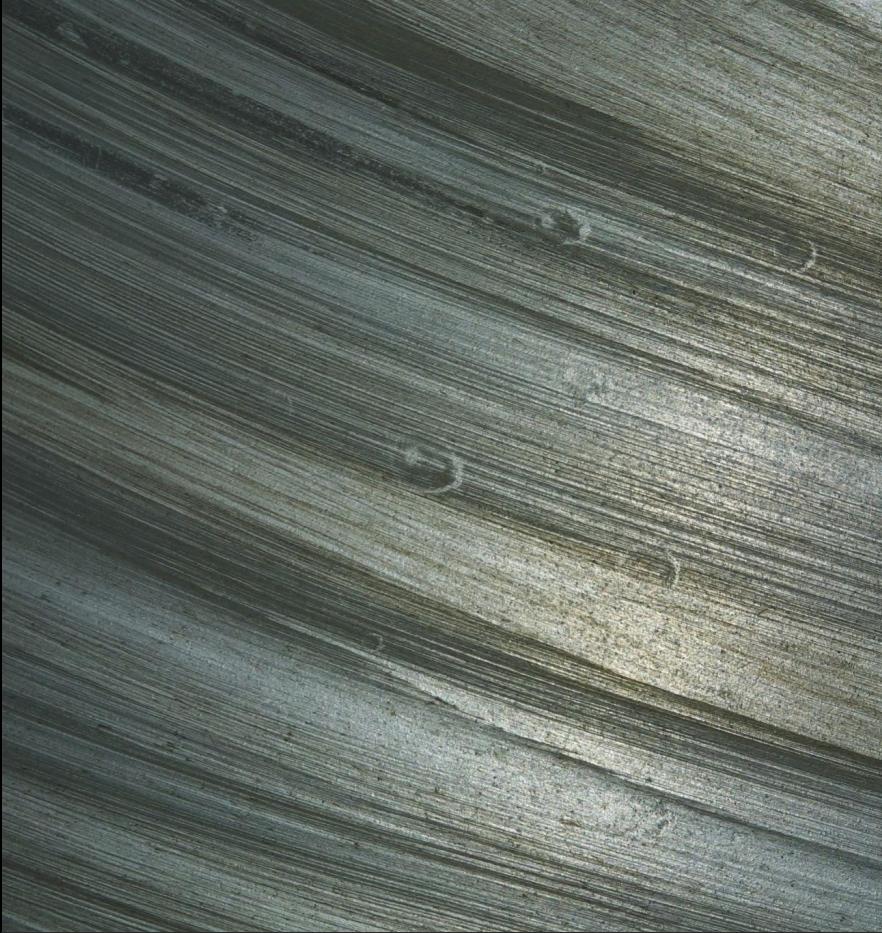
- users don't just want to "dump" thoughts; they want to stage their return. The value isn't in closing the day, but in trusting the setup for the next morning.
- "Closing" is less about hiding work and more about preserving state (like a video game save point).

## what didn't work?

- Users skipped the "Key Idea" field when extremely exhausted, weakening the sense of closure.
- Hiding the card in a box felt counterintuitive; users preferred leaving the "Save State" note visible on their desk so it would see it next day

## validity + moving forward

- users can "switch off" if they feel their progress is secure.
- discard the physical box; develop a digital or notebook-based "Save State" UI that emphasizes the resumption plan rather than just a to-do list.



hmw: maintain healthy sleep w/o requiring a strict routine or set bedtime

**solution:**

**tool that rewards consistency of signals instead of timing**

# sensory prototype

## Critical Assumption:

- users can trigger a "wind-down state" following a specific sequence of sensory cues, regardless of the time of day

## Description:

- baseline:** participants rate their current alertness (1-10)
- sequence:**
  - sound:** listen to pink noise (120s)
  - taste:** drink warm water/tea (60s) ->
  - sight:** block light with hood/mask
- post-test:** participants closed eyes (60s) and re-rated alertness

## Participants:

- who?** students with irregular sleep schedules
- how recruited?** asked students late-at-night in study lounges and library
- relevance?** represents users with inconsistent bedtimes



# results

## what worked?

- **audio isolation:** pink noise allowed participants to detach from environment
- **measurable drop:** alertness scores dropped 3 points (on avg)

## new learnings

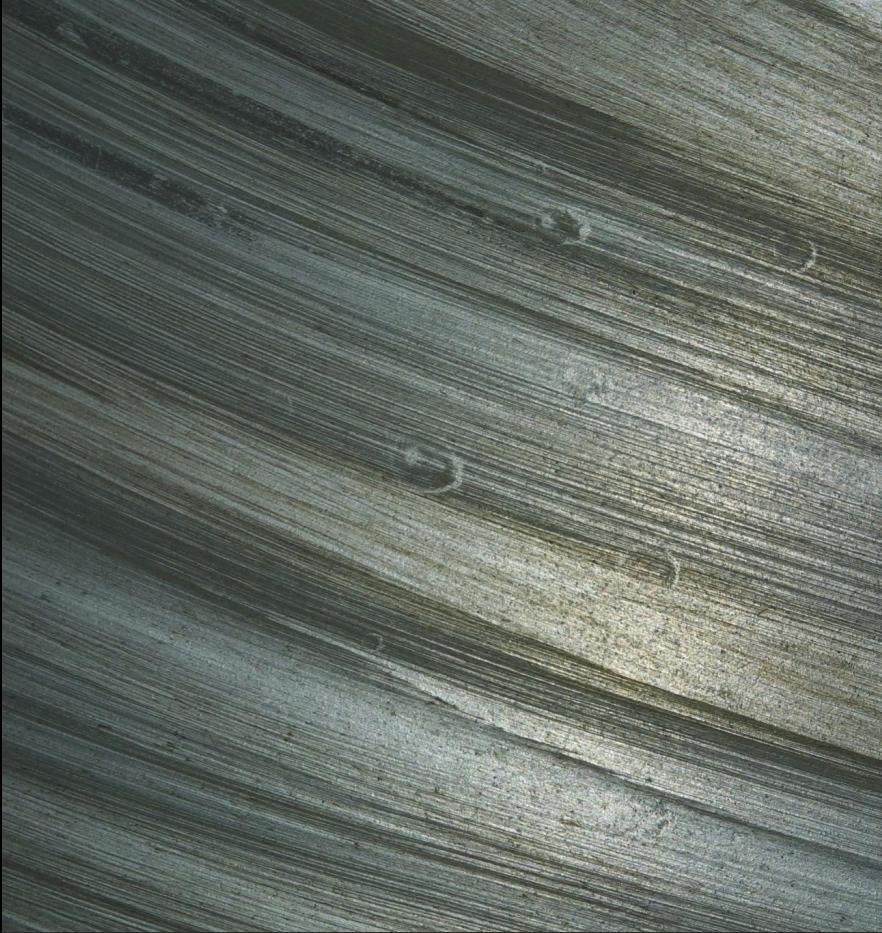
- blocking vision **amplified** effects of the pink noise audio
- using the phone to play the audio was a **weak** point, participants reportedly easily distracted

## what didn't work?

- the "taste" aspect was highly impractical and hard to execute in non-bedroom settings
- participants thought prep time was too high effort

## validity + moving forward

- sensory cues **are** able to trigger a "wind-down state"
- moving forward, we will remove the "taste" aspect of the routine to reduce friction



hmw: design routines for non-fixed sleep schedules shaped by work & social commitments

**solution:**

**Planner that visualizes sleep debt & recovery windows**

# sleep debt visualizer prototype

## Critical Assumption:

- Visualizing "Sleep Debt" reduces anxiety only if users can immediately visualize "Recovery Windows" to pay it back.

## Description:

- **location:** common room table / desk
- **props:** weekly calendar, "debt blocks", "recovery blocks"
- **execution:** fill out calendar with "debt blocks" representing lost sleep (all nighter, etc) with regular school schedule. Hand participants "recovery blocks" (nap, sleep in, early night) and let the participant fill in the recovery blocks

## Participants:

- students with irregular sleep schedules (found in library)



# results

## what worked?

- The physical act of placing a "Recovery Block" provided immediate relief; users visibly relaxed once the "debt" had a "home."
- Treating sleep hours as movable objects made the abstract problem feel solvable (like a puzzle).

## new learnings

- Users prefer a "Weekly Balance" view over a daily "Pass/Fail" metric.
- The goal isn't "Zero Debt" (which feels impossible), but "Managed Debt" (knowing when the recovery is coming).

## what didn't work?

- "Trading" social events for sleep felt punitive; users hesitated to sacrifice fun plans just to place a block.
- Users initially tried to pay off all debt in one day, leading to unrealistic schedules (e.g., a 14-hour sleep block).

## validity + moving forward

- Visualizing the solution (recovery) successfully neutralizes the anxiety of the problem (debt).
- Develop a "Dynamic Scheduler" that automatically suggests realistic recovery slots based on open windows, ensuring the user focuses on balance rather than loss.

# evaluating our solutions

# "off ramp" / "save point" solution

## 1: impact

high, because it addresses the root psychological anxiety ("fear of forgetting") that physically prevents users from disconnecting.

## 2: reach

high, broadly applicable to students, creatives, and knowledge workers who struggle to "switch off" regardless of their schedule.

## 3: novelty

medium-high, shifts the focus from standard "relaxation" techniques to "productivity assurance," which is a unique psychological pivot.

# sensory wind down solution

## 1: impact

medium, highly effective for physiological regulation, but requires higher active effort from the user to set up physical props.

## 2: reach

medium, best for users who are responsive to tactile cues and willing to adopt a physical ritual rather than a passive digital one.

## 3: novelty

high, moves beyond standard tracking or meditation apps by using a specific sequence of physical inputs (temperature, touch) as a control mechanism.

# sleep debt visualizer solution

## 1: impact

high, transforms sleep from a daily "pass/fail" failure state into a manageable resource, significantly reducing stress and guilt.

## 2: reach

medium-high, specifically targets the massive demographic of irregular sleepers (students, gig workers) whom standard apps ignore.

## 3: novelty

medium, builds on existing calendar and tracking interfaces but introduces a unique "debt repayment" mechanic that doesn't currently exist.

# chosen solution: the "Save State" / Cognitive Off-Ramp

1



evidence

participants reported that standard relaxation rituals felt like "chores," but the specific prompt "What is the first tiny step for tomorrow?" instantly lowered their anxiety.

2



adjustments

while the physical "box" prototype was found to be cumbersome, we are moving forward in favor of a portable "Save State" system that focuses on resumption rather than just closure.

3



community served

this solution specifically serves students and knowledge workers with irregular schedules, individuals who view sleep as a threat to their momentum and need permission to stop without feeling unproductive

# Thank you

