



EKKO

o Design Development Record o

Authenticity Statement

This is to certify that to the best of my knowledge, the content of this DDR is my own work. This DDR has not been submitted for any subject or for other purposes. I certify that the intellectual content of this report is the product of my own work and that all the assistance received in preparing this report and sources have been acknowledged.

NAME: Giahn Swinbourne

STUDENT NUMBER : n11240491

DATE: 04/11/2024

Use of AI

I have utilised AI in this DDR. I have used Chat GPT to assist in various ways. The way I have used AI includes understanding topics to flush out Internet data and to inspire interview questions.

NAME: Giahn Swinbourne

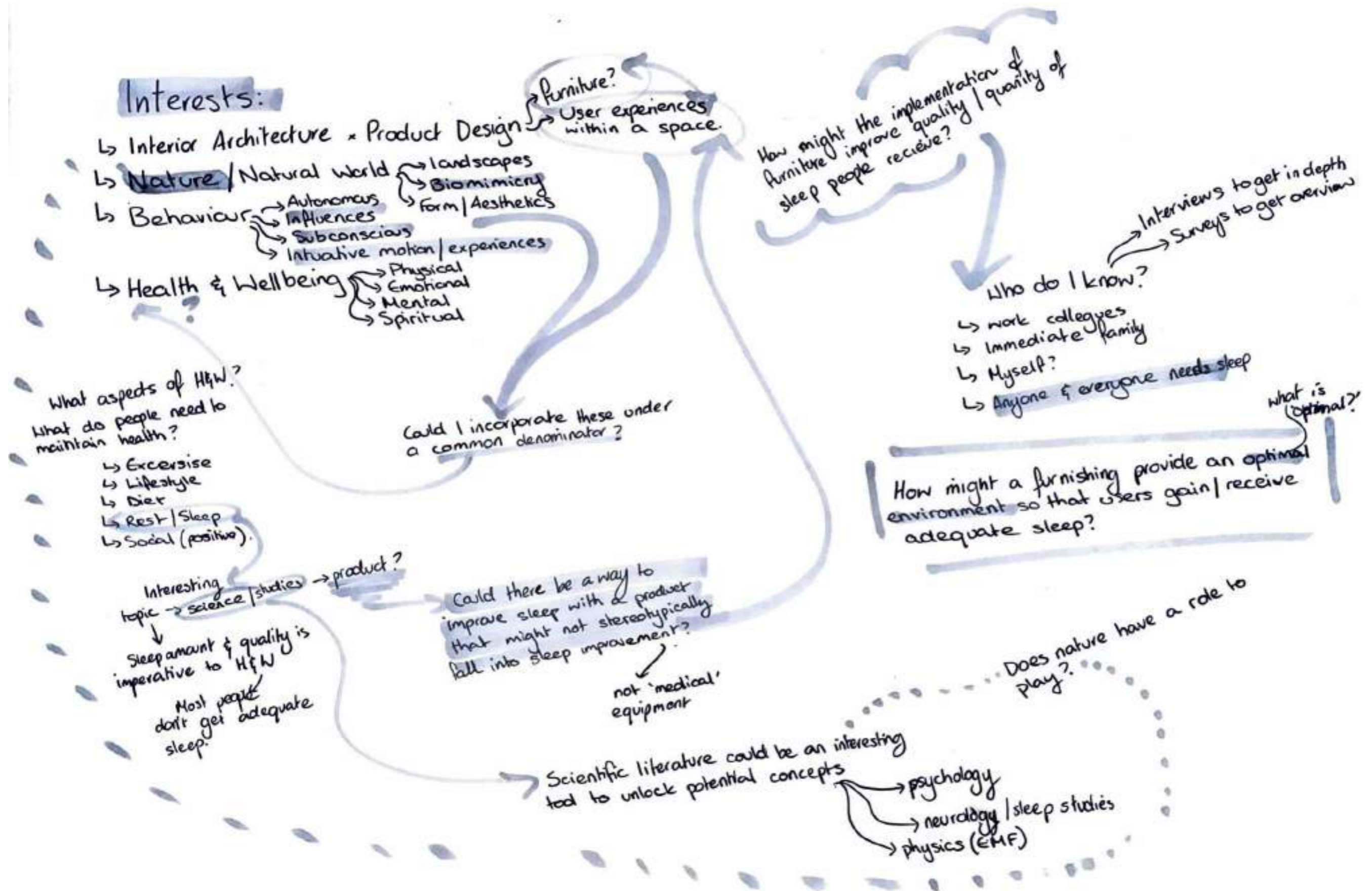
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Part I : Research

Project Development

Brainstorming



Project Development

Staff Feedback and Approval

Pitched Project Direction

I would like to explore how a furniture piece might be able to improve the health and wellbeing of the user, in particular, *sleep*. We know how important sleep is to the overall health of an individual and it is also understood that most people don't get adequate amounts or quality of sleep. There are also people who suffer insomnia and similar sleeping problems. I am also interested to research and interview people about their sleep experiences, what may prevent or help them to sleep and develop a product based on the uncovered insights.

My own design interests surrounds environments and how products, like furniture pieces, can be experienced by the end user. In this project, I want to create a furniture piece that challenges stereotypical furnishings , where the purpose goes beyond it's basic function and is informed by research.

Feedback from Staff

- » It's a good pitch but needs more refinement
- » Think about user group - is it young adults, elderly people, children? What is the age bracket or group?
- » It's good that you have an end user but consider reaching out to specialists in the field. It might be someone here at uni or you might have to go external and search outside of QUT.
- » Also consider what environment / context to focus on

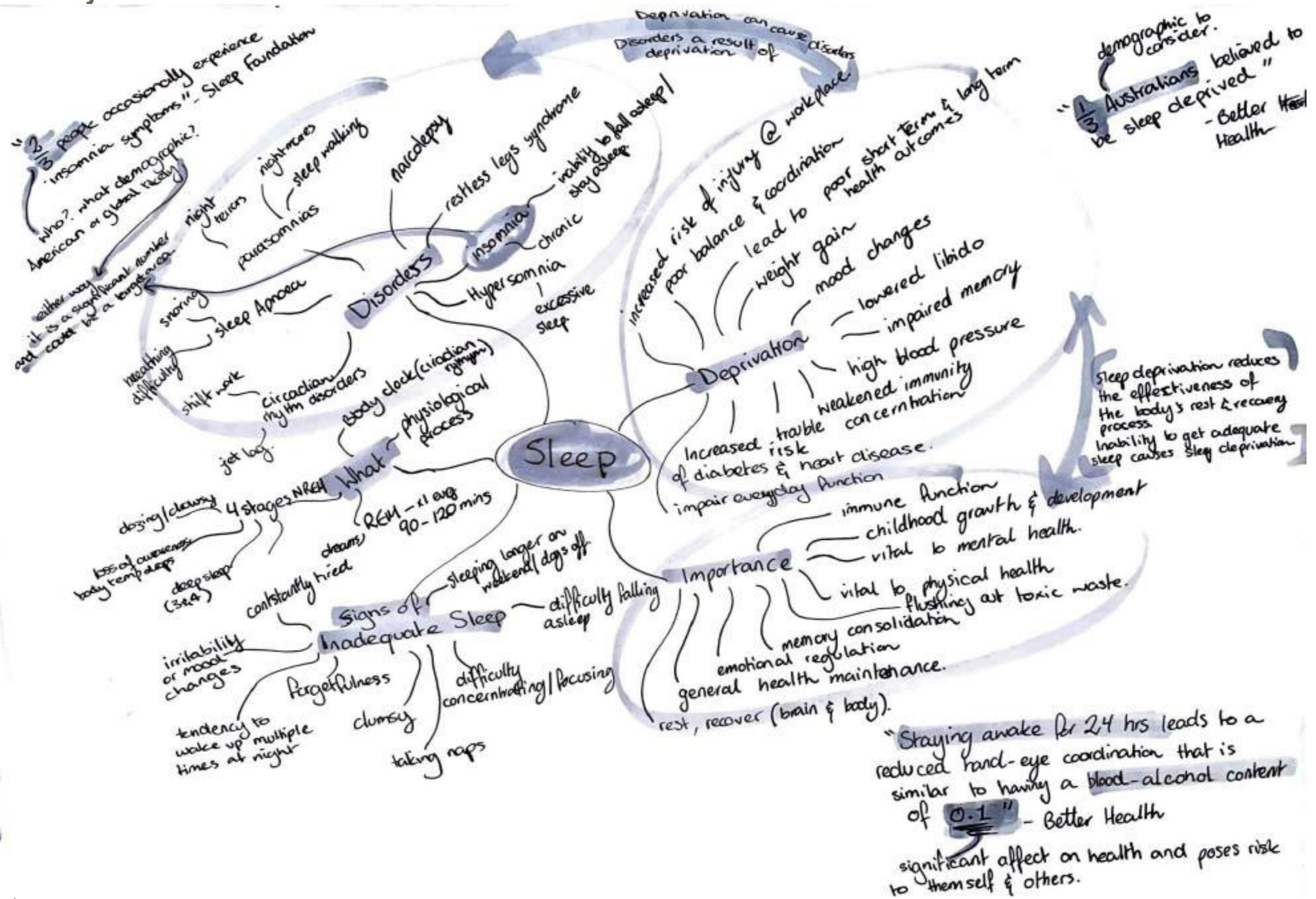


Going Forward:

- » Look into types of stakeholders - preliminary statistics
- » What sleep disorders / conditions are there and which ones do I want to focus on?
- » Look into experts in the field of neuroscience and psychology - those with research and knowledge about sleep
- » Start figuring out interview questions for expert and end user

Project Development

Preliminary Research



Project Development

Insomnia

GENERAL STATS:

- 40% struggle to sleep for 7-9hrs
- 59.4% experience symptoms at least 3-4 times a week
- Children 12-15, 25% don't sleep for 8-10hrs
- Children 16-17, 50% don't sleep for 8-10hrs.
- 20% report uninterrupted sleep → less than 1/4 !!!
- 20% fall asleep behind the wheel, 5% occurring in accidents
- Sleepless Australians are almost 80% less productive
- Heart disease & diabetes kill 40% of sleep deprived Australians
- \$66.3 billion is spent on health & overheads because of sleep distress (pyr).

Symptoms: trouble falling asleep
staying asleep
waking too early
not being able to sleep

all are symptoms of insomnia

Statistics consistently showing a significant experience of insomnia

now a safety aspect for themselves and others is introduced

FACTORS & CAUSES:

- Lifestyle → 48.8% complain about schedules hampering sleep
- Environment → Sleep Health Foundation believes it is a primary cause
→ noise, hot/cold, children interrupting, environmental & societal factors
- Technology → 22% work before bed, 69% sleep problems
→ 40% drink alcohol before bed
- Other factors → 13.8% adults utilise tech 2-3 nights
→ teens & children do not follow sleep guides due to internet access.

REPERCUSSIONS:

- Death → 77% of heart conditions of 3017 who passed due to sleeplessness (2016-17)
→ Monthly, 29% drive exhausted
→ More than 50% of exhausted accidents were within 25km of leaving point.
- Health Issues → increase risk of long term health conditions 20-40%
→ 20% insomnia, 15% ALS, 5% OSA
→ Can occur due to ill mental/physical health.
→ Any point, 1/5 Aus have mild insomnia
- Social & Economic Costs → 2016-17, \$66.3 billion outcome of insufficient sleep.
→ productivity loss of \$17.9 billion

CURRENT ACTION:

- Sleep contributes 88% physical & 89% to mental health
- 63% Aus. taking measurements for better sleep (2018, Philips Global Sleep Survey).
- 33% watch TV, 31% reduce caffeine, 21% listen to calming music, 18% schedule wake up time, 18% take prescribed drugs.

Project Development

Dr. Matt Walker: The Biology of Sleep & Your Unique Sleep Needs | Huberman Lab Guest Series



Project Development

Dr. Matt Walker: The Biology of Sleep & Your Unique Sleep Needs | Huberman Lab Guest Series

Have to warmup to cool down to fall asleep. ^{warm environment makes you draw blood to surface, lowering core temp.}

Single night poor sleep vs. more than one night

↳ one night, 4hrs, 70% reduction in cancer preventing cells of immune system (UCLA study).

↳ within 5 nights, someone could be pre diabetic.

↳ 6 or less hrs, 3x more likely to get common cold or flu

↳ Cardiovascular diseases

↳ Day light saving, 1 less hour in Spring causes higher rates of heart attacks, accidents, suicide, harsher judgement from federal judges
↳ 1 more hour in Autumn causes lower rates of above.

↳ gene impairments → effects immune systems.

↳ one night you can see impermeable effects but it isn't necessarily detrimental.

↳ bad things happen when you get chronic

Good Things Happen Through Good Sleep

↳ neuro plasticity & learning → brain capacity is much higher & capable.

↳ sleep after learning, far less likely to forget → strengthen memories → associative networks → wisdom

↳ Problem solving capacity increased → integrate, link information

↳ restoration for immune system

↳ Sleep provides reboot for mood & emotional change → clears from previous day.

↳ Weight control, weight loss

↳ Isn't a major part in body or brain that doesn't get better with

↳ Appetite, ~~more~~ ^{more} sated, higher hunger levels when deprived → crave carbs & simple sugar.

want cleaner food.

↳ Quality has been argued to hold as much if not more weight into measuring a good sleep

Have to have both quantity & quality.

Physical Changes (bad sleep).

↳ Bags / dark eyes

↳ "look tired", sickly, pale.

↳ due to effects of immune systems

↳ Proved 'Beauty sleep'

What is good sleep?

↳ Quantity (7-9hrs)

↳ Doesn't capture the complexity

"about 90mins more"
↳ based on average

↳ Macro of Sleep

↳ Q, Q, R, S

Quantity

Quality

Regulation

Timing

↳ chronotypes time of night/day

Fragment = poor quality continuity

% of time asleep in bed.
↳ 85% healthy

Deep Sleep strength

when you go to bed

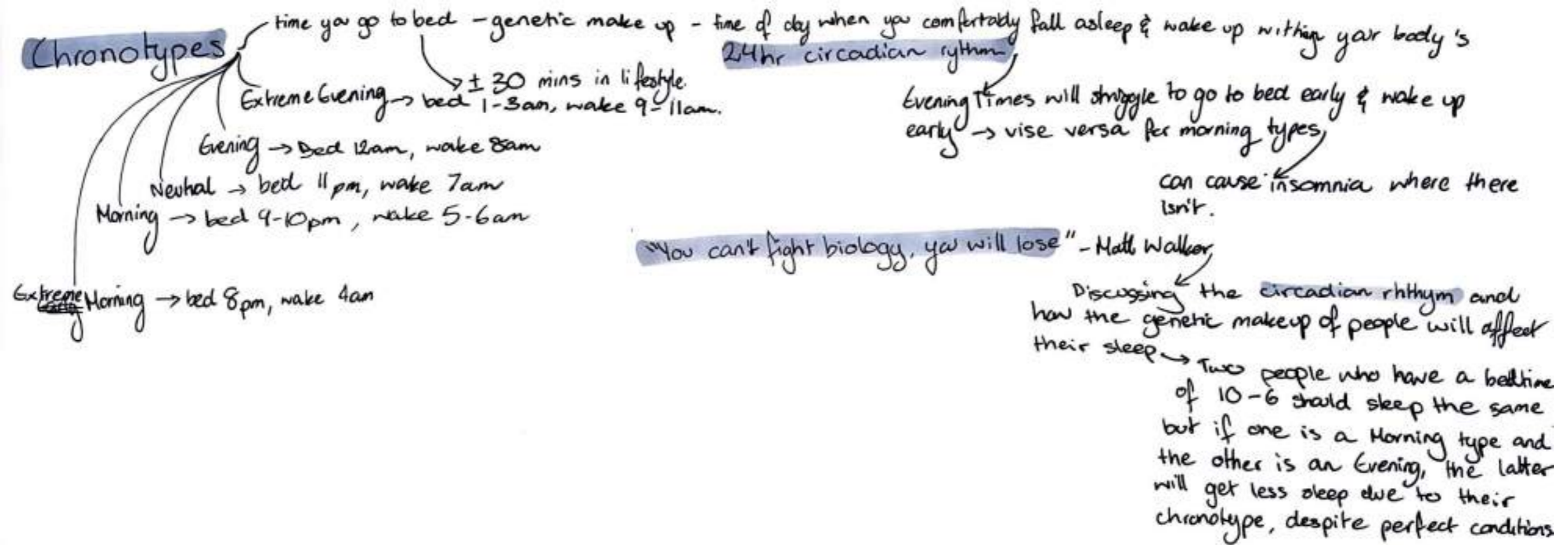
when you wake up

↳ lower mortality for highly regular

± 30mins (lights out).

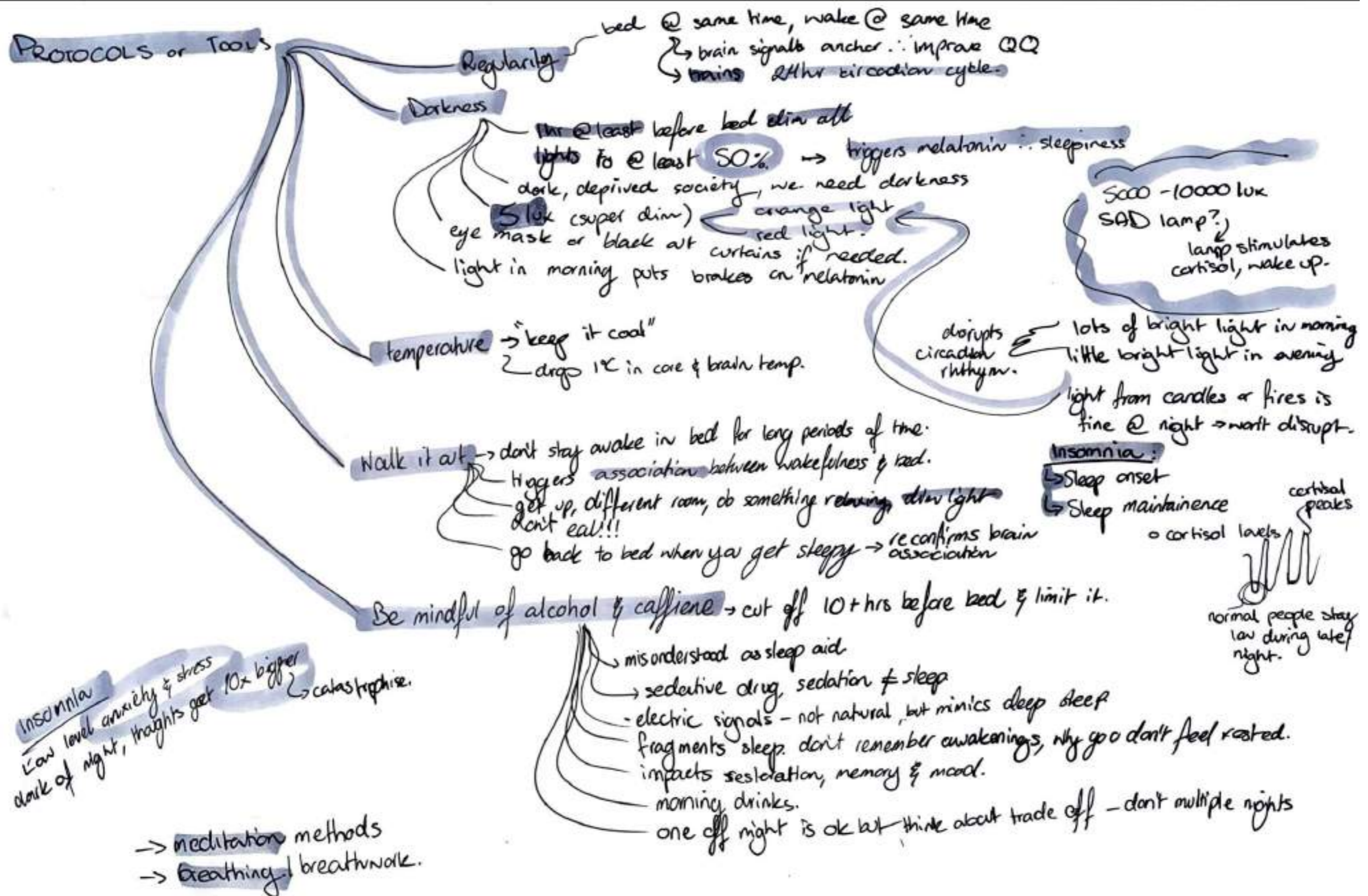
Project Development

Dr. Matt Walker: The Biology of Sleep & Your Unique Sleep Needs | Huberman Lab Guest Series



Project Development

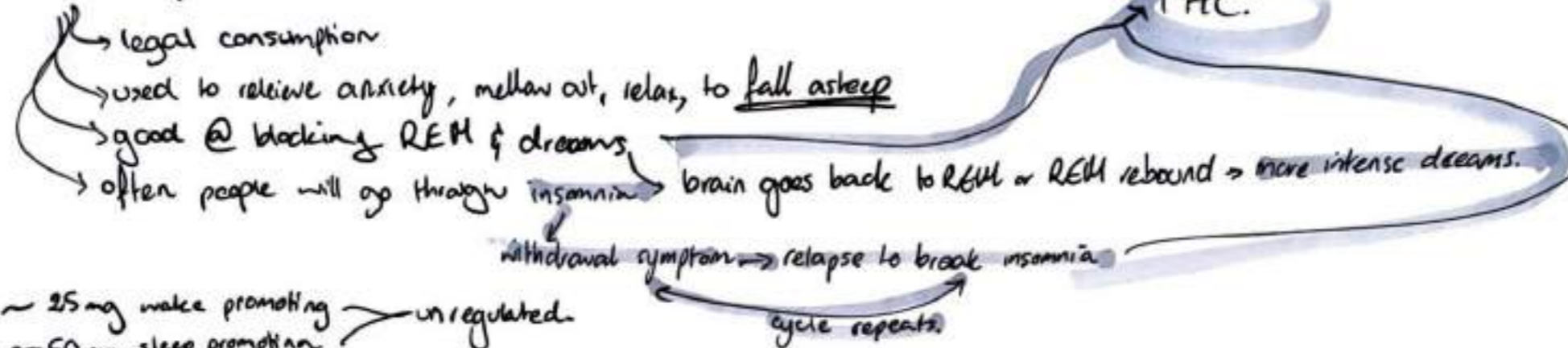
Dr. Matt Walker: Protocols to Improve Your Sleep | Huberman Lab Guest Series



Project Development

Dr. Matt Walker: Protocols to Improve Your Sleep | Huberman Lab Guest Series

Cannabis - THC & CBD



CBD

- ~ 25mg wake promoting
- ~ 50mg sleep promoting
- unregulated.
- Has more favorable evidence than THC
 - ↳ doesn't appear to have same REM effect
 - ↳ drops core temp
 - ↳ reduces anxiety & stress

SLEEP HYGIENE

1. Regularity is king
2. Optimise light in morning & during day.
3. Dim & dark at night fall
4. Warm up to cool down for sleep, stay cool to stay asleep
5. Wake it out if can't go to sleep -> wakefulness associated
6. Limit caffeine & alcohol to morning
7. Cannabis is disruptive to sleep structure (THC) (CBD Tbc).

UNCONVENTIONAL SLEEP TIPS

- ↳ Do nothing! Don't go to bed early, wake up later, nap or intake more coffee
 - ↳ danger of disrupting regularity / circadian rhythm.
- ↳ CBT - i -> Baseline treatment for clients
 - ↳ Bedtime rescheduling - constraining sleep to force efficiency into brain
 - front end - bed later; same wake time
 - ↳ Wind down routine - sleep is more physiology
 - ↳ whatever calms or relaxes you
 - ↳ find a way to decelerate
 - ↳ Don't count sheep! Makes people stay awake longer
 - ↳ try mental walk, one you know well, very detailed walk like you might walk
 - ↳ gets mind off itself
 - ↳ Remove clock faces - knowing time will make things worse, heightened anxiety

Project Development

Dr. Matt Walker: Protocols to Improve Your Sleep | Huberman Lab Guest Series

AUGMENTED SLEEP STIMULATION

Thermal - Acoustic - Electrical - Kinesthetic

Electrical

- Brains currency / language is electrical, principle language - manipulate in this
- direct current brain stimulation - trans cranial direct current stimulation
 - moving something through skull of cortex.
- connect electrodes to head and send through current of electricity → not high enough to feel but
- Rest of brain
- Stim. group, waited to go into deep sleep - stimulation pulses trying to match pulses - slowly.
- Trying to boost deep sleep - were able to boost electrical quality by ~60%
 - able to double memory benefit.
- closed loop stimulation
 - doesn't wait until deep sleep (estimated).
 - programmed algorithm
 - to wait until @ peak wave of slow brain activity.
 - strike @ biggest dip in brainwave - to enhance it.
 - more specific & accurate.
 - experiment was personalized.
- people have different timings
- can buy but do not as they are not yet properly developed.

Thermal

- High fi, low fi, mid fi tech available
- thermal trigger zones
- deep sleep is staying cool zones
- greatest decline trajectory
- blood races to head, hands, feet where our body releases heat from core, cooling temp down.
- warmer feet = faster you fall asleep - study conducted.
- study that warmed certain parts of body → 25% faster falling asleep.
- increase ds by 30-40 mins more
- Reduced 80% → 5% in older adults waking up in second part of night
 - powers & quality increased in waves.
- product recommendation for portable pair of socks
 - heat up (to fall asleep)
 - cool down (to stay asleep)
 - heat up (to wake up).
- Insomnia study in AIs with warming hands was not as dialed in as healthy adults
- phase dialed in
- suggests body cause, not just mental.
- older adults cannot thermal regulate like other adults → struggle to drop temp ∴ fall asleep.

Project Development

Dr. Matt Walker: Protocols to Improve Your Sleep | Huberman Lab Guest Series

Auditory

- German study - take acoustic tones (light)
 - gradually increase volume to understand awakening threshold.
 - 90mins into sleep playing, able to increase amount of deep sleep.
 - ✗ is it functional?
 - memory
 - wakefulness
 - task management etc.
 - was no memory benefit.

→ closed loop (brain wave algorithm)

- ↳ auditory tone clicks
- ↳ able to improve memory

- ↳ White noise machines
 - studies were inconclusive
 - no reliable, robust effect
 - positive (NYC), lots of external noise pollution
 - context dependant potentially.

pink noise
less power/intensity high frequency ranges
more enriched in lower ranges

increased total
sleep time 30mins

2 Sleep stage.

Kinesthetic

- body manipulation
- old histories w/ infants → rocking to sleep
- rock bed frame, suspended from chains, rotating arm
- would push/swing bed left to right
- 0.25 Hertz once every 4 seconds.
- 90min nap = increased quickness to fall asleep, boosted deep sleep & spindles
- Night of sleep = memory benefit 10% (modest).

similar to
adults in hammocks

Enhancing REM

- Warm up a little bit to improve REM sleep
- ↳ thermo neutral point → to have REM sleep.
↳ warm room to 30°C.
- Hard to do for commercial use due to different sleep conditions
- DORA's → new drug w/ evidence of improving REM.
deal (orange) antagonists

Benchmarking

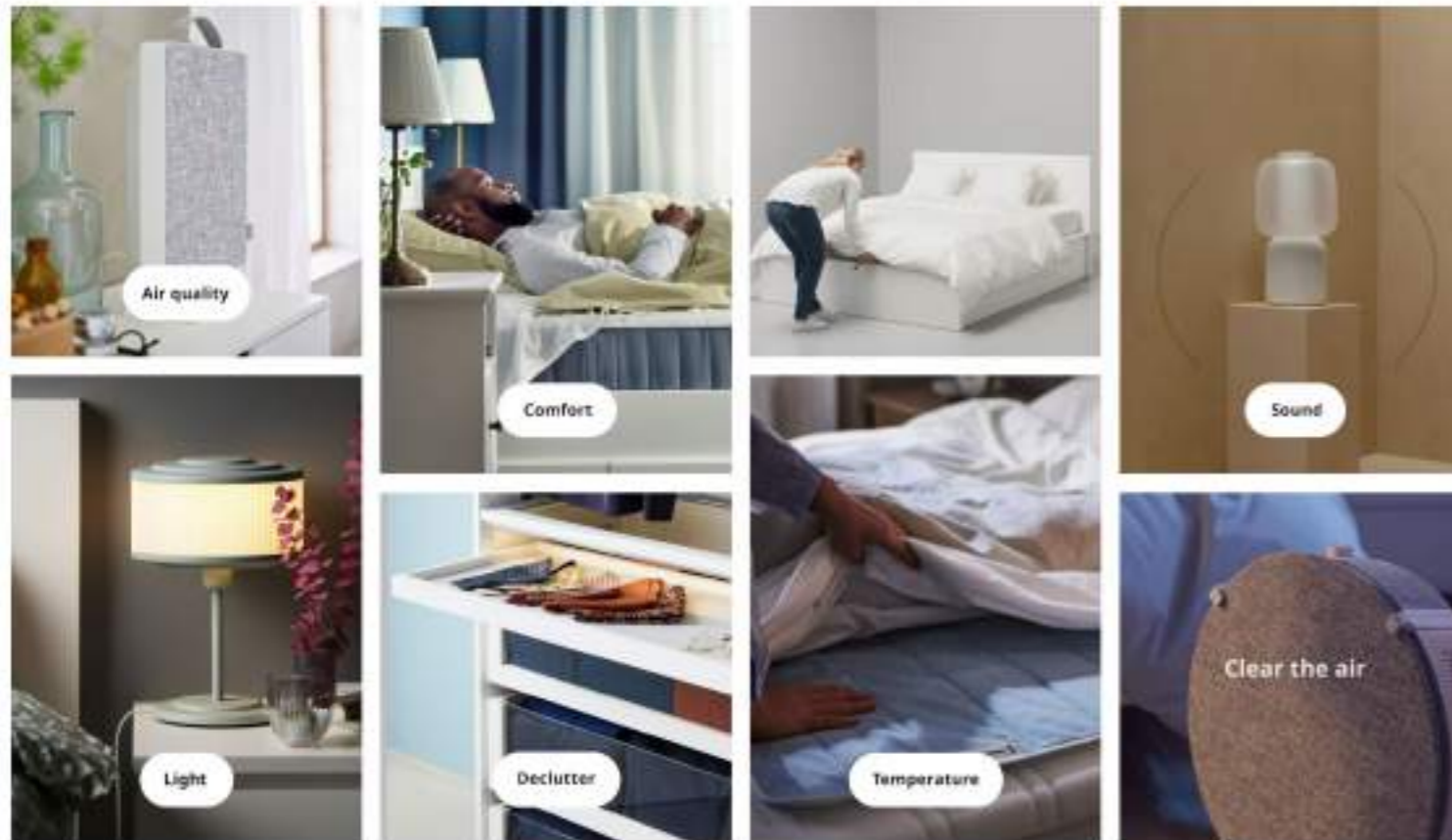
Products to Help Sleep

IKEA Products:

A guide to having your best night's sleep

Learn about the six sleep essentials

Air quality, comfort, light, declutter, sound, temperature – all come together to create a base for a good night's sleep (or well-earned nap).



Benchmarking

Products That Help Circadian Rhythm

Block Blue Light:



Blue Blocking Amber Light Bulbs

- 100% Blue Light Free
- Relaxing Warm Amber Light
- General Purpose Lighting
- Improve Sleep Quality

The SweetDreams Sleep Lights are amber light bulbs; they are bright enough to sufficiently light a room and can be used as a general-purpose light throughout the house. These low blue light bulbs produce zero flicker, are low EMF, and most importantly, have been verified to emit zero blue light. These are available in E27 screw, E22 Bayonet, E14 small screw, and recessed downlights.



BioLight Full Spectrum Light Bulbs

- Full Spectrum Technology
- Down to Dusk With 3 settings
- Replicates Natural Sunlight
- Boosts Mood & Wellbeing

The BioLight Full Spectrum Light Bulb provides 3 different light settings in a single bulb. This allows the light output to be changed to replicate the different phases of the sun. BlockBlueLight has created a unique full-spectrum technology light source that replicates the same output of viable light as the sun making the most optimal daytime lighting to use.



Blue & Green Blocking Red Light Bulbs

- 100% Blue & Green Light Free
- Relaxing Sunset Red light
- Perfect For Bedrooms
- Maximize Sleep Quality

The Twilight Red Light Bulb not only removes all the blue light but also has all the green light spectrum removed. The melatonin disruption zone also extends into the green light range, so removing all the green light makes them even more effective. This light is a dimmer light to be used in the last few hours before bed, suitable for bedside lamps and bedrooms. These bulbs produce zero flicker and have a low EMF, making them great lights for sleep.

[read more](#)

Benchmarking

Products to Help Sleep



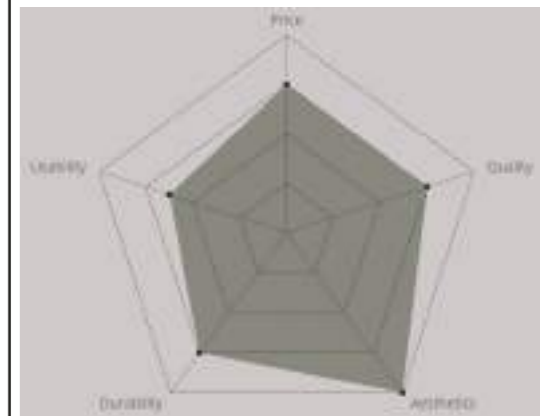
Name: Sleep Aid Device
Brand: Dodow
Price: \$79
Rating: 3.5 / 5 (10,000+ reviews)
Function:

- Metronome with a light system
- Designed to teach users how to fall asleep without medications
- 2 exercise modes (8minute and 20minute)
- Used by people of all ages
- Battery powered (3 AAA batteries)
- White in colour
- Features LED, touch pad and battery lid



Pros (based off reviews):
 Some users mentioned that it helps them to fall asleep and has improved their sleep overall. Many like that it is small and portable.

Cons (based off reviews):
 The pulsing LED is a blue light and was mentioned to keep users up despite the mindful exercises. Users mentioned that breathing isn't always easy to synchronise to light pulses and this makes some users more anxious. Lowest rating 1/5.



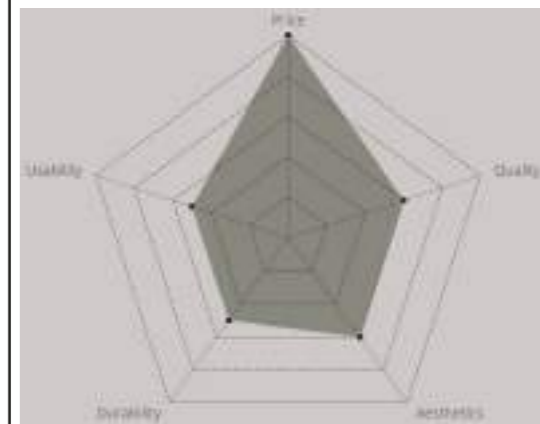
Name: Restore 2
Brand: Hatch
Price: \$ 169.99
Rating: 4.25/5
Function:

- Sleep sounds to help you fall and stay asleep
- Bedside light
- Dimmable clock to keep your room dark after bedtime
- Sunrise alarm for gentler wake-ups
- "Rest" and "Rise" buttons to start routines phone-free
- Option for 3 colours
- Connects to iPhone in app purchases
- Requires wifi connection



Pros (based off reviews):
 Consumers enjoy the alarm clock and ability to set a night / morning routine without the use of a phone.

Cons (based off reviews):
 Consumers believe the price point is too high for the limited features without the subscription (extra cost). Some consumers also found it hard to use certain buttons and features. Lowest rating 1/5.



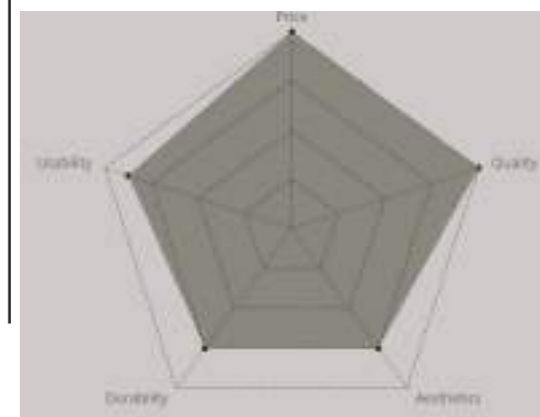
Name: Headspace App
Brand: Headspace
Price: \$91.99 (annually) , \$19.99 (monthly), In app purchases
Rating: 4.8 / 5
Function:

- Digital Product (app)
- Uses evidence-based meditation and mindfulness tools, mental health coaching, therapy, psychiatry
- Helps create habits to support your mental and physical health



Pros (based off reviews):
 Consumers have benefited from the meditation and mindful courses. Several reviews describe an improvement to their lifestyle and wellbeing.

Cons (based off reviews):
 App doesn't have free trials despite the marketing for it. Consumers are unhappy and feel ripped off. Lowest rating 1/5.



Benchmarking

Products to Help Sleep

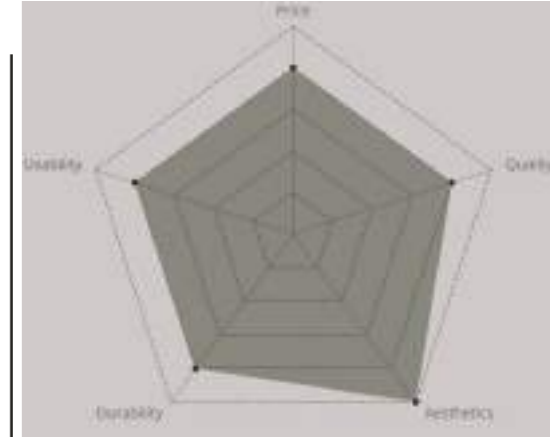


Name: STARKVIND
 Brand: IKEA
 Price: \$274
 Rating: 4.6/5 (8 reviews)
 Function:

- Table with air purifier and additional gas filter
- Comes in two colours
- Designed to improve indoor air quality
- Low fan noise allows for easy sleep
- Can be used in conjunction with 'IKEA Home Smart App' when not in same room
- Has auto mode that adjusts fan speed and detects air particles PM2.5



Pros (based off reviews):
 Consumers like the overall aesthetic and form. They also comment on it's effectiveness and functionality in the space.
 Cons (based off reviews):
 Major concern from consumers is the auto fan that is too high all the time. Lowest rating 4/5).

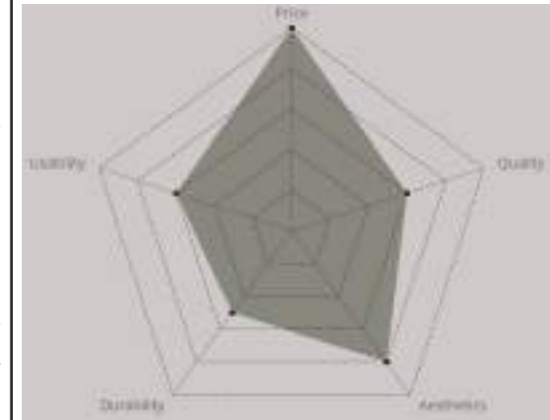


Name: SYMFONISK
 Brand: IKEA
 Price: \$249
 Rating: 4/5 (22 reviews)
 Function:

- Speaker Lamp Base with Wifi
- 180-degree sound
- 2 colour options
- Pair with glass or textile lamp shade (additional purchase)
- Compatible with most streaming platforms so can be used for music, podcasts etc.
- Has ability to pair two or more speakers within same environment



Pros (based off reviews):
 Consumers are happy with the aesthetic and multi-functional aspect (lamp and stereo). The sound system was also commented to produce quality sound and volume.
 Cons (based off reviews):
 There was a common comment about the life of the speaker, many claimed it stopped working after 12+ months. Some also expressed limited usability with personalised functions (ie, dimmers, treble). Lowest rating 1/5.

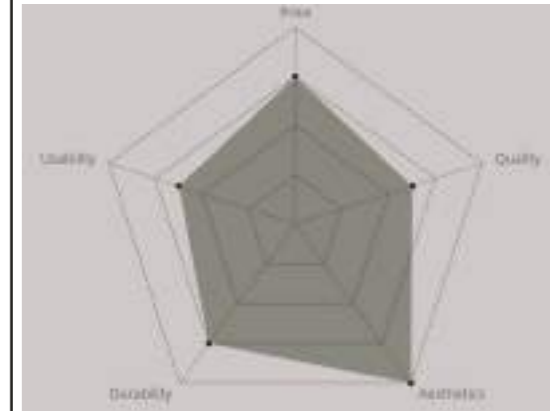


Name: GUNNLAUG
 Brand: IKEA
 Price: \$79
 Rating: 3.5 / 5 (20 Reviews)
 Function:

- Lower the general light level and provide privacy to the space
- Fabric is lightweight to create aesthetic drapes
- The chenille yarn is woven specifically to absorb sound
- Sound absorbent fabric is designed to reduce echo and reverberation in medium to high frequencies
- Available in two colours
- Can be used on tracks or rods

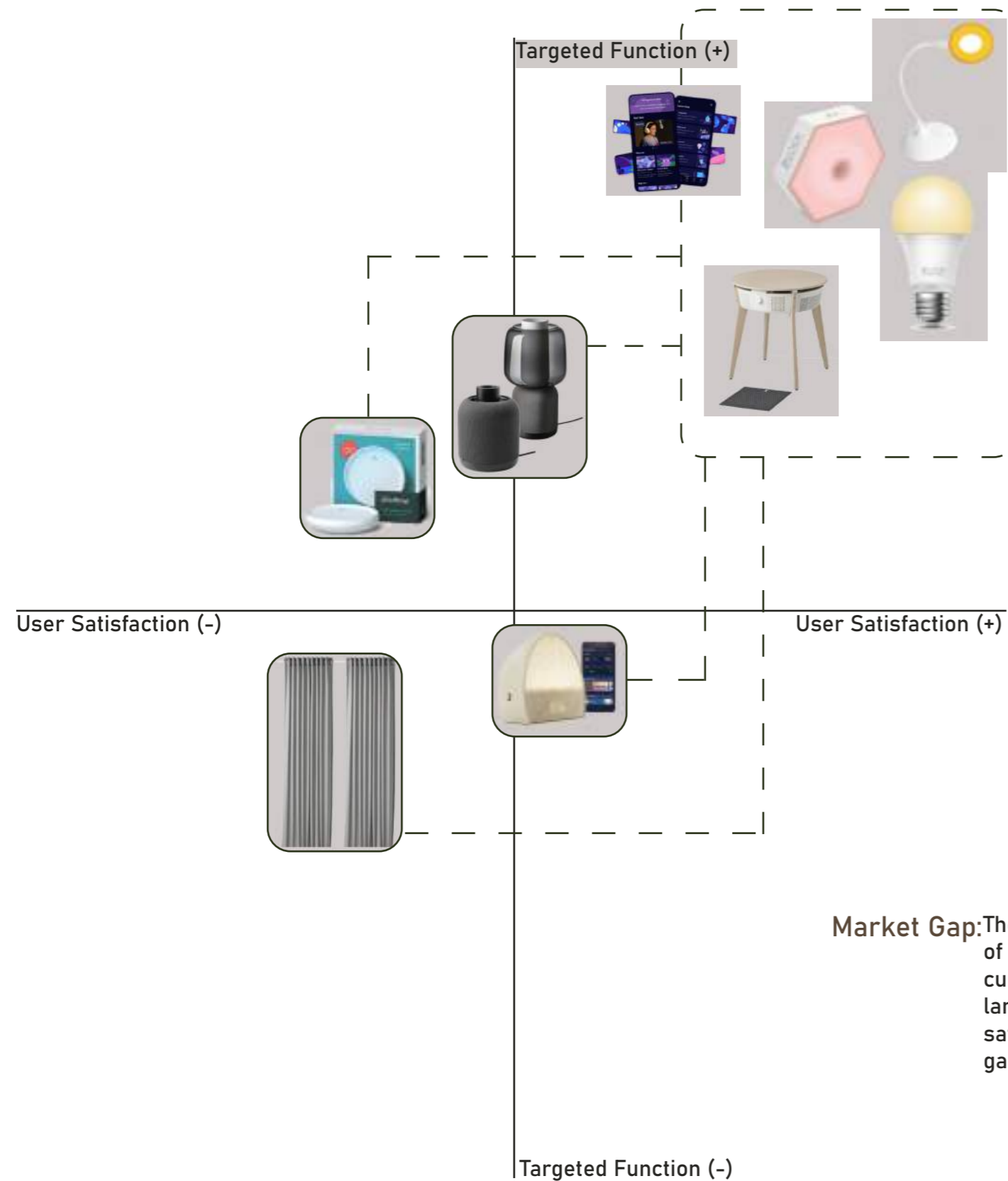


Pros (based off reviews):
 Consumers have described the noise from traffic and neighbours to be reduced. The aesthetics (style, weave pattern, colour) had positive mentions.
 Cons (based off reviews):
 Many reviews mentioned limited ability to block light and absorb sound - some described no sound difference whilst others described very little. Lowest rating 1 /5



Benchmarking

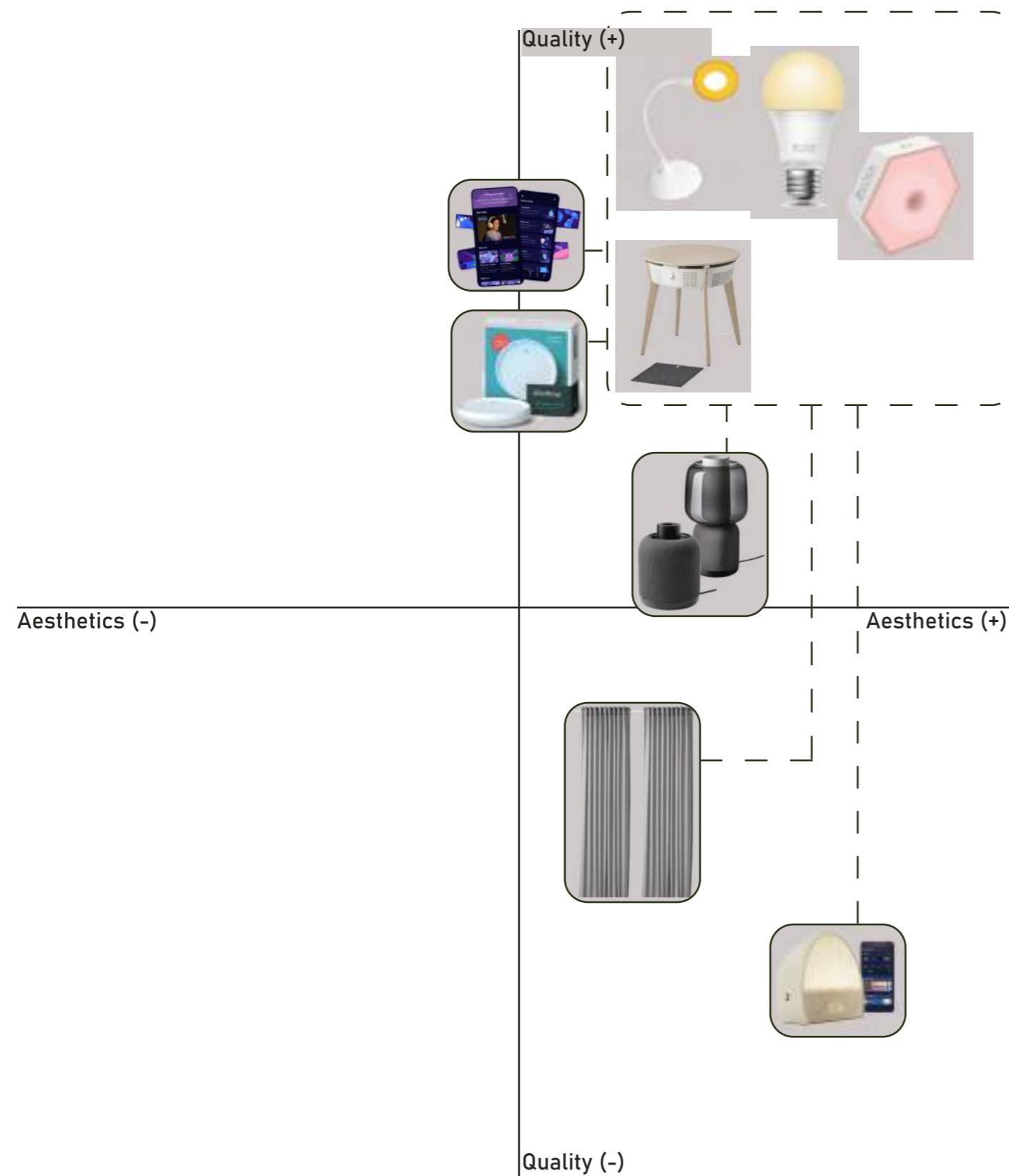
Products Matrix



Market Gap: The products outlined all have a common focus - sound. Reviews identified a level of user dissatisfaction relating to the targeted function/s of the products. The curtains have an inability to absorb sound whereas the Restore 2 and IKEA speaker lamp uses an output of sound. The BlockBlueLight products had the highest user satisfaction as they were able to perform according to their purpose. Therefore, a gap for audio products targeting improved sleep is identified.

Benchmarking

Product Matrix



Market Gap: The BlockBlueLight products achieve high aesthetics not only from the form of the products but through the ambience produced by the light. Achieving its functional purpose, it is considered a high quality product. In contrast, the Restore 2 has a high aesthetic due to the focus on the form but fails in quality. A product like this demonstrates the value of physical form for users but at the cost of functional output, lowering the overall quality. Products that have a strong aesthetic output as well as function will increase the overall quality of the product and this is the second identified gap in the current market.

Research Planning

Interview Questions - End User

ChatGPT was used to aid in the formation of interview questions:

I am conducting an interview for the purpose of research that will inform the design of a furniture piece. The Project focuses on sleep and how the product will improve the quality and quantity for the user.

My interviewee is a potential end user for my target group (adults suffering from insomnia and similar sleep conditions). She has a recent history of insomnia.

What are some questions I could ask that would provide informative responses?

ChatGPT Response:

Here are some questions that can help you gather valuable insights for your research on designing a furniture piece aimed at improving sleep quality and quantity for adults suffering from insomnia:

1. Background Information:

- Can you describe your typical sleep environment?
- How long have you been experiencing insomnia or sleep difficulties?

2. Sleep Patterns and Habits:

- What is your usual bedtime and wake-up time?
- How many hours of sleep do you usually get per night?
- Do you have a bedtime routine? If so, what does it involve?

3. Sleep Quality and Issues:

- Can you describe the main issues you face when trying to fall asleep?
- How often do you wake up during the night, and how long does it take you to fall back asleep?
- On a scale of 1 to 10, how would you rate the quality of your sleep?

4. Physical Comfort and Environment:

- How comfortable do you find your current bed and bedroom furniture?
- Are there specific features of your bed or bedroom that you think negatively impact your sleep?
- What improvements do you think could be made to your current sleep environment?

5. Health and Lifestyle:

- Do you suffer from any medical conditions that affect your sleep?
- How do your daily activities and stress levels impact your sleep?
- Do you use any sleep aids or medications? If so, what are they and how effective are they?

6. Furniture Preferences:

- What type of bed or mattress do you currently use, and why did you choose it?
- Are there any specific features or materials in furniture that you find particularly beneficial or detrimental to your sleep?
- How important is the aesthetic design of your bedroom furniture to your overall sleep experience?

7. Potential Solutions and Innovations:

- What features would you like to see in a piece of furniture designed to improve sleep?
- How do you think adjustable furniture might help improve your sleep?
- Are there any technologies (e.g., smart beds, temperature control, noise reduction) that you believe could aid your sleep?

8. Personal Insights:

- Can you share any experiences where changes to your sleep environment significantly impacted your sleep quality, positively or negatively?
- Do you have any rituals or habits that help you relax before bed?
- What is the one thing you wish could change about your sleep experience?

These questions should help you gather detailed information on your interviewee's sleep habits, issues, and preferences, providing you with valuable insights for your furniture design project.

Research Planning

Interview Questions – End User

Questions to conduct the interview with the End User (edited from ChatGPT):

1. First I would like to ask you about your environment. Where is it and could you describe it to me? *(Cue any follow up questions about lighting, noise and smell)*
2. Does this environment have the tendency to change? That could mean anything in that particular environment or any other locations that you would deem to be a sleep environment.
3. These next set of questions involve sleeping patterns and habits. On average, how many hours of sleep would you get per night?
4. Do you go to bed roughly the same time or does it change?
5. How common is napping for you?
6. Is there anything from your lifestyle that you would consider to influence your sleeping habits?
7. Do you have a bedtime routine? *(Follow up question if yes)*
8. Now lets talk about the quality of sleep. How would you describe the quality of sleep you get?
9. How often do you wake up from your sleep and how long would it take to fall back asleep?
10. In previous conversations, you have mentioned that you have experienced insomnia, could you tell me about your experience? Go into as much or as little detail as you are comfortable with. *(Cue follow up questions based on response)*
11. Are there any products currently on the market that help insomnia (or similar) and what is your opinion of them?
12. If there was a product to be designed to improve quality and duration of sleep for adults with sleep disorders, what qualities or functions do you believe will be needed?

*Approximate Interview Time = 30-45mins

Research Planning

Interview Questions – Expert

Questions to conduct the interview with the Experts (edited from ChatGPT):

1. From your professional knowledge and experience, what is insomnia and how does it impact those who experience it?
2. What are the most common causes of insomnia that you encounter in your practice?
3. How does insomnia compare to other sleep-related issues?
4. What role does lifestyle play in quality of sleep?
5. What specific interventions do you recommend to patients with insomnia?
6. Have you received feedback from patients about existing sleep products or insomnia treatments and if so what were they?
7. When designing a product intervention, should there be a focus on a particular time on the overall sleep cycle (ie. before bed, during sleep or waking up)?
8. Similarly, what are some key aspects to consider when designing this product?
9. To what extent do you think nature / natural elements might improve sleep (unrelated to natural medication)?
10. Have you, yourself experienced insomnia and did you use your knowledge to overcome this?

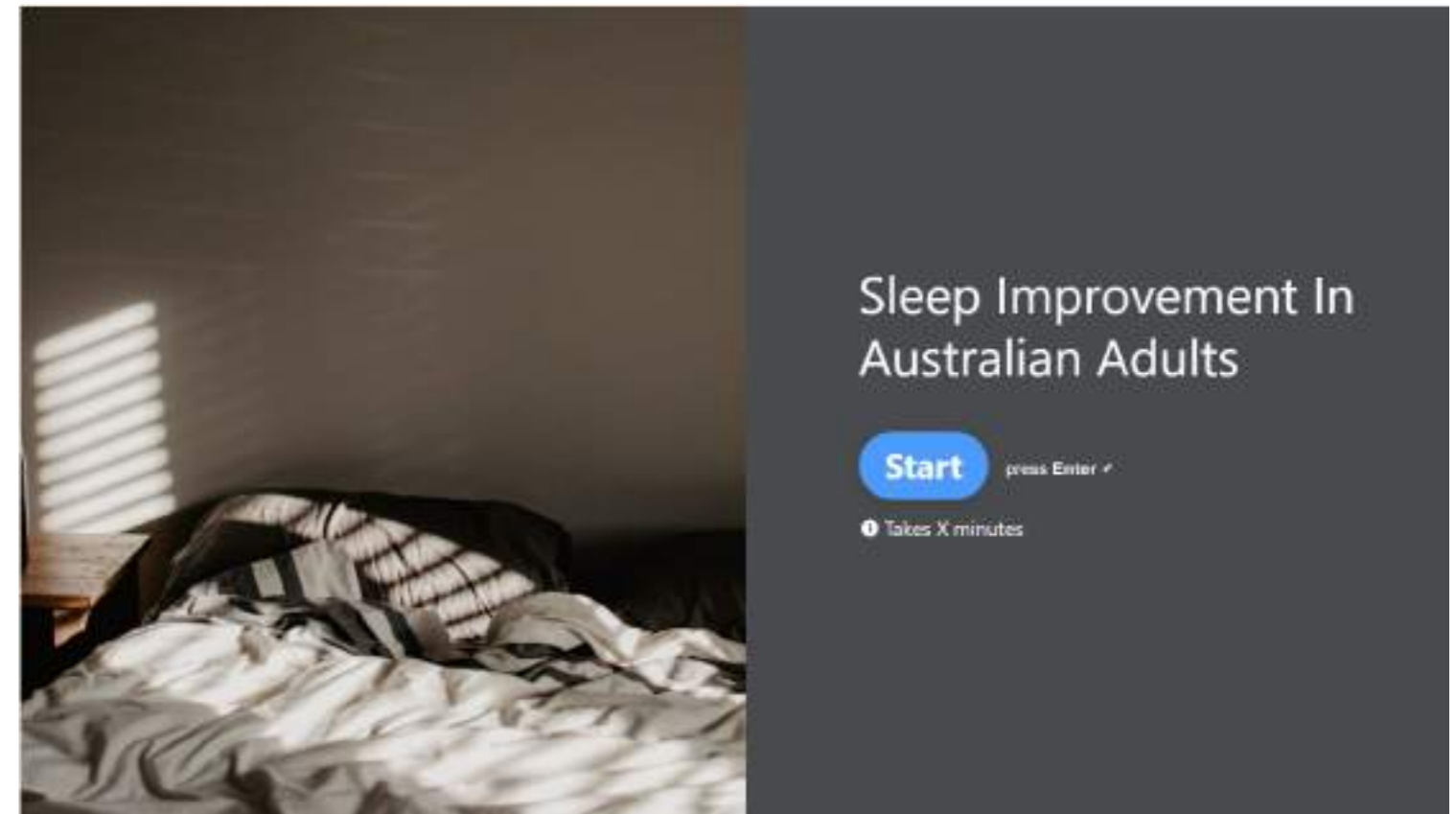
*Approximate Interview Time = 30-45mins

Research Planning

Survey Questions

1. What is your age?
18-25 (Young Adult), 26-64 (Adult), 65+ (Older Adult)
2. What is your sex?
Male, Female
3. On average, how many hours of sleep would you get per night?
Less than 4hrs , 5-6hrs, 7-9hrs, Greater than 10hrs
4. Have you experienced insomnia?
Yes, No
5. (If Yes) Could you describe this experience?
"Typed Answer"
6. What, if anything, helps you have a good sleep?
"Typed Answer"
7. What, if anything, keeps you up / wakes you up?
"Typed Answer"
8. How satisfied are you with current products or treatments to aid / improve sleep are you?
Very Satisfactory, Somewhat Satisfactory, Neutral, Somewhat Unsatisfactory, Very Unsatisfactory
9. What features / functions do you believe a product should have if it was to aid sleep?
"Typed Answer"
10. For the design of a product, what stages of sleep should it be focused on?
Before Sleep, During Sleep, After Sleep (wakeup) Other (specify)

*Approximate Survey Time = 2-7mins



Desktop / Computer Preview



Mobile Preview



Shared to LinkedIn, Instagram and Facebook to gain a wide audience and increase the likelihood of responses.

Research Planning

Stakeholders

Experts at QUT



Using QUT services, I filtered to find people with any background in neuroscience and sleep. A handful of Associate Professors, Lecturers and other Academics were found.

Experts In Practice:



4 potential options for Sleep Experts. Within these, there are sleep doctors, sleep scientists and General Practitioners (GP). The above professions have different roles yet they all have experience treating and diagnosing insomnia.

End Users and Other Stakeholders



End user #1:

- » Middle Aged Female
- » Work Colleague
- » Has recent and potentially on going history of Insomnia
- » Has agreed and scheduled an interview for Monday 29th of July
- » Will be a valuable and on going stakeholder for product feedback later



End User # 2:

- » Adults of any age (18+)
- » Aim is to gauge an overall understanding of sleep conditions and environments experienced in day to day life
- » Data will be collected in the form of a survey
- » Data will be evaluated and potentially graphed

Quantitative research is something that can be measured and analysed with mathematical procedures. Variables, numbers, statistics

Objective
Unbiased
Context free
Accurate reliable and valid

Qualitative research is research that doesn't involve numbers and is something that cannot be measured. Words, images, descriptions. Detailed views of peoples perspectives and perceptions and is conducted in natural settings where possible

Subjective
Biased
Within context
Helps understand the meaning

Mixed allows for comparative and insightful analysis of the research topic. Understanding the limitations of the study. Looking for complexity and richness to data

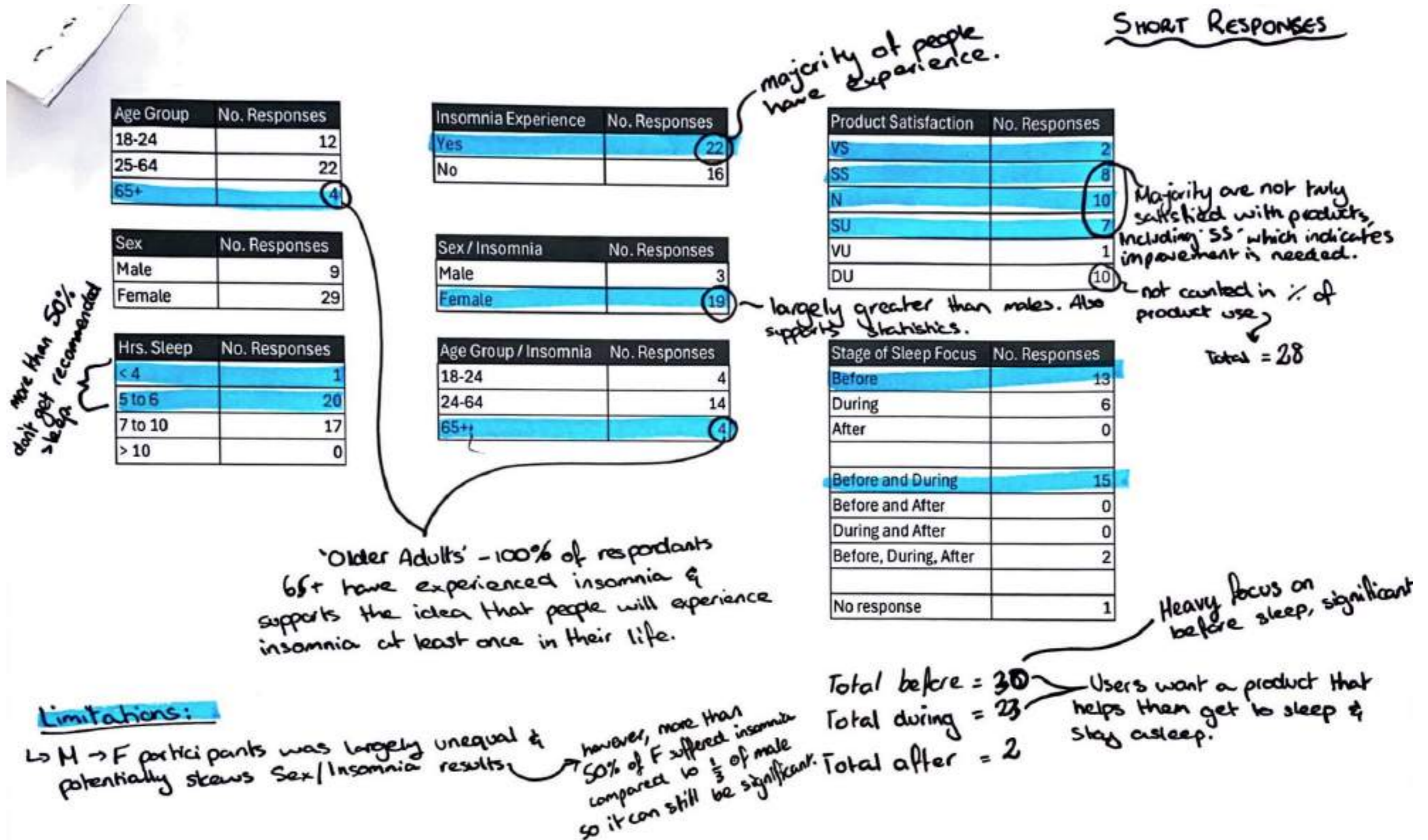
Survey Results Summary

P. No.	What is your age?	What is your sex?	On average, how many hours do you sleep a night?	How do you experience insomnia?	Could you describe this experience?	What, if anything, helps you get a good sleep?	What, if anything, keeps you up / wakes you up?	How satisfied with current products or treatments do you feel? (response sleep the past)	What features / functions do you believe a product should have?	For the design of a product, what stage of sleep should it focus on?
1	35-44	Female	5-6hrs	1	Waking up at 4am at the college going hard to fall asleep but my body just isn't, but it's so extremely tired it needs to	I sleep better when my husband is home off work and he's taking sleeping medication but he's to avoid this as I feel drunk in the morning otherwise, I have tried herbs and oils and I am taking a sleep machine atm	Wakes at my kids getting up in the toilet, even since I became a mum I have been a light sleeper	Neutral		Before Sleep
2	18-24	Female	5-6hrs	1	anxiety, thinking, nervous, fatigue, feeling and feeling, panic	podcasts, music, just to get it out	stress, thoughts	Very Dissatisfied	calming effects, easy to use, portable	Before Sleep
3	25-34	Female	5-6hrs	1	Restless constant waking up, unable to relax or consistent waking not able to close eyes at all	White noise or sleep partner using the same app	Breathreading baby, foot rest and light	Neutral	White noise light blue or	During Sleep
4	25-34	Female	7-10hrs	1	Feeling tired but cannot sleep	Planning a calming routine at night, including herbed tea, lavender oil, no technology or stimulants before sleep and getting to sleep by 10:30pm at the latest	Evil wavy heads late at night, being on technology late, noisy alarm, bright lights. Anything too stimulating	I don't use any	It should be natural	Before Sleep
5	25-34	Female	5-6hrs	1	Unable to fall asleep and unable to stay asleep when you do	Flexi-bed sleep position	Thoughts, partner, noise	Somewhat Dissatisfied	Natural products with no scent. It could be used to have my prescription sleep compared to natural products that may actually benefit my sleep	Before Sleep
6	25-34	Female	7-10hrs	1	Fluctuating	No coffee after 5pm	Stress	Neutral	comfort, I would use whatever if they allowed me to sleep comfortably	Before Sleep
7	25-34	Female	5-6hrs	1	overthinking and can't sleep I end up getting up and doing work	Being free of stress and sleeping in my bed	Blue light, smoking, smoking, nervous, restless, symptoms. Calming to bed, no heating and smoking things over when I don't get up	I don't use any		
8	18-24	Female	7-10hrs	0	Sometimes background noise like a show I broadcast, sound mix, piano, keyboard, multiple pieces		Heating, phone, bedtime, nervous, stress & overthinking, excitement, noise	I don't use any		Before Sleep
9	25-34	Female	5-6hrs	0	Angry without the baby's cry		Baby, house from outside, been active, too much caffeine, being excited	I don't use any		Before Sleep
10	25-34	Female	5-6hrs	1	Can't get to sleep	Bedding	Life	I don't use any	Soothing	Before Sleep
11	18-24	Male	5-6hrs	0	Cold temperature and humid noise	Cold temperature and humid noise	Stress, overthinking, nervous	Somewhat Dissatisfied	The ability to regulate temperature	Before Sleep
12	25-34	Female	7-10hrs	0	Fluctuating	Fluctuating	Coffee before sleep, light, getting up, noise	Somewhat Dissatisfied	Polysomnography	Before Sleep
13	25-34	Female	5-6hrs	1	Overthinking	Overthinking	Overthinking, nervous, stress	Somewhat Dissatisfied	Ask anxiety to sleep	Before Sleep
14	25-34	Female	5-6hrs	0	Waking up too early	Waking up too early	The alarm, noise	I don't use any	It's not a good idea to use anything other than medication	Before Sleep
15	25-34	Female	5-6hrs	1	You are too tired but your mind won't stop	Medication	Sleepy and stressed about something	Neutral	One that works within 30 minutes	Before Sleep
16	25-34	Female	5-6hrs	1	Feeling too tired	Feeling too tired	Stress	Somewhat Dissatisfied		During Sleep
17	25-34	Female	7-10hrs	1	Strong difficulty getting to sleep and then also remaining asleep, heavily frustrated	White noise, Magnesium	Overthinking, nervous, stress	Somewhat Dissatisfied	Attracting, easy to use, calming	Before Sleep
18	25-34	Female	7-10hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	I don't use any		Before Sleep
19	25-34	Female	5-6hrs	1	Absolutely debilitating and unable to function days upon end. Involuntarily have had meltdowns where this has occurred. Otherwise, I like a calm and consistent mood and feeling of happiness	Medication (prescribed sleeping pills), but unfortunately have had meltdowns where this has occurred. Otherwise, I like a calm and consistent mood and feeling of happiness	Partner snoring, noise outside, for me, the biggest thing though is anxiety and depression	Somewhat Dissatisfied	An understanding that it may not cure, but at least, I want to sleep better to be able to sleep product benefits and results	Before Sleep
20	18-24	Female	5-6hrs	1	Constantly tired but never able to fall asleep	Long, weighty, background noise in my head	Anxiety, stress, loud noises, bright screens	Neutral		Before Sleep
21	25-34	Female	7-10hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	Somewhat Dissatisfied	Creates a warm, cozy, calm, and serene	Before Sleep
22	18-24	Female	5-6hrs	1	The strong desire to sleep but unable to	Long, weighty, background noise in my head	Overthinking, nervous, stress	Neutral	more accessible medication, no other sleep machine, pillow for heating, no pillows	Before Sleep
23	25-34	Female	Less than 4hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	I don't use any	The television on in the background helps me not overthink at all when I'm trying to relax and give my brain after a full day of work and/or school	During Sleep
24	25-34	Female	5-6hrs	1	Has to be anxious, knowing I'm going to be really tired the next day but not being able to get to sleep	Being calm	Medication, being calm	Neutral	Be non-invasive and easy to use, a natural approach	During Sleep
25	25-34	Male	7-10hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	Neutral	To work	During Sleep
26	25-34	Female	7-10hrs	0	Not being able to get to sleep or stay asleep all night	Magnesium powder, sleep (27), over temperature, no heat, no light, no noise	Alcohol, being calm	Somewhat Dissatisfied	Put you to sleep and keep you there	During Sleep
27	25-34	Female	5-6hrs	1	Unable to fall into a deep sleep - constantly waking and then taking hours to fall back off - regardless of how tired am	Recognizing when my sleep is over and going to bed then I can usually get a good sleep if I have before I wake again if I do that	Usually it is being uncomfortable - restlessness, muscle aches, pillow not right	I don't use any		During Sleep
28	18-24	Female	5-6hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	Somewhat Dissatisfied	LED's not sure	During Sleep
29	25-34	Male	5-6hrs	1	Some nights I can't sleep and I feel restless, I can't fall back to sleep, uncomfortable while trying to sleep	Listening to podcasts	Other people, can't sleep before 11am due to anxiety about personal issues	Somewhat Dissatisfied	Sleep inducing factors, easy to use, fast to use and proven to work, research based	Before Sleep
30	18-24	Male	7-10hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	Neutral	Help me get to sleep and stay asleep, increase relaxation nature of sleep if possible	During Sleep
31	18-24	Male	7-10hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	Somewhat Dissatisfied		During Sleep
32	18-24	Male	7-10hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	Somewhat Dissatisfied		During Sleep
33	18-24	Female	5-6hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	Neutral	A non-invasive, change that matters	Before Sleep
34	18-24	Female	7-10hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	Somewhat Dissatisfied		Before Sleep
35	18-24	Male	7-10hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	I don't use any	That's your job as a designer? I don't think of any really happy	Before Sleep
36	25-34	Female	7-10hrs	1	Insomnia for 12 months, becoming gradually worse. Eventually I was waking 10 times per night and was completely exhausted. My quality of life was terrible and I was miserable	LED's, white noise, sleep (27), over temperature, no heat, no light, no noise	Occasionally I have a night when I wake up multiple times but only about 2-3 times per month	Very Dissatisfied	Help getting off to sleep, staying asleep	During Sleep
37	18-24	Female	7-10hrs	0	Overthinking	Overthinking	Overthinking, nervous, stress	Somewhat Dissatisfied	Blackout background noise	Before Sleep
38	25-34	Male	7-10hrs	1	Round 4 years of insomnia after my son was born. Some nights 7 hours of sleep, some none at all. At least 2-3 times per week	A regular routine and waking up at the same time every day. Limit screen time to 30 minutes or less at night. Avoid caffeine and alcohol before bed.	Anxiety, stress, overwork, but most of all stress about not sleeping and not being able to function or live a normal life	Somewhat Dissatisfied	Full a sleep quickly and stay asleep without awakenings. Minimal noise	During Sleep

→ Hormone Replacement Therapy & sleeping tablets were the only items considered 'VS'.

Survey Results

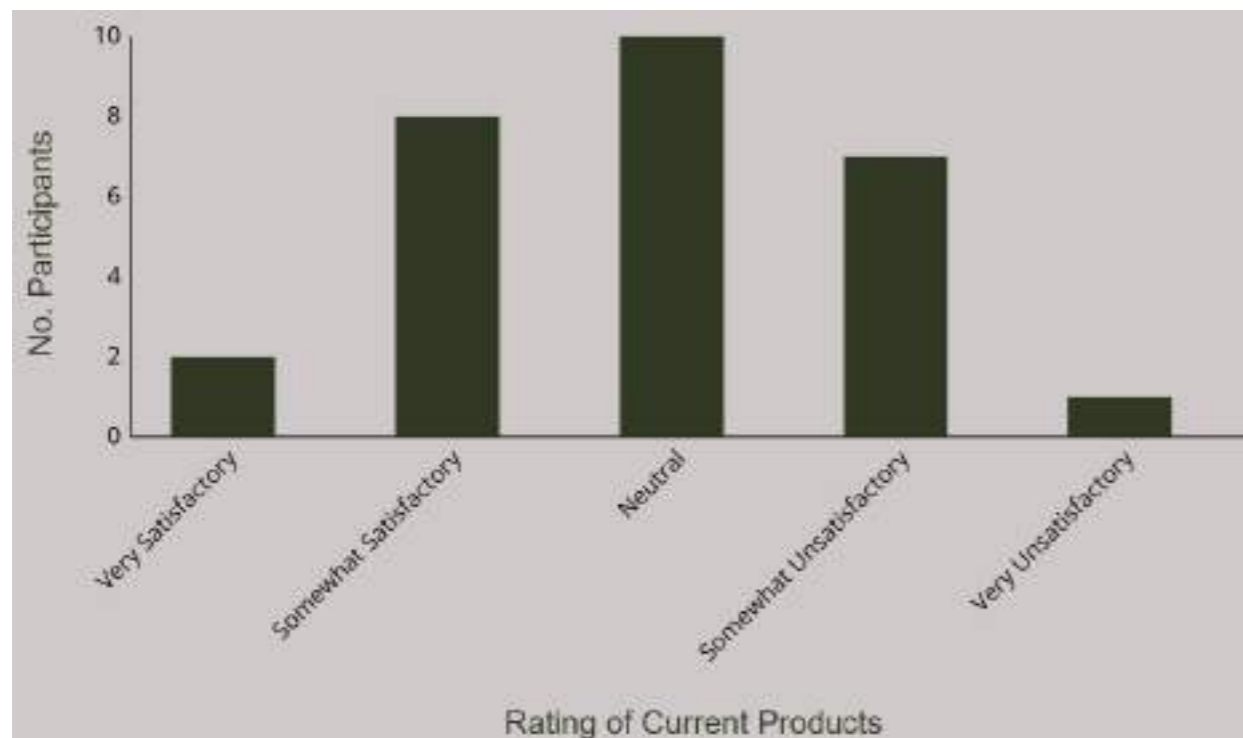
Short Answer



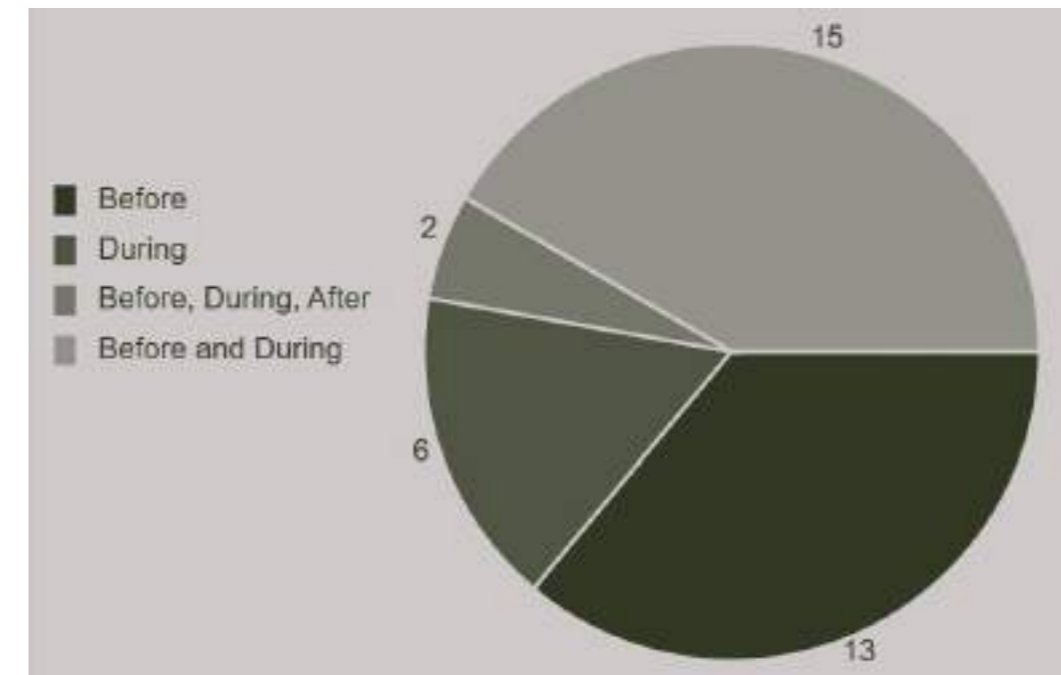
Survey Results

Short Answer Data Visuals - Product Development

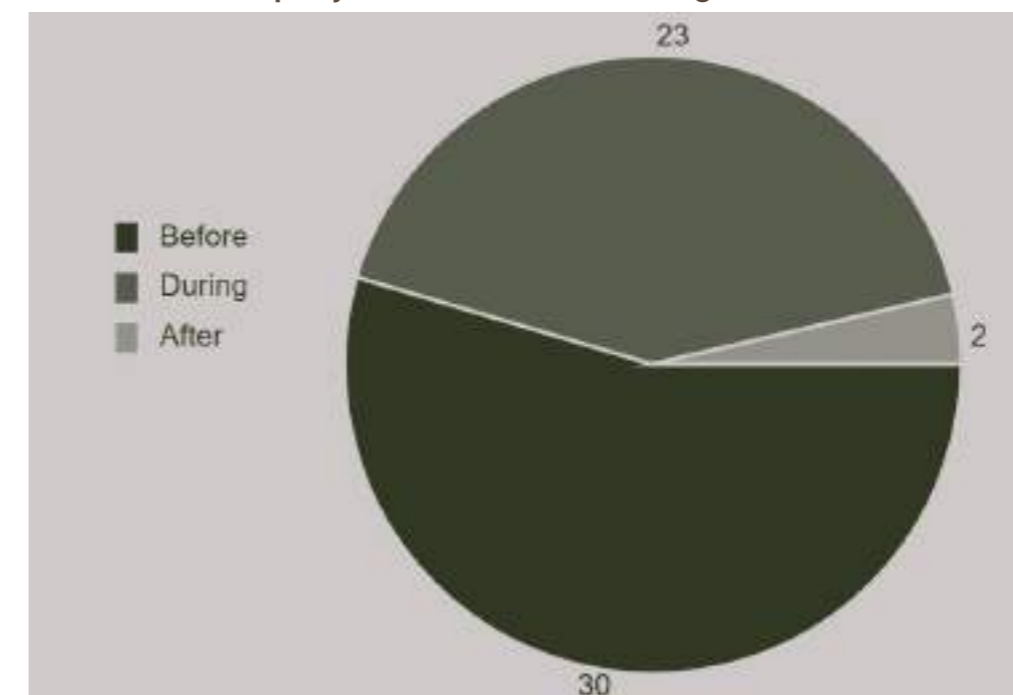
User Satisfaction of Products:



Breakdown of Time of Sleep Cycle for Product Usage:



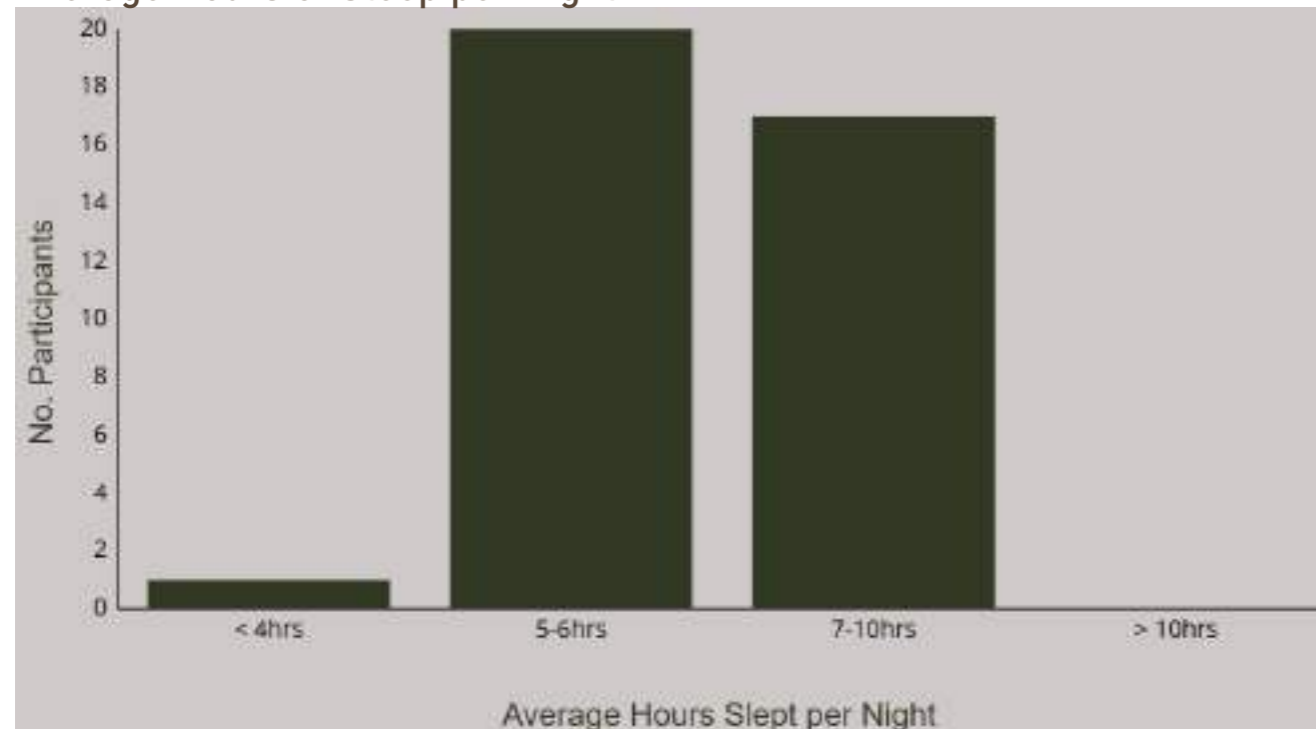
Total No. Sleep Cycle for Product Usage:



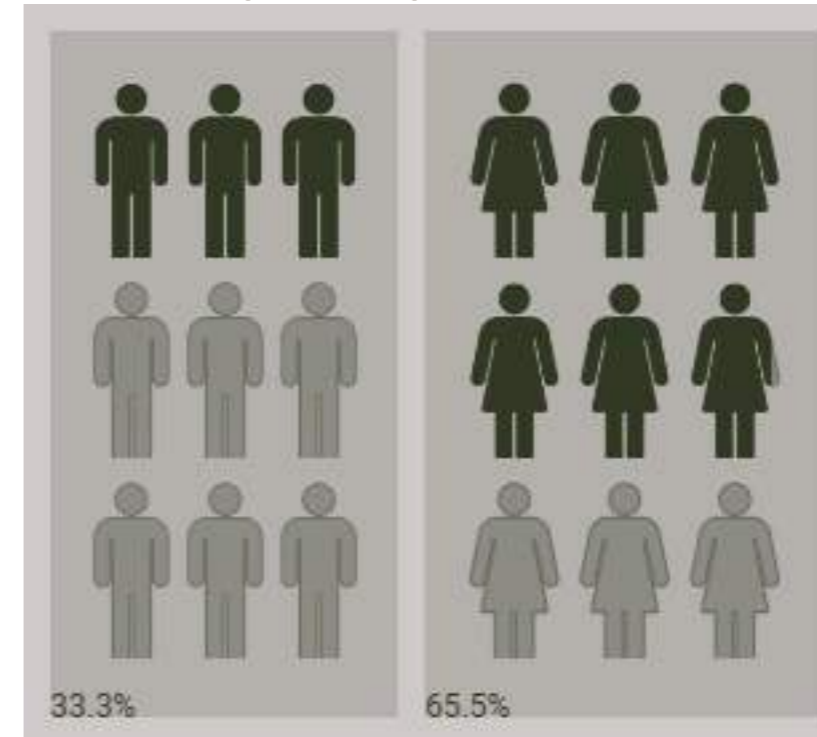
Survey Results

Short Answer Data Visuals – Demographics

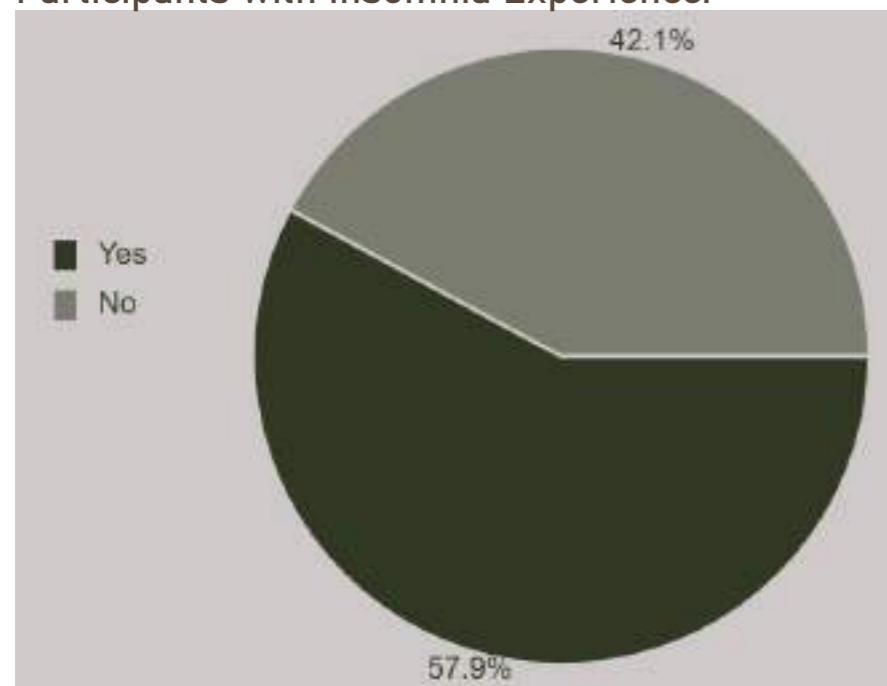
Average Hours of Sleep per Night:



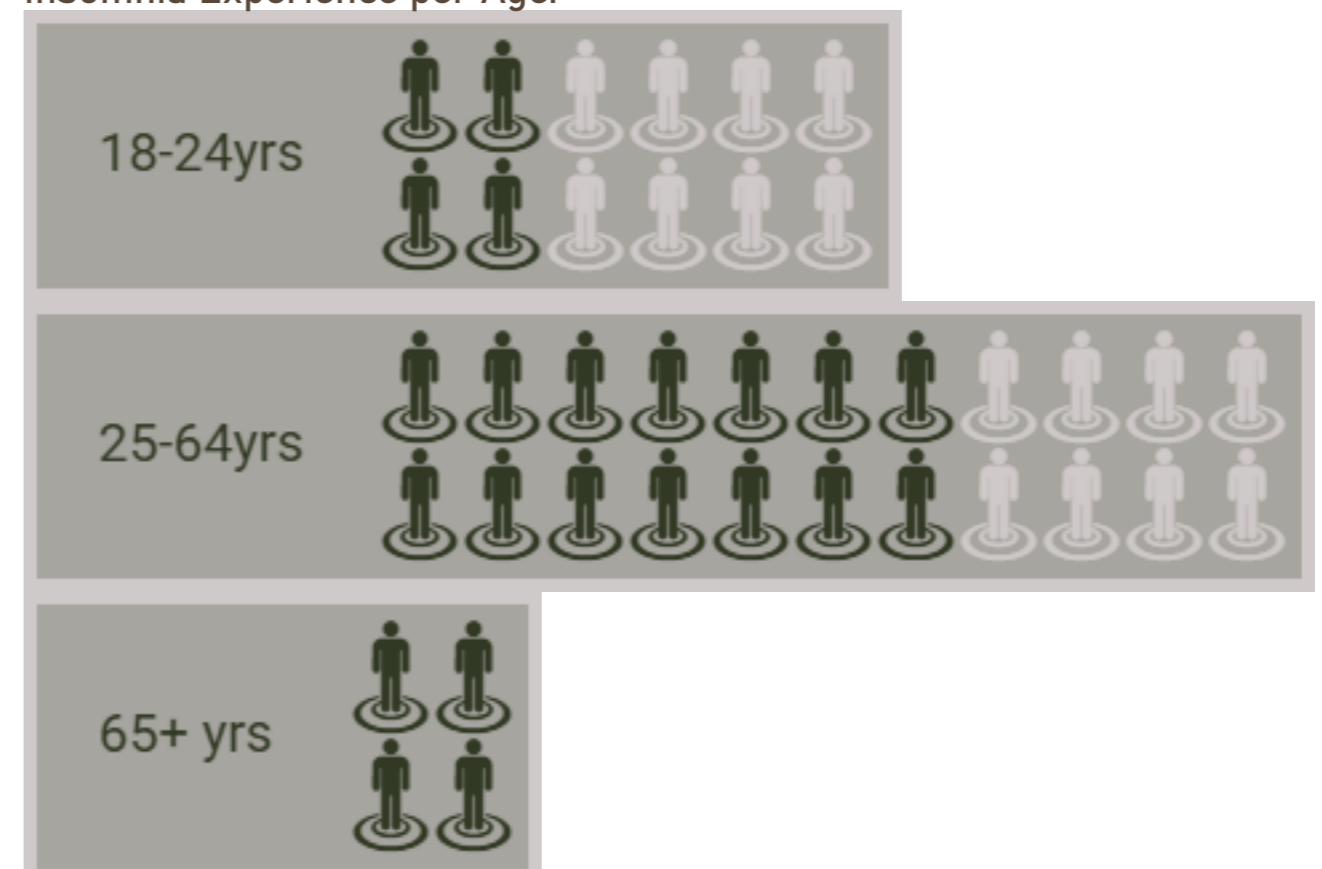
Insomnia Experience per Sex:



Participants with Insomnia Experience:

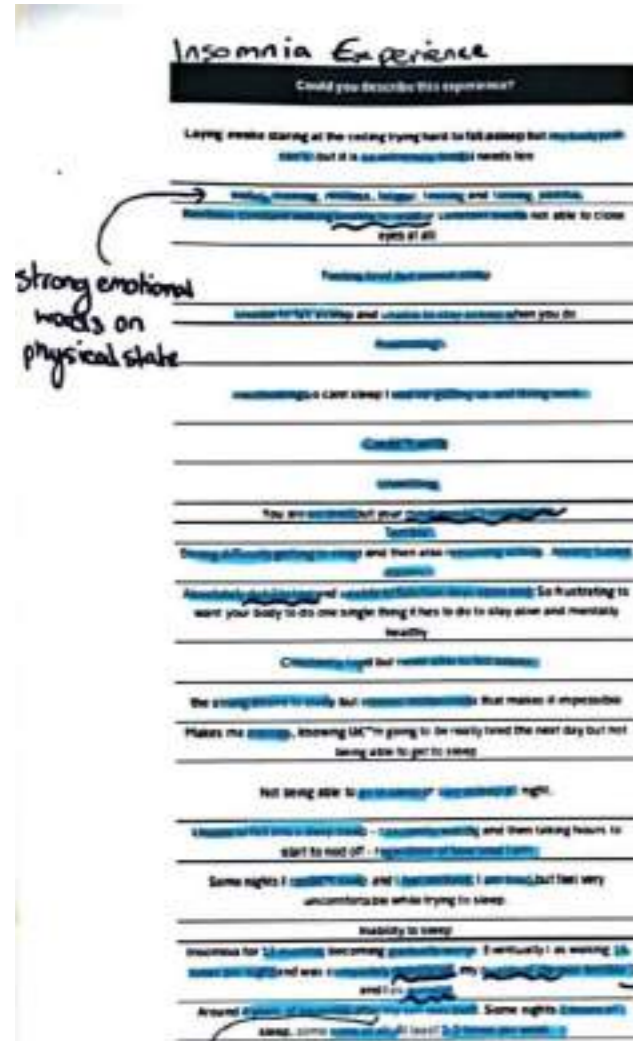


Insomnia Experience per Age:



Survey Results

Long Answer



strong emotional
works on —
physical state

Common Theme:

Tired, but can't sleep = 7

Restlessness = 4

Can't fall asleep = All (12 mentioned this)

Struggle to stay asleep = 4

Anxiety = 3

Chronic mention = 2 (probably more).

unable to / unsetting = 15

→ Debilitating, suicidal, terrible quality of life

new mother, post partum?

many respondents said
good environment but this
response aligns with
Mark Walker's sleep
theory: "warm up to fault
asleep".



Common Themes:

Supplement / ingested = 10 (mentions)

$$\hookrightarrow \text{medication} | \text{pills} = 6$$

↳ relationen = 2

↳ magnesium = 4

↳ Herbs / oils / Teas = 2

Fainted sleep pills/medications - 2

Noise = \mathbb{R}

L_2 white noise = 6

↳ Podcast / Stories (audio) = 5

$L_2 \text{ Rain/music} = 1$

1. Telegraf = 2

Dark room / low lights = 8

Cold room / temperature = 5

Breathwork / mindfulness / meditation = 4

Air flow/quality = 3

Limiting Technology = 2

Bedlinen / blankets, pillows / bed = 6

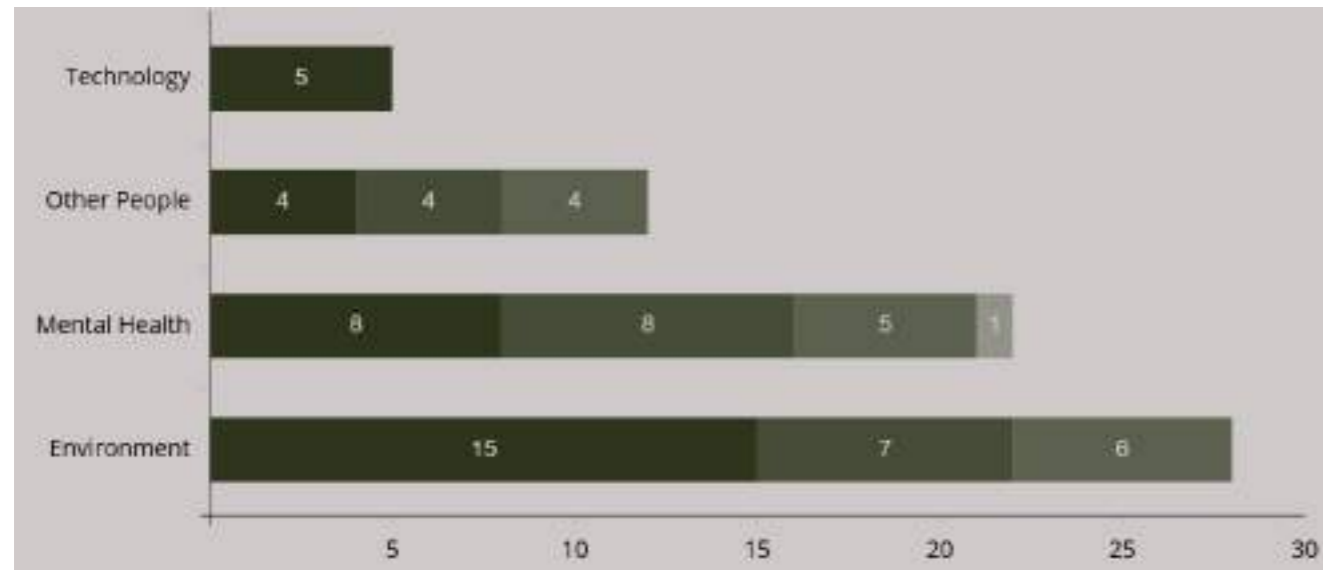
Reaching = 3.

*The overall feeling of these responses is calming & relaxing. It is common among responses that a wind down period helps with getting a good sleep.

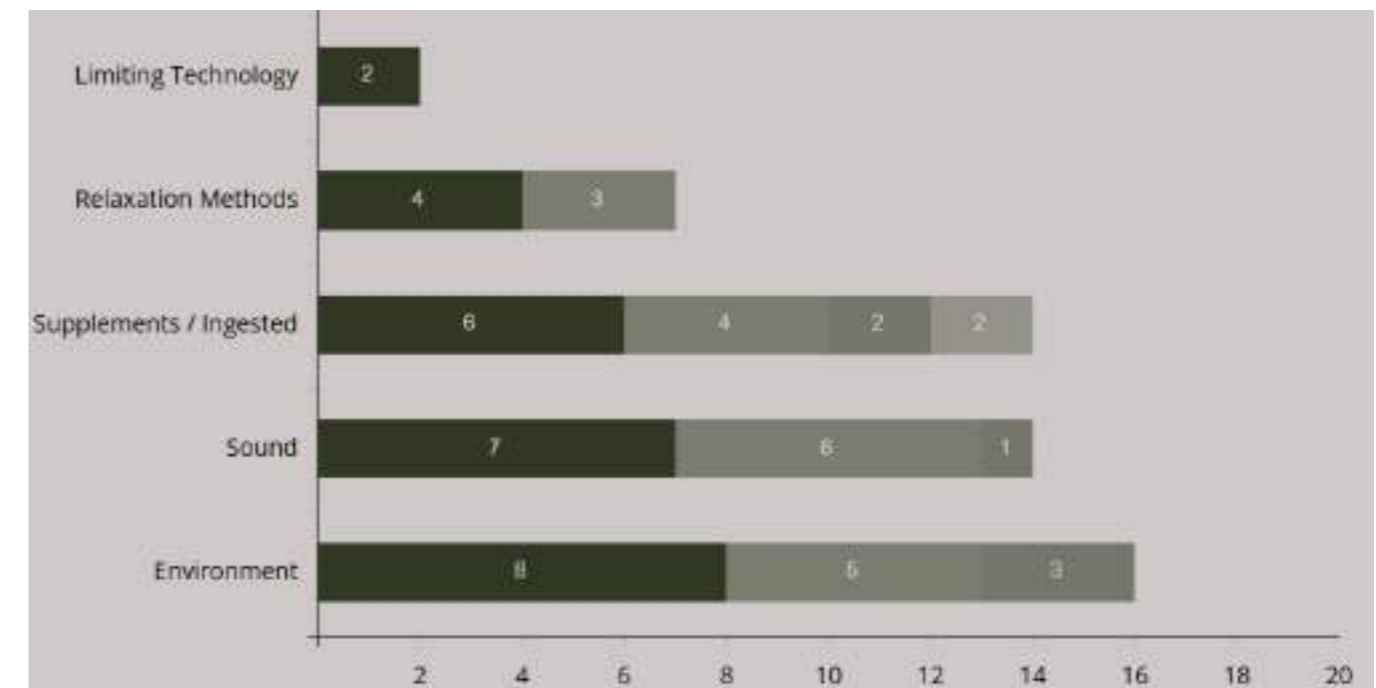
Survey Results

Long Answer Data Visuals - Sleep Influences

Sleep Inhibitors per Mention:



Sleep Inducers per Mention:



Interview Transcription

End User

Alright, so the first question I'd like to ask you about your environment, where is it and could you describe it to me, your sleeping environment?

This is the main bedroom in the house. It is east facing. So it's a stupid house. It's cold in winter and really, really hot in summer. It gets too much light and... and the street light from the street comes in. So I've had to put black out curtains and stuff in the room. Next door neighbours are fairly quiet, don't have any noise complaints and I've got a good bed... carpeted floor. It's not very noisy house. But I like it to be quiet.

Thank you. So yeah, those blackout curtains. You need them to sleep is that is that right?

It's gotta be black. It's gotta be quiet.

Does this environment have the tendency to change the sleeping environment? That would mean the actual bedroom that you described, or the actual location of the environment itself.

No. No, I always sleep at home. I always sleep in that same room. Same bed, same side every night.

And the next set of questions involve the sleeping patterns and habits. On average, how many hours of sleep would you get per night?

Between 8 and 10 hours a night.

Nice. That's a lot.

At the moment, at the moment.

Is that, is that common for you?

I'd say the last few months, a year. It's been common since I had the flu on April 1st and before that I had pretty severe insomnia for about 6 months.

Do you go to bed roughly the same time? Does it change?

I do go to bed roughly at the same time, and that was from doing a cognitive behaviour therapy course through my GP for insomnia. That I learned best to go to bed at the same time every night. It's generally around 9:30 and I'm up around 7:00 every morning. But I'm awake at. I get woken up every morning at 4:00, but I can go back to sleep and I get up at 7:00.

That's a solid sleep! Geez.

It is, it is. And it's nice because I didn't have it for a long time and I thought I was going to go crazy.

Wow, that's good.

Describes environment & influences on sleep

Environment: Bedroom, E facing

Influences: light → sunrise
street light
quiet (not noise)
temperature { too cold in winter
too hot in summer

Environment stays the same.

Above | at recommended hrs of sleep

Duration of sleep.

unusual yet interesting link to sleep improvement.

describing insomnia

Chronic insomnia

treatment

who

sleep hygiene

Thoughts, feeling, emotion.

Yeah.

Really good.

I'm really happy.

Well, how common is napping for you?

Sorry?

How common is napping for you?

No, I don't. I don't nap. Unless I'm sick. I'm sick and I can't physically keep my eyes open.

Are they, in that instance, are they long naps or short nap?

Short nap. Always put an alarm so it's not more than two hours.

OK, awesome. Is there anything from your lifestyle that you would consider to influence your sleeping habits?

Not really. Maybe. Maybe the only thing that that might be an issue and influence is eating dinner too late.

OK.

Yeah. I know you're supposed to have dinner quite early, and so it doesn't affect your gut while you're sleeping stuff when you're sleeping. So cause hubby doesn't get home until 6:45. I have dinner ready for him at 7:00 and we eat quite late. So that's the only thing I can think of that might influence.

Yeah. Anything that might positively influence your sleep?

Sticking to the routine of going, going to bed at the same, same time every night. But in saying that as well if I'm not asleep within half an hour, I, I get up and I get out of bed. According to what the CBT? Cognitive behaviour therapy course said, yeah.

OK. OK.

But that's hard because it says you're not supposed to have a clock in your room.

Ah, OK. Interesting.

Right. So, and you've gotta gauge yourself how long you think you've been laying in bed. And then of course, you've gotta roll over, tap your phone and then, and then you have the light which to see how long you've been, been awake for so it's a bit. Yes, don't have a clock but you need one to see how long you've been awake.

Yeah, OK.

And I, I used to listen to frequency music.

depleted immune system

influence on sleep

sleep hygiene

treatment

influence on sleep?

series of actions

blue light reference.

wakes up your brain makes it harder to sleep.

same phrase repeated

relational

mentions clock

influence on sleep

Interview Transcription

End User

As in like radio frequency?

So like different Hertz like 432 or, you know, 432 Hertz and different, different frequencies that are supposed to do different things and there's some on YouTube called Black Screen Sleep and so there was a certain frequency where they claim that they help you to get to sleep and it's nice to listen to and it. I found there for a while that I couldn't sleep without it. But the issue you have with that is having really sensitive ears.

Yeah, OK.

And if you've got earphones on, you've gotta be on your back and I'm side sleeper if I wanna get comfy and use this to go to sleep, well, then you've got something poking in your ear. So you listen to it without the speakers, and then you you don't get the efficiency, supposedly. Because it's not going straight into the eardrums and into the brain.

Yeah. So the audio is only supposed to be effective if it's directly in your around your ears and not within your environment.

Yes.

What if it was louder the volume? Would that make a difference? If it was in your life?

Yes, but I'd want it to feel like, you know, when you're in a car in the middle seat and you can hear the music kind of like in a movie theatre. And you can kind of hear it all around like, surround sound. I'd, I'd want that. I'd want it to be across my head somehow. Not just one noise coming from one direction.

So I guess surround sound OK. Hmm. Yeah, sounds like it sends you over to an interesting place I think. Having that those frequencies, do you believe they helped though?

Yes, I do. And then there's another one called by Binaural Beats and they've put it into music. So it's like, you know, you've got like 3D. This is like 9D music. And when you've got big headphone proper headphones on, it's bloody incredible. Like, the way the music bounces around inside your head... it's really weird.

And that helps you sleep? And does that help the quality of sleep from your experience?

Yes. Yes, it helped me. But I don't, I find I don't need that the moment since like I said, since I got the flu. When I go to bed and I, I can sleep relatively easily.

worth noting specific frequencies

major influence of sleep → dependency.

limitation of product usability

isolated noise/music to be effective.

usability factor - How would it be used to get most effective results?

thoughts, feelings, emotions.

relational

If you didn't get the flu, do you think that would be different?

No, because I think... what I was going through was with

withdrawal symptoms from coming off medication.

OK.

Seemed to be, it seemed to line up with the time frame of stopping the medication. And then numerous other side effects before this one kind of kicked in and then... [the time frame of the drugs coming out of my body and out of my system completely kind of coincides with the sleep improving.] relational

Yeah. OK, that that makes sense.

So I've kind of, I believe that I've narrowed the, the sleep issues down to that, but yeah.

Yeah.

The medication withdrawal.

OK. If you don't want to share, you don't have to - but what was the medication for?

So one was for anxiety. One was for depression. Numerous different ones over the years cause, you know, eventually they stopped working and you take it more or you take a different one when that one becomes ineffective and I am. Yeah, it's, it's interesting that coming off that medication, the side effects mimic the initial complaint which is anxiety or depression. So almost you think you're getting worse than what you were to begin with. You think you can't get any worse...

But it can?

But it can. And then the next day and the next day and the next day until... um things start improving again, but this, the sleep and the lack of sleep was... and then I also have problems with drugs have the opposite effect on me. Yeah. To give me pain relief and it makes me sick and not touch the pain. Give me a sleeping tablet and I'm wide awake for three days.

Interesting.

So there was nothing when I was going to the doctor saying, I need help. I was desperate because there was nothing that can be done for, really, for insomnia, unless they're sleeping tablets but again they are addictive. They wear off relatively quickly when they do work and their effectiveness only lasts for a certain amount of time.

identified another cause for insomnia/improvement

self-evaluation

mention of withdrawal is relation to insomnia

mental health influence on sleep

mention anxiety thinking/overthinking patterns

describes withdrawal symptoms being an elevated/more intense feeling/experience than original issue

rainbow after rain situation

cause bad insomnia

drugs ineffective

thoughts, feelings, emotions.

person of significance

sleeping tablet ineffectiveness

Interview Transcription

End User

Is that in terms of certain amount of time during your sleep at night or like a certain amount of times in a month long span?

Of, of constant use. It's, it's effectiveness will, will essentially wear, wear off. So yeah, getting, getting this proper sleep back on track was imperative. You, you wonder how you can possibly cope on such little sleep.

thoughts, feelings.

Yeah, it's such an important part. It is just human. Any living thing needs rest, really. So sleep is incredibly important. Yeah. Well, let's talk about the quality of sleep. How would you describe the quality of sleep that you get?

I would rate it... out of a 10, quality of my personal sleep would be probably about a six. And that would be improved by my husband not being in my bed.

sleep quality self-evaluation

So being by yourself improves your quality of sleep?

person influence

Absolutely.

Yeah, yeah, I, I mean I've kind of heard a mix, a mix things about it. It's supposed to be helpful, but at the same time, sleeping by yourself, is also quite nice cause I'd imagine there'd be less disturbances?

It's not, it's one of those beds that's not very disturbing anyway. That's just that he snores and I'm forever rolling him over. That's all I say all night, "oh, Roll over, roll over, roll over". And so of course, he's up every morning at 4:00.

noise, interruptions

So then you are up as well. That leads the next question anyway. How often do you wake up from your sleep, and how long would it take to fall back sleep?

The other big, the other big factor in all of this is I was, before I found out I was dairy intolerant, I was a mad chocoholic. So if there is chocolate in the house, I will not sleep well. I'll have a very light sleep and all I can think about is waking up and getting to the fridge and getting chocolate. So yeah, it depends what foods are in the house as well. Makes a difference to my sleep and if it's my husband's chocolate, he literally has to hide it, so that I don't eat it on him. Yeah, but I can, I can generally get back to sleep relatively quickly.

food / diet influence

thinking, active brain.

Within a few minutes or...

Yeah, I'd say within 10 minutes.

wakeup → fall asleep.

Yeah. No, that's reasonable. I think that's what it's supposed to be. What it's supposed to take roughly 10 minutes to fall asleep from, you know, just lying in bed. Doing nothing.

5

The time gets so distorted too. When you're laying there like you think you've been there for three hours and it's only been an hour.

thinking

Hmm. Really does. So overall, do you wake up a lot?

No, not normally, not, not, not in the last 6 months.

OK, OK, that's good.

mention of sleep experienced waking up

This has been nearly a year since I started work, so (God that's gone fast) so yeah, it would be maybe eight months that the sleep has been improving because it was about four months there when I first started that I still wasn't getting good sleep.

insomnia experience

Yeah. OK, I briefly remember that. But it doesn't that seem like sooner. Doesn't seem that long ago? Well, you mentioned you've experienced insomnia. Could you tell me about that experience just as little or as much detail as you're comfortable sharing?

It's probably one of the most frustrating health issues that I've dealt with other than the "We don't know what's wrong with you for eight years, you're actually dairy intolerant" because like I said, there was nothing that could be done for me. Sleeping tablets. It's when you come from a family of addicts - and that's part of your medical history, the doctors take one look at you and say "no I'm sorry you're not having a sleeping pill". And and so that was the case for 20 odd years before I found a doctor who was ever willing to let me try. He gave me two. In little things. "Here's two. You can take two home and that's it". And of course, they didn't work. They kept me up. And so yeah, what was the question again?

thoughts, feelings

hopelessness

plural suggests experience with more than one

long term

point of difference but still same profession

mention of ineffective drugs.

Just pretty much tell me about your experience with insomnia. As long as you're comfortable.

It's it's, I think psychologically it's a very, very quick issue to become a big thing like you, you have one night with no sleep in your ohh. OK. I didn't sleep well last night. And you have two nights with no sleep and then three and then four. And then within you know by night 7 you don't want to go to sleep. You don't you, you start getting anxious hours before bedtime because, "Oh my God, you know, am I gonna be able to sleep tonight? Will I get any sleep? I really need sleep. I really need sleep." And it doesn't happen. It it takes over nearly every thought of every minute of every day because you're so tired. Your brain is foggy, you're not functioning properly. You know that you're getting your words muddled up at work and it's, and it's all due to lack of sleep. And you eat well and you exercise and you do what they say and get up at the same time and even the cognitive behaviour therapy app that the doctor

insomnia experience, psychology mental.

thoughts, feelings, anxiety

thinking / over thinking → influence

lack of sleep, causes, influence

same time wake up.

taking recommended medical advice

6

Interview Transcription

End User

gave me, as brilliant as it was, it was still really frustrating because the first sentence is, "This is not a quick fix."

Yeah.

This can take months, and if you're not structured enough within yourself to keep it going, go to bed at the same time, get up at the same time, eat a certain amount before dinner, make sure you get sunlight in the morning, make sure you get sunlight in the evening. If you're not willing to follow the exact things on the CBT thing, you're not going to see any improvement. So it took three months. As they're doing it constantly to see an improvement, and when you're doing that on your own. Yeah. The only person that can help yourself is yourself, and it can get a bit....

Give you a big challenge.

Yeah, you can just tear your hair out and think "when is this going to start working, for God's sake?" You know you stop it, if you're gluten intolerant and you stop eating gluten, do you feel better the next day? I don't know. You know I don't. When you can't sleep even just getting one good night's sleep, it doesn't make you feel...

Because you got a backlog?

Any better. Yeah you've got a backlog of so many...

Yeah, yeah, of course I know tiny bit about sleep debt and that. Yeah. You're never going to get it back. Yeah. Get a little bit more back. You're never gonna get it all back. Can only just continue to get sleep, at a good quality and amount of time.

Hmm. As a kid, I used to be able to sleep anywhere, anytime....

Little break for a friend.... *little bird landed next to interviewer/ee

Little butcher bird.

So how long did it last for? Sounds like it lasted a while?

The insomnia? The insomnia, it had to be at least, it was at least six months. I went through a period of insomnia previous to that as well. A few years ago, maybe 2016... I would like to no, no, it's 2018 or 19. And it's just pacing around the house. And because it's night time too, you can't go anywhere. You can't do anything. All you can do is read a book or watch some telly. You're tired. And as soon as you close your eyes, you're wide awake and it's yeah... It's hair tearing frustrating.

thoughts, feelings

understanding that this takes time & effort

influence / sleep hygiene

CBT / insomnia experience

thinking

thoughts, feelings

insomnia experience / duration

Activity

thoughts, feelings

7

Hmm, imagine it would be. It would play a massive thing and not mentally, but also physically because your health and your immune system is a bit deprived from that inadequate rest so... I don't know would be, you know, kind of almost like a spiral.

It's like a you know. Pushing a snowball down the hill just gets bigger and bigger and bigger and becomes a bigger problem mentally than it needs to be and of course, so the more, more we think about it, the more it happens. You can't help but think about it.

That's right.

Can't tell someone not to think about it. I'll think about it.

That's right. So have you only had two? I guess periods of time where got insomnia, or has it been something that's been an ongoing fluctuation?

No proper proper insomnia? Only twice. And I suppose overall in length it would probably be the two of them combined. It would have been years worth of. And some now, yeah. Yeah. And I lived next to a lady in Darwin and had insomnia for 10 years.

Geez, well, the next question was do you know anyone else who has or had insomnia or other sleep disorders that are similar? So obviously your neighbour...

Right. No, only that neighbour, but we heard people say that they don't sleep well. Yeah, and my grandmother doesn't sleep well. She'll, she can get to sleep, but she'll wake up at 3:00 in the morning. She can't get back to sleep, and she'll just lay there and toss and turn.

Is that when you were younger?

That's been her whole life. Ever since she was a kid and she's now 92, so I don't think she's ever had sleep. There's a couple of times you know, and she'll say, oh, I slept really well and I slept in. And, you know, 8:00 is a sleep in for her. Yeah, but no, I never really came across anyone that had insomnia and such.

Well, how do you think people who do have something are the ones that you do know? How do you think their experience compared to yours?

No, it's not something you hear about very often. It's not something you hear people talking about. You'll hear people say I had a really shitty sleep, but you don't hear the word insomnia come out of people's mouths very often, I suppose. I would hope that some of the cognitive behaviour therapy thing

insomnia experience
mental strain, psychological

Thinking / overthinking

insomnia duration

another person with insomnia

another person with insomnia

not explicitly insomnia but suggests that more people experience it than we know

social stigma

8

Interview Transcription

End User

that I did, was was pretty cool. But there was a time limit on it, so you had to complete it in a certain time in order for it to remain on your phone for 12 months so you can access it. And if so, if you didn't, if you didn't get it done, and I can imagine people that maybe don't have, they're on prepay or they don't have the money to do it online. Imagine that could you know, maybe kind of push them out of being able to even do a cognitive behaviour therapy thing because I think that was the only thing that really got me over the edge. So the accessibility I suppose for people and how much doctors are willing to listen and look at alternatives rather than just shove a tablet at you because the tablet only creates another issue somewhere else that then has to be addressed and... or if you're like me, they just don't work.

Yeah. So there is a large market of people, I suppose, just from what you've said, pills either is ineffective or it doesn't solve the problem. It just, you might mitigate it through a certain amount of time. That doesn't solve the problem itself.

From what I've experienced, I would say insomnia is a far bigger psychological issue than I initially realised. You know, you think it's just a part of the brain that that makes sleep function that's not working properly. But like I said, it affects everything. Your thoughts all day everyday just, well fuck I'm so tired, I'm so tired. How am I gonna get through today? I need a coffee. I don't normally drink coffee. Let me have another coffee. Let me have another coffee. And then you got the jitters and you can't function with this either. And then and, you know, yeah, it takes over everything. So it was quite, it's really nice to not have it at the moment or now at anymore Touchwood.

Do you think that for future you it might happen again?

Yes. Because I'm an overthinker. And so learning to cope in this last 12 months without any medication it's been a massive, massive learning curve. For me to find myself now in situations that are the same level of stress that I've had previously in in the other situations in years gone by but I'm actually coping better.

That's good!

I'm coping better and more and more clear headed and more level headed. More calm. I don't get as uptight and angry as easily as I used to. Yeah. So I think that's that a lot.

Is that, do you think that's from the medication or the cognitive behaviour therapy?

phone use

product usability

targeting connections to doctors

alternative to a sleeping tablet

tablet ineffectiveness

big psychological issue

hired

functioning

thoughts, feelings mentioned

overthinking

another comment about sleep, medication and "withdrawing"

gain from improvement and looks more positively to the future should there be another wave of insomnia.

common word associated with rest/sleep

dependency on standard

I think that's that's an interesting one. I think the cognitive behaviour therapy helped with settling my anxiety around the sleeping. And not having a backup, you know, I don't take medication anymore. So, you know, I'm anxious about this not sleeping business. How am I gonna get through this? So learning other strategies for, you know, calming yourself down and and self soothing and and that kind of thing is being imperative for getting through, all of it.

So having a way to improve your sleep or help the insomnia without medication you think is do you think that's something that a lot of people would need or....

I'd love to see more people, I would love to see more alternative therapies you know. Is there a... you see so much on Facebook and honestly, you could spend thousands of dollars. There's there's some tea, it's an indigenous tea. I'm sure of it. And you hear the guy call up and say, "well, did you guys drug me or something? Like I slept for 12 hours like. What's happening?" and you look at all these things and you could spend all this money for it to maybe not not work so alternative other than like I said, big Pharma tablets that they give and you end up relying on yeah, and nothing else.

Are there any products currently on the market that help insomnia or other sleep disorders? What do you think of them? And it doesn't have to, as you've mentioned medication, but it doesn't necessarily have to be...

Well, there's that tea that I was just telling you about. I'll see if I can find it now that we've spoken about it. You know phones listen, the ad will pop up on my Facebook, I'm sure. And I'll just send it to you, but yeah. What I have wanted to try and cause I hate purchasing stuff online is a sleep mask, so it's like an an elastic headband that you would wear for sports. But it's got little speakers on it so that you can lay on your side and it's blocking your eyes at the same time.

Ah, I used to have one.

So that's what I wanted to try so that I could listen to my frequency music in without the pain in my ears. But I never got one, so I never worried about it well or if I do want to listen, what I do is I put it on my phone and I put the phone under because my pillow falls apart. So I just lift the section up and shove my phone under, but then the pillow gets really hot and I'm scared it's gonna catch on fire.

Because you've got the radiation from the phones and not supposed to sleep with it under your pillow.

mentioning stopping medication

learning strategies / behavioral changes rather than tablet.

words related to state of mind associated with good sleep

alternative to sleep tablets

mention of sleeping tablet ineffective

mention of frequency music later again

mention of the use of phones ~ limitations

Interview Transcription

End User

And that's the other thing. And yeah, you're not supposed to have that kind of stuff in your bedroom either, cause you've got the electromagnetic fields. And so. There's crystals in my room to combat the EMF. I don't I don't particularly like having my devices right next to my head.

Yeah, yeah, of course.

You know, 20 years ago, an old, you know, alarm clock was different, you know the old box, "Meep. Meep. Meep. Meep" alarm. You know, they I'm sure there was no electromagnetic frequency in those to even worry about. They're on the other side of the bedroom anyway. Yeah, you know, but these days you just put your phone beside your head. What's the time? I'll roll over, click my phone. Oh it's 2:00.

Of course. Is there anything else that you you might know of? Not necessarily something that's ingested, but maybe a physical, tangible product that you know?

Not really. No. Only you know noise making things but hubby showed me it, it's one that looks like a mushroom and the water droplets come out of it. And it sounds like rain. You know one you've seen them and it said, but again, that's beside your head. So you're only hearing on on one side, and if you're laying on your side and you're facing it will then the noise it's not, it's not going to sound like rain. It's just going to sound like trickling next to you.

Yeah. What if it? What if it was? Above you.

To be different, yeah. And that's where I like this idea of music.

Kind of being around my my head.

Yeah. OK.

Do you know when you were saying you were? Designing that chair. I envisaged sitting in that and being able to kind of close myself off from the world, you know like, the float pods when they first came out? No. So they look like an egg. And they, yeah, these were magnesium float bars and they open like this little alien egg thing in half. And you lay in it and the whole thing closes around you and the lights. Turn off and you're floating.

Ohh wait, I think I have seen them. Yeah sorry.

I imagine. The, they have that feeling of like being almost like I'm floating. And I'm warm. And but the noise come, if I wanted to listen to anything, it comes all around my head.

Surround sound.

mention clock, but as alarm

mention of time/tracking time

mention of surrounding head

natural product

lights off influence

feeling of calm & relaxed

float mentioned x4 in a short time span :: words associated with restful sleep

And some kind of technology that would turn around and whisper, "you have been awake for 40 minutes. It's time to get out of bed" rather than me laying there going. Ohh. How long have I been awake for? Is it an hour? Is it half an hour to turn and ohh do I look at my clock yet no give it another few minutes and so you think a form of technology. Would help that. Hmm. I mean, you've got watches and things these days, but I don't. I don't know how the technology could well, suppose it's easy to measure whether you're asleep or not through rapid eye movements and your heart rate, yeah.

If there was a product to be designed to improve quality and duration of sleep for adults with sleep disorders like insomnia, what qualities or functions do you believe will be needed?

It's gonna be transportable. It's not something that you just have at home that couldn't be moved around. If you want to go on holiday or go to hotel and sleep. So it's gotta be small. Gotta be compact. It's gotta have a good battery life if it's not plugged into something cause you want it to last all night or for minimum of eight hours.

Yeah. Do you think it needs to be something that's technological? Or that has that needs some source of power?

Unless it could be. Charged. Prior to that, I'm assuming, yeah, yeah. I can't think of a product that's not got any technology in it that might work, you know, like giving me a lavender scented teddy bear is not gonna cut it, you know.

Of course, of course. That actually might stop people from sleeping, I think if it's strong enough.

There is a bear out there at the moment for people with anxiety and it, it's chest moves up and down and it's got this really soft breathing noise. And apparently these women that have bad anxiety or ADHD and they are really heightened, it's helping them get to sleep at night. So that is a physical teddy bear. Who knows what? Yeah. Is going to be that ends up helping people.

But yeah, so you think that technology would play a big part in it?

Yeah, I would say it would have to. Especially if you could get into like. You know the different frequencies and stuff where it could measure and track. So if you were listening to something that was of a certain frequency or it, it could monitor that, OK. "Well, you fell asleep listening to that within 20 minutes and you slept solid for five hours before you woke

time / tracking

duration of wakefulness mentioned again

again describing clock as object for time management during sleep

product usability

mention anxiety

technology as a function / feature.

product usability

Interview Transcription

End User

up. And then you woke up and you were awake for 40 minutes. Before you put the music back on and we could tell you were asleep again within 10 minutes, that kind of thing technology wise, like if there was nothing that was tracking that information, we would have a hard time gauging it yourself. "Did I sleep very well, or did I not?"

Yeah. OK. So it's something that's trackable for someone rather than just something that helps you fall asleep, but something that helps maintain some longevity or some kind of data that would give?

Yeah, the data recording and analysing. So at the end of the week you can say, "OK, well, you tried this for seven days and we had a 60% success rate. Let's look at a different frequency and we'll try that and we'll measure those statistics at the end of the week and we'll see". You know, I think frequency for me is a big thing, but then you've also got lights as well. But, you know, they say don't have certain coloured lights in your room.

Yeah.

Red light, whatever. So that, that could be another. Yeah.

So you haven't had much experience with the light therapy kind of side of sleep?

No.

You know, just the bit more audio.

Yeah, cause yeah, there's not really. I've got a friend who's got this this, like, it's called a bloop on this, this little handheld device. It looks like a little massage. Like it actually looks like a little laser machine thing. And it's got all the different colours of the chakras and so and, and that pushes the light onto different parts of your body for healing. But I mean, that's the kind of thing that you would sit there and have to hook it all up. And you you could hear the machine like running and the light would be in your face. So I can't see how light it would work for sleep.

Yeah. Yeah. OK. No, that's that's good to know.

Other than lack of light, lack of light?

This is a bit of a different question, but to what extent do you think nature or natural elements influence with an individual's quality and duration of sleep?

tracking as part of function
keeps mentioning frequency per sleep
frequency as influence

lighting & its affect on sleep

Gosh, that's a good one. I know even changing my environment, going home to Tassie, I'm so looking forward to going to Mum's because I know I'm gonna have a bunch like yeah, well, it's the environment. It is laid back, chill, relaxed. Every day's a Sunday. Nobody gives a shit. We'll do 70 on the highway cause we can. No one's in a rush. Everyone helps everyone. It's a completely different way of interacting with people, the city life here is so different. There's a lack of intimacy. There's a lack of connection with people. You can look at someone in the street and they won't smile at you. They'll look at you and you know that they've seen you, but they're not gonna smile and tip their hat and say "G'day. How you going?" You know it, I can imagine that for a lot of people living in cities like this, it's very lonely, although it's very busy and there's there's a far bigger population, it's actually far more isolating than if you were in a small country town.

Yeah. So those are rural or regional slash urbanised environment that you think would impact how someone gets to sleep at night?

Hmm, I can imagine students that are coming from you know, much quieter countries and end up, you know, living in the city would really struggle. I couldn't imagine living in the city. I couldn't imagine living in one of those apartments. And and you know, hubby just comes and says, "oh, they're double glassed and you don't hear anything". And I'm like you do. You do and I do I, when we lived in Maroochydore, we were on the main road and just a constant traffic like you know. You'd wanna go away for the weekend, bush just to get some silence.

sound / quiet as influence of sleep.

So do you think that if if the product was to incorporate something natural about it with some influence or some elements that you would connect to nature? Do you think that would help?

Yes, yes. And you kind of got my brain asking lots of questions on how would that work, I mean? If it's, if you tell me what you think, well. I think this is gonna sound really weird, but for anyone that's been to Tassie when you breathe the air there, it's so different. The air is just so cleansing and refreshing, and you know when you take your breath, it gets into every little corner and crevice of your lungs and I think it has to make a difference. Good old country. Fresh clean air. I'm on pedantic about my my room and getting good air flow in there and making sure you know the blinds aren't dusty and trying to keep a good temperature in a room in a house that's not insulated properly too is a nightmare. You're either too hot or you're too cold. And so there's lots of natural elements, I

feelings that are linked to successful sleep.

interesting observation of cultural/social influence
what is the link to sleep?

maybe a communal or companion-like product?

discussing environmental / contextual shift on influence on sleep.

air quality as influence of sleep.

bringing back nature?

temperature as influence on sleep.

Interview Transcription

End User

suppose, like temperature and air and and stuff that you think of of of nature. But the best night's sleep I've ever had were outside.

Yeah. Do you recall?

In a in a swag.

What I guess what your senses were picking up like. Any feels like touch, smell, hearing, sights, any any of those senses? What they? What you think they might have been picking up?

The senses in touch and stuff, I suppose as well. But when I'm in a swag, I'm I'm cosy, I'm secure, I'm cocooned, I feel safe in in that, but at the same time the top is open. You're looking at a starry night sky and you're breathing in fresh air. It's pretty, pretty easy for sleep.

Yeah. So the stars, right, looking up at some of the stars or? It's dark, obviously if you're outside at night, but just the idea of looking out for the stars, that relaxing for you?

Yeah my pop had built me an A-frame Cubby house and it had a little verandah on the side of the outside of it with a slide that went down into a sand pit.

Yeah?

Sleeping bag because there was a cubby sleepy hole inside as well. But I'd I'd sleep outside and sleep down with little stars.

Yeah, cool. Well, do you think, do you think other people would find that relaxing? Especially people who struggle falling asleep or staying asleep?

I think so, I'd, like, yeah. I'd love to sleep in one of those clear plastic igloo bubble things for a night and, but you'd wanna... I I don't come into the city very often. I mean, it'd be interesting sitting here at night and seeing how many stars you could see because they can imagine the the city lights would block out a lot. But I think something like that where, it's open and you're in nature, but you're cocooned. Does that make sense? Like, like, clear igloo. You're inside something, but you're outside and you know you're safe.

And what about at home? A home environment? If you were to incorporate that feeling?

I'd have a skylight in my bedroom.

What if you couldn't have a skylight?

Feelings that could influence sleep

natural element calming for some.

a way to see the stars/night sky.

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I'd have one that is projected onto the ceiling that makes it look like the the night sky in the southern hemisphere. That would be cool, yeah.

southern cross star, dipper, things unique to home sky.

OK. Have you seen, I I'm guessing you would have seen the there's these lights that people can project. They can project, you know, nebulae. They can project colours like the stars. They you know, they can project that onto their walls and their roofs and their their room is just like this one big space universe. Yes, kind of environment. What do you think of that?

I'm thinking down near Mount Cootha, isn't it the observatory? There's one in there where you can go and it's really cool, really, like I could stay there probably for days and just stare at.

That because there's there's products of always made me want to do. They actually do people fall asleep to those quite easy because the colours are. There's Pink, says greens and Blues. There's everything, but it's not like a dark night.

Go. No, it's not. It can be quite bright and having worked with kids in resi care, so kids were severely autistic. One, it's interesting they were twins. So one child had. The night light of the stars, because he was obsessed with planets and he could fall asleep knowing that that it's all. Whereas the other one, if you put that same thing on, see, he was obsessed with numbers, he wasn't interested in space. And so he would sit there and say, "well, what's that? One, what's that one? What's that?" Keep that up so we'd keep him up. Whereas Tyler already knew what they all were. So I think neurodivergent kids, that would be interesting to see who, who, that kind of equipment pipes up.

True. What do you think in the perspective of adults.

What do you mean?

Like you thought about your experience with kids and you're neurodivergent kids. What about if they were an adult. What do you think that that's all to their views might, would they be different or do you think you'd have a similar experience?

Ohh they they could think that they would be different across the board. I think you'd have a broad spectrum of of reactions to. To different Night Lights and colours cause different colours can be can mean different things to different people, yeah. Especially if there's trauma involved or even repressed memories. You might have a child that is, I don't know, seen a

interesting perspective on usability and unintended consequences.

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Interview Transcription

End User

lot of blood and then, you know, you put a night light in their room and it's red. You know, they're they're not gonna. It's gonna be such an individual.

Yeah. And then that wouldn't, I guess that would influence how they are as an adults trying to get to sleep?

Visuals exposed them. Yeah, that might impact their sleep. Hmm. Yeah, it's like, like you say, you're growing the environment that you grow up in as well. I mean, I grew up in the country and on a clear, clear day with no wind you could hear the train in town, which was 15 minute drive away. Yeah, so there was, apart from the the road coming in and out of our town, you couldn't hear anything except cows or wind or birds or harvest, but the harvest is going at night was probably the biggest interference for sleep as a kid. But then. Take that city kid and take them on a holiday in Kings Cross. Seven nights later, their kids not had much sleep. And that that was that was me. That was me. Age 9. I went on a holiday to Sydney when my dad and I were stayed in Kings Cross. And, you know, just over stimulating. Constant noises in in their little brain that hasn't heard these noises before going well. What is that? That's not a tractor that's a train. No, there are no trains in Tassie.

Yeah. Well, there and obviously you've got country people and move to the city and it's gonna be a big change. What about people growing up in the city and still live in the city? Do you think that their sleeping patterns would be impacted?

I think that I think well, I suppose some people would get used to it, but I think maybe everybody would be affected to a limited point that they're not aware.

Would be used to it.

They might think they're having a really good night's sleep, but if you could track that data and see that we're OK, you actually fell into R.E.M. For only an hour instead of what the average is supposed to be, whatever it is, whether it's four hours or five. I don't know. But I think that constant background noise or the the signs or whatever would have to have an impact on your health in some way, shape or form over a long period of time, yeah. It might not be an issue. For a year or two, and then you might see like, a longer period of time it might have all sorts of differences. So bringing the country to city people or people living in a city, or I guess a loud environment, yeah. It would be interesting to take the city people and put them in the country in a swag and see how well they sleep.

product to not be over-stimulating
yet still engaging
negative influence on sleep

sub-consciousness, underlying health problems?

→ nature

I wonder if there's. Any studies have a little look into that. Yeah, OK.

And being that we're talking about and then this might be going completely off topic, but. How did the indigenous sleep here? You know, in different parts of Australia? Did they sleep in parts? Did they have to have blankets? Did they sleep outside, looking at the stars? You know what? How I wonder what their sleep was like?

Yeah, there's a very innate. Level of humans connection to nature that you just don't get anymore. So yeah, you're right.

You know, they talk about grounding and the earth having that magnetic frequency that if you put your bare feet on the earth every day, it's supposed to be really good for you. And you can, apparently you can. Get these grounding sheets have. You heard of them though. See these sheets that are connected to a wire, but. From what I can, I haven't looked into it properly, but for you, it is a wire coming off the fitted sheet that goes on your bed and it is earthed to the ground somehow through your house. And the same energy that comes out of the Earth is coming then into your shapes and into your bed. So they're called grounding sheets, and they're supposed to people swear by them. Like I said, these are all different things that you can spend lots.

Yeah. And lots of money on. Are they actually any good? Are they actually going to make a difference? That's the real question, yeah, another question. Can you, if if this product was to be a piece of furniture and it doesn't need to be a stereotypical piece of furniture like, it might not be a bed, it might not be a chair it might not be a table. Can you see that being implemented into your space? Some some furnishing into your home?

Yes — definitive answer to something unknown → good sign to continue this path.

It's good to know. I know a lot of products that are dedicated towards improving sleep aren't necessarily considered furniture.

Yes, so like the sleep mask, wouldn't be considered furniture.

No, it would be a wearable. Yeah. And you have lots of devices, so to speak. That would help. Lighting is an example of furniture as well, but yeah. My aim, my aim with this is to integrate furniture, something that is not theory typically. Considered to be of great significance because even though you use it so intuitively within your

Interview Transcription

End User

environment, it's just. It's just not used for that kind of function integrating that.

Yeah, into furniture. Yeah. So when you say that I just had this image of, you know, like, OK, so a bed head and above my head is a rising noise that you would pull up and then that kind of pulls out and over your head and over your face. So it's recording and the noise is there. And then it just folds away. Nobody knows it's there.

And that's the first thing that comes to your mind when you think of that. Awesome.

Yeah.

So you do think that it would be something that is definitely or not definitely the strong words....

So that's that's moving away from something portable, but that's like you're saying incorporating into furniture. It's in the bed, it's, it could be. Yeah, it's in there already. The whole thing maybe could be taken out and inserted into. A different bed but.

Yeah. It could be portable. I mean there is definitely scope of making things modular, customisable, portable within the realm of furnishings. That's another level that you can design for, but if the criteria was to be portable. A swag just example and it's a furniture piece, you know? Yeah. So it's not impossible. But yeah, no, it's interesting that let's get your opinion before any designs or concepts come to mind. But yes, I was interested to see what you thought about the idea.

I see something like like something that you would see in a sci-fi movie that would be like some kind of 200 years from now. Kind of like, you know, this thing hovering above your bed while you're while you're asleep, just little mini drone. Makes no noise or something that's doing everything that would be.

Pretty cool. I don't know if I'd sleep with that if I'm being honest. Knowing that there's something watching me. I don't know, but yeah.

The flying robot.

No, thank you though.

You're welcome. I hope that helps in some way.

It definitely does it, it really does, is that well before I stopped the recording, was there anything else you

good idea, interesting visual of an end product
gives a little insight into what might be an attractive solution for end users.

different form/aesthetic to what is modern/minimal
high tech but would have limitations associated with cost, function & usability

wanted to add or any thoughts? Or. Comments. Feelings. Opinions.

No, like I said, I think that the data tracking is really important part of it. Because wearing the watch, you know, like I've got myself an Apple Watch rather than earphones because I was having trouble sleeping. And the idea was that I'd get this watch and put it on sleep app and that you monitor your sleep well, that ends up becoming an obsession and then I came in obsession within two nights. I've gotta check my phone. Did I sleep well? How many? Ohh, it says I only got 4 hours. God, I didn't have a very good night's sleep. And so then in your back of my mind, if I didn't know that I. Didn't have a. Good night's sleep. I wouldn't be so upset. Yeah, so if you had something that could retain from telling you that information every day. Like I said, it gathers the data and at the end of the week says OK, well, we tried this. Technique first and we had this percent success rate. Are you happy with this? Do you want to keep going with it? No, I want to try something different. Well, what was it about it that didn't work? Or was this and this and then? The machine goes right. Well, OK, there's a new programme. Yeah, yeah. And let's try this one for a set a set day period. And if you wanted to look up. How well did I sleep last night? I'm sorry. It's not. Gonna tell you. Yeah, it's gonna wait until that given day period. So you're not constantly checking. How you sleeping? How you sleeping and and and and and increasing your own anxiety about it. If that could be taken away from me and it doesn't give you the option, sorry. This is locked for seven days. Well, then you go. OK, well, there's nothing I can do about that. It's locked for seven days, and we'll see.

What happens in seven days? Do you think the unknown of what you possibly got for the night before you've possibly got to like that anticipation of getting that data? Would that make you? More anxious or not?

I could see it making some people with with red anxiety more anxious, yes. Yeah, but for me right now, I think I could cope with the week. You know results. Yeah, I think that could be the only thing that it it it could become obsessive if people are allowed. The the access to it all the time.

Yeah. I think definitely could.

Because yeah, I don't use this. I use this watch to tell the time and if the message comes. So if I I I wanna know if my mum's calling at work. It's the main main, time when I wear my watch. Yeah, even I'm, I'm hesitant to wear these cause I've been told of the increase of breast cancer of women wearing these on the left side of the body. Or whichever prominent hand you wear your watch on, they they claim that breast



Cancer is on, the increase, and they say it's because of these watches. Who knows?

I mean, yes. They say lots of things, but I mean those are powerful. They're they're like a mini phone. So, you know, hmm. Understandable that there's been that.

But it's red light, you know, red lights, not harmful, it's like well.

So yeah, with their lights. If there was a light in the room. That, you know, research claims that does help you sleep. Would that have an effect or no?

Probably not for me because I've always needed a really dark room. I mean, even trying to have the night light on for my dog who's scared the dark. I can't do it. Sorry, dog. Go sleep elsewhere. But, if it was one that was proven to work. Like, Do you know if you had like a little eye mask and it very gently pushed, like through your retinas into your brain somehow for 10 minutes and you just wore that mask for 10 minutes before you went to sleep? If something like that, but having a light constantly on around my face wouldn't work for me. Yeah.

Even if it was, you know, somewhere in the corner of the room, projecting light into the room, not directly in your face?

Yeah, it might be a different story. I might be able to cope with that, yeah.

OK. Well, thank you.

That's OK.

dependency
lighting as influence to sleep environment
trust issues with products
alludes to unideal sleep environment
might not allow for restful sleep.

Interview Transcription

Expert

Alright. Fire away

Alright. So, I know don't have a lot of time. So, if that's okay, I'm just going to kick start with the questions. So the first one from your professional knowledge and experience, what is insomnia and how does it impact those who experience it?

Okay, so insomnia is basically not being able to get adequate sleep, that when the person wakes up, they feel refreshed and they feel that they've had a good night's sleep has, you know, lots of energy for the next next day, etc. So there's a lot of reasons why you can have that, often underlying problems, and it normally affects someone in ways such as it can make them sleepy during the day, that's one of the bigger things. It can reduce their focus, it can make them less productive at work, for example, make them have trouble with concentration, memory issues as well. If they haven't been sleeping very well because of insomnia, it can also affect their driving. That's another big thing. So there is a certain percentage of road accidents that happen because people haven't been sleeping properly, and then they fall asleep while driving. So paying attention is a major, major area that actually gets affected when you have insomnia, and it's not good for the mental health. So they can become quite depressed and anxious, that can all have a impact on their life, especially with kids, if they're not having a good night's sleep, and they have insomnia often they're not able to verbalize things, so they often have trouble with it sort of manifests as in younger kids behavioural issues. So they can be often disruptive in class, not paying attention, not listening to their teachers, and that sort of spirals out of control. And often there's a bit of a teacher thinks the child's being lazy when it's not the case, and there's often this confrontation, and the schooling and everything else gets worse. Oh, on older children, it can also affect their mental health. Anxiety during exams or research assignments. is another time, and people don't sleep very well because they're worried about what's going to happen, and that can affect their performance as well.

Thank you. When you when you're talking about the children, Does that have an effect on the parents in terms of...

Oh absolutely. Sorry, keep going?

defined by professional/expert suggests insomnia is a symptom of something else.

is related to focus becomes more than just function -> safety of person & others.

attention/focus

mental health commonly associated by d & a.

important developmental stage.

relational between insomnia & daily life.

relational context.

mention of anxiety

mental health

worried/stressed

No, that's okay. If the child was experiencing insomnia, would, do you see any correlation to the parents then experiencing it if their child is?

Yeah, so if the child has insomnia and that is causing the child mental health issues, disruptive behaviours, etc, then it'll affect everyone else in the household, including the parents and other siblings as well. So it can actually cause anxiety and often depression in their family. Often the parents are also not sleeping very well because they're anxious about their children. And then they can have all the problems that I've said before about about insomnia and the mental health issues that can come from it.

Thank you. What are the most common causes that you encounter when in your practice?

About insomnia? Sorry?

Sorry, what are the, what are the most common causes that you, you tend to find with your patients who have it?

Okay, so, yeah, so that will be in younger children. It is often, again, mental health problems such as bullying at school, often using too much mobile phones and apps as well. So these days, bullying doesn't stop at school. It can actually come home as well, because kids are forever coming up with new social media apps that can, so they're never really disconnected. Also the screen time. So mobile phones, laptops, etc, emit a certain type of light that can affect the pineal gland, which is the gland that affects the human body's sleep wake cycle. And so if they are using it right up to when they go to bed, they'll still stay up for about two or three hours because of the stimulation from that light. So often we talk about sleep hygiene, which involves not using any mobile devices or stream devices for two hours of people going to bed. Other things, people use drugs and alcohol as well. And so these days, even young kids are using drugs and alcohol and that can also keep them awake. Certain types of drugs such as speed and also other really wonderful ones are coming up on the streets nowadays that can keep you awake. Mental health problems such as schizophrenia and bipolar disease, especially when they're having an acute manic phase, can also keep you up and cause insomnia, just grief as a general grief. So someone's family member passed away, a

mention

anxiety within family

parents mentioned

parents become anxious

topic relating to children w/ insomnia

children demographic

another person/people that influence younger demographics

mobile phone use

related to phones

alcohol as stimulant

mentioned

discusses this as a cause for insomnia in people with mental disorders.

grief as a cause.

Interview Transcription

Expert

relates to stress, overthinking.

loved one passed away, and the grief is unresolved. That can have trouble causing insomnia as well. They can't switch off, can't stop thinking about the person. Children often get nightmares and also night terrors that can affect the sleep. Another big thing is actually sleep apnea, which is where there's an obstruction of the airways when someone's sleeping, and they don't get as deep sleep as they would normally get if they're getting free from oxygen. In children, this is especially important in those kids who get tonsillitis a lot, so their tonsils are too big, and that blocks the airway. So that's one of the major indications for tonsillectomy in children and adults, especially if they have excess weight. Although it doesn't have to be excess. I've actually seen quite a few skinny people who have narrow airways and also have sleep apnea, so that's a quite a common reason for it as well. And so I've talked about depression, mental health, sleep apnea, I think that's about it really, alcohol, poor sleep hygiene, they're the main things. Okay?

Yeah, thank you. That was really, really helpful, and I think you partly or fully answered my next question which was, how does insomnia compare to other sleep related issues? I know you mentioned sleep apnea, but I know, there's a few others, like restless legs narcolepsy, things like that. Is it more of a symptom of those, or is it something else?

Okay, so in terms of restless legs, that is a cause of insomnia, because they just have to move their leg. They just feel that they have to move their legs. And sometimes the legs actually just move on their own. So in severe cases, that is definitely a cause for insomnia and narcolepsy is another, whole new ball game. Yeah, because that's got quite a few complex neurological, yeah, neurological issues, but narcolepsy, they just came with narcolepsy is that they just feel drowsy and sleepy all day, okay, and then they sleep all day, and then they stay up well, so and again, that's more of a central nervous system problem but I don't think you need the causes of things to use. You don't need to sign that that's alright. So your narcolepsy differently is another one, and the way it affects the body is very similar. They often get hallucinations because the brain is not getting a good night's sleep. It sort of starts getting tired, and it's like a computer. If you overload a computer, you basically it'll just misfire, come up with different images and make the wrong connections. And that's

grief (x2)

Expert must have experience with children having insomnia (x5)

diagnosis treatment method (x6)

mentions sleepiness during day as a result of insomnia at night - this relates to narcolepsy (x2)

underlying problem (x4)

what hallucination is. The hallucination is you can see things that thing that are not there. You can hear things that are not there as well.

Okay. Thank you. No, that was really..

Anything else.

Um, yes, just trying to go through them, I know you've covered a few of my questions in one hit, so I think I'll move down to... in terms of interventions. What do you recommend for patients with insomnia?

Well, it first thing is to go and see the doctor find out the actual cause of the problem because, as we say so, there's a long list of things that can cause insomnia. Okay, so if it is tonsils in cases in children then we need to get them to see a ear, nose and throat surgeon to have the tonsils taken out. If it is suspected sleep disorder, we can we do something called a sleep study, and that will tell us whether there is insomnia is present, and then we can treat them things like CPAP, as well as an advancing submandibular sling. If it is major depression, anxiety, grief, well, there are psychological, cognitive behavior therapies, pharmacotherapies, etc. Sleep hygiene is very important. So as I said, shut down all computers and things and spend time before, a couple of hours before bed. I normally recommend people to use that rare thing called a book, and read that leading up to sleep. Things like Valerian and herbal preparations like Valerian and that chamomile tea can help as well. There's a couple of Aboriginal teas that are floating around as well that works quite well. And also, yes, exercise is really good, good way to get yourself tired before you go to bed. Cut back on the coffee intake as well. That's nothing. I forgot. A lot of people drink coffee to excess, and that the stimulant.. Why are you drinking coffee to excess? Do you?

Well, I have a coffee with me right now, but I wouldn't say excess. This is number two for the morning, but I'll be done after that.

Oh well only two the morning, that's alright then. I just saw you smile haha. Anyway. So yeah, so a body stimulant or drugs that sort of thing. That's those legs that are... Sorry?

No, that's okay. You keep talking.

people (x5)

underlying problem (x3)

medically approved drugs (x5)

CBT-i

reading

natural remedies (x4)

exercise

mentioned as a stimulant (x4)

coffee as stimulant

Interview Transcription

Expert

Yeah. So restless legs has their own pharmacological treatment as well. Depression and schizophrenia, said, has their own pharmacological treatment as well. And narcolepsy these days, we use stimulants for that. So same stimulants as ADHD, which can actually, believe it or not, modified version of speed. So that's why there's so much control around them. And unfortunately, they're highly controlled drugs. You need special approval from the director of Queensland Health in Queensland, to actually prescribe them, but again, so the first step really is to go and see a doctor, get the diagnosis done, to see what the actual underlying problem is, and basically, so treat the underlying problem.

treatment in form of pharma - drugs

underlying problem

Awesome. Thank you. Well, I'll move on to the product side of things, because that's what the end goal is for me.

The what sorry?

Pardon sorry?

Sorry, your lines breaking up. So what side of thing did you say?

When it comes to designing a product, what should there be... a focus on a particular time in terms of the overall sleep cycles, so before bed, during sleeping or when they're waking up?

Okay, so what sort of product are you designing?

So I will be using the research and all the information I get to inform the product, but the goal is it will be some kind of furniture piece, or some kind of furnishing within the environment to help sleep, so something that's a bit more on the life style, kind of approach that's non invasive into the everyday life.

Okay, furnishing... all right, okay.

Yeah, I'm trying to steer away from the device side of things and be create something, that's a little more different.

Okay, well, you can actually combine the two if you wanted to. So what you could potentially... so one of the things I've said was the blue light exposure and the screen time exposure that can lead to insomnia. Maybe you can design a piece of furniture that someone can log attached with a

tracking data

mobile or similar

Bluetooth, for example, and keep the mobile phone turned off, but you can have mindfulness music coming out of the furniture chair. You can relaxation music and come out of that. You can also design the furniture to have a light a certain light, which is not blue light, that will still allow the person to read a book while listening to the mindfulness or relaxation music. That's one the other thing is often with sleep apnea, you'll find that people who sleep on their back are at higher risk of developing sleep apnea symptoms than those who lie on their side. So when we do this sleep study, we basically report as spend 80% of the time on their backs, and that's when they went breathe in. And a lot of people, when you talk to them and tell them that, they think, "Oh, I never sleep on my back". Well, we actually have video evidence that you had do spend 80% of your time sleep on your back. So people who go on on their right hand, the thing they're sitting on the side was on their on their back. So what I've been telling people to do was to sew a little golf ball hole in the pajama backs. And so whenever they roll onto their back, it sort of makes them go back on their the discomfort of the golf ball makes them go back on the side. So perhaps you can design a furniture that will help people be more comfortable on the side, so support the supine sleep, and maybe something that can sort of stimulate them or encourage them to roll onto their side. So that's another option. In terms of any sort of furnitures, etc, that can help with relaxation, would be really good one. So massaging their lower back, massaging their legs as well, because that's the thing, people who restless legs have a lot of discomfort around the legs. And let's, let's face it, we all like being pampered, and that's one way to really relax someone if you're going through a bad day, or if you're at a bad day. So something that might help with that, okay, is another way you can look into it. And yeah, so what is, what are your thoughts?

Yeah, no, it's really interesting. I'm just kind of taking in all the information I can get, and then I'll dissect it and find something, or some things that come out of that. So, yeah, I'm really trying to use the information I get to inform what this this piece of furniture will be, and it doesn't have to be necessarily, stereotypically a chair or a bed or anything like that. There's lots of different things. Anything you kind of situate in your house or your place of residence would be considered furniture. So it's quite open in that respect.

Okay.

Interview Transcription

Expert

Well when I was in the 80s, haha, a while ago, before you were born, basically they had these picture frames, which were... you can plug in various sounds, relaxation sounds, whatever in it, and it will have these not a lot of light coming out of the actual screen, but they'll have these scenery scrolling on the screen itself. And that's often a really good one for kids as well. So that's another option. Actually talking about insomnia, the other thing that I forgot to tell you is actually dementia. So people who are who has dementia, especially dense dementia, when the sun goes down and they can get they can get quite agitated. And you find a lot of dementia wards are actually locked because people are having what is called sundowner. They can't sleep. They're pacing it around. Often they let themselves out of the the given the chance out of the unit, and then they'll wander around, get hit by a car or die, or whatever of cold. So one way to reduce the agitation someone with dementia is to actually reduce the stimulation in the room. So often, what nursing homes does is they put this poor person in my bed with nothing in the room, all white walls, white everything. So perhaps something that will help them relax in the room along with their, you know, white hospital bed and looking at a white hospital or a nursing home, a wall, something else that might be able to relax them, would reduce but not always stimulate them, but allow them to focus and sort of interact, but not too much, as in, they can't break it or whatever, something that I bet will be actually really good one.

Yeah, okay, thank you. That's really helpful. A bit of a different question, but still related to the product itself. To what extent do you think nature or natural elements might improve sleep, not related to natural medications?

Okay, so nature, so again, that ties in with some of the ideas we're talking about. So we have five senses. So vision, hearing smell, taste and sound, sorry. Vision, hearing smell, taste and touch, sorry. And so obviously they're not going to taste their furniture, but you can use smell as a way of relaxing. There are certain smells that are actually useful in calming people down. For example, if there's a thunderstorm or one of my dogs get agitated, I give them lavender drops. Lavender is well known to actually help calm things down. So smell of lavender rain sounds or white noise, like gentle white noise is a good one. Certain music helps stimulate the brain in certain ways. Some relax them. Some don't there is that famous

discussing kids/children

example of a New York train station where there were lots and lots of hooligans and gang members, and they started playing this classical music, and there was no violence after that. So something similar to that, something visually eye-catching. So again, something color. Something that shimmers probably that you know, like they say green. Whenever you feeling stress, you go out of the city, go walk in a botanic gardens or go to the country. What do you see in the country? You see lots of grass, lots of greenery, lots of wood, birds, singing, etc. So something to help relax you.

Thank you.

Does that make sense?

Yeah, that makes sense. Thank you. This is this question you don't necessarily have to ask answer if you're not entirely comfortable. But have you yourself experienced insomnia, and did you use your knowledge to overcome that? If you have..

Well, I was a year 12 student once, and I was as a university student once, so yes, there was always when I was going through those high pressure study times. Yes, definitely experienced insomnia. And I've used exactly what I said when I was doing. Those were the days when the internet was first coming into being. YouTube was coming into being. So yeah, I went around listen to all these music and watch videos of people walking around for us and things. And even now, whenever I know it's a high pressure day, I would put on music on the background. People would look around say, "Hang on. Sounds like a fine massage parlor." It's not. So, yeah, nature music, that's what I've used, basically. And also I've got other martial arts training and that sort of thing. I won't go into too much of those. However, focusing on mindfulness, meditation, focusing on where rather where you rather be than where you are now can help, and also can actually help control people's emotions and etc, to help relax as well. Yeah, that's it. And everything else I've said about reducing screen time and things that has happened the past day.

I think, yeah, you've answered everything, everything that I have written down, you've answered and to great extent, so I really appreciate that. Thank you.

No, no worries.

green associated with calm, nature.

strong repetition -> relaxation suggests good sleep.

mindfulness is a way to relax.

Would you be open to the prospect of during my development phase for the product, would you be open to giving me any feedback?

Yeah, sure.

Perfect thank you.

That's okay.

Yeah, so I'll send you it if you want. Do you want me to send you a copy of the transcription so you have it on file?

No, that's all good. I haven't said anything controversial. I hope...

I don't think so haha.

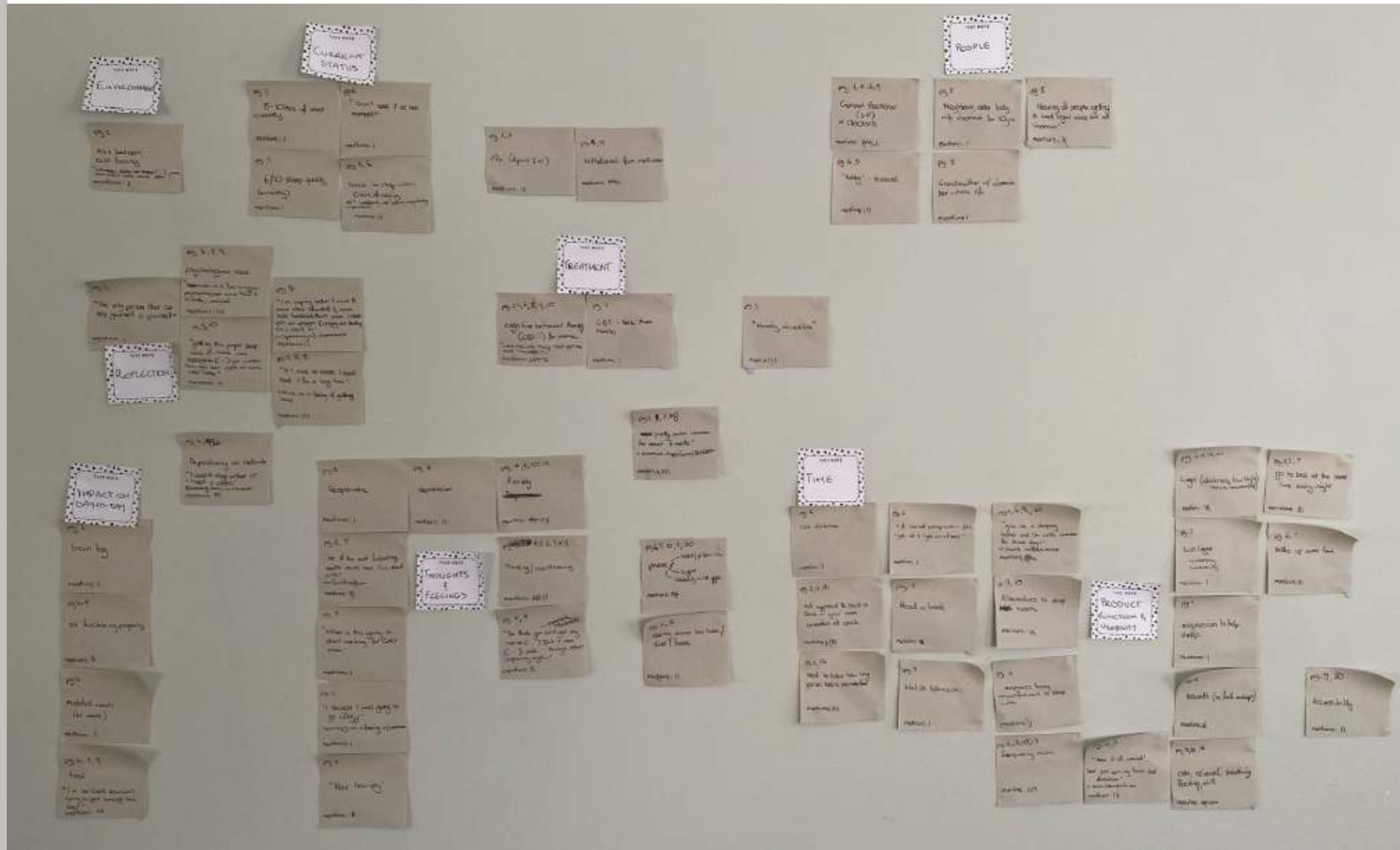
Excellent, if you need any clarifications or anything like that, let me know next week.

Okay, thank you so much.

All right no worries, yeah, bye.

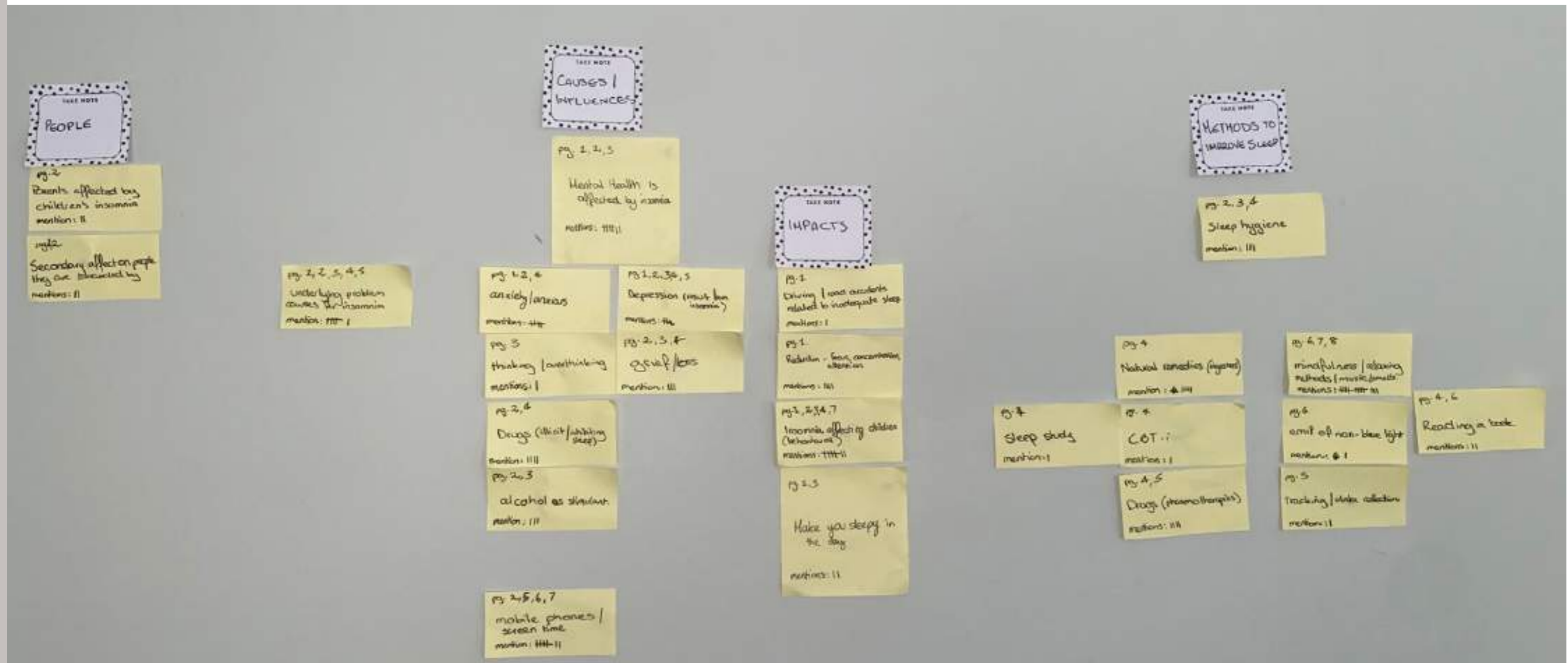
Interview Analysis

Coding - Iteration 1



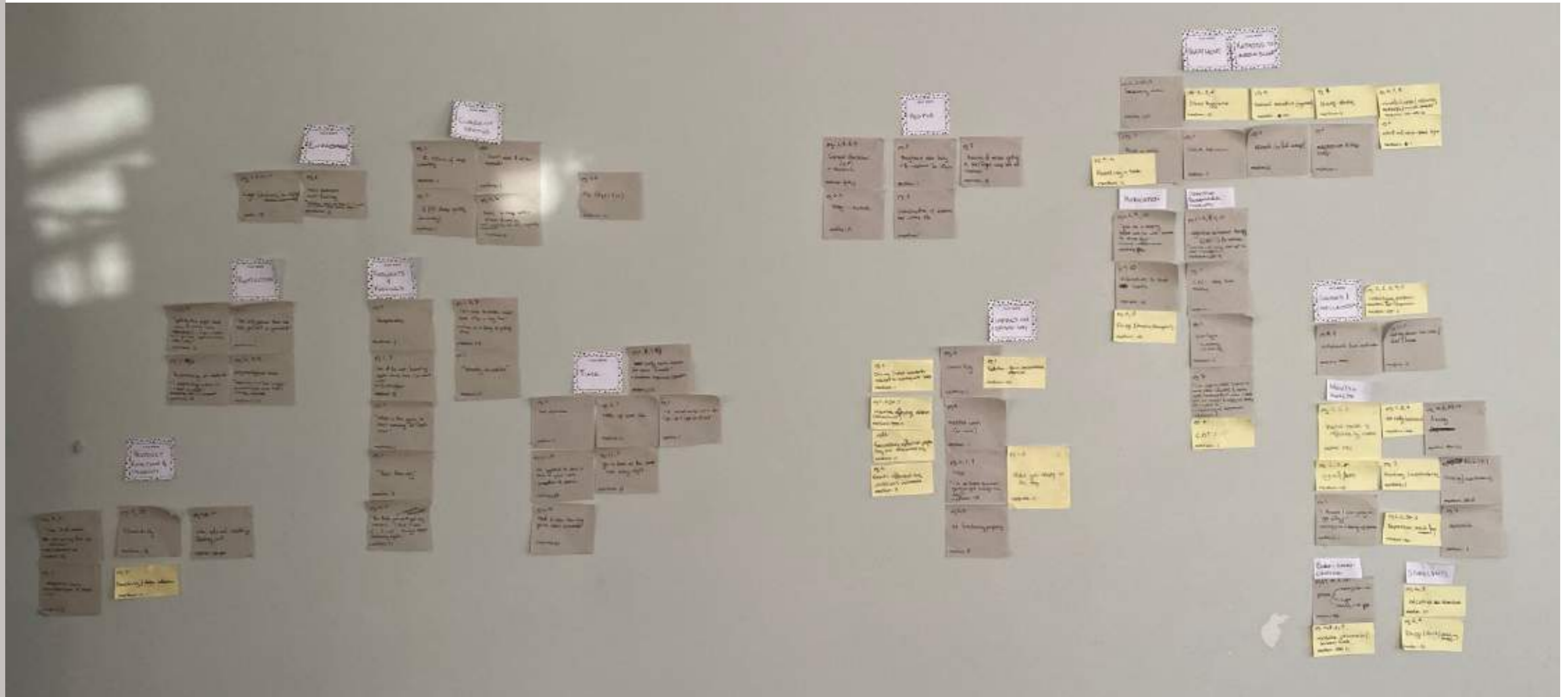
Interview Analysis

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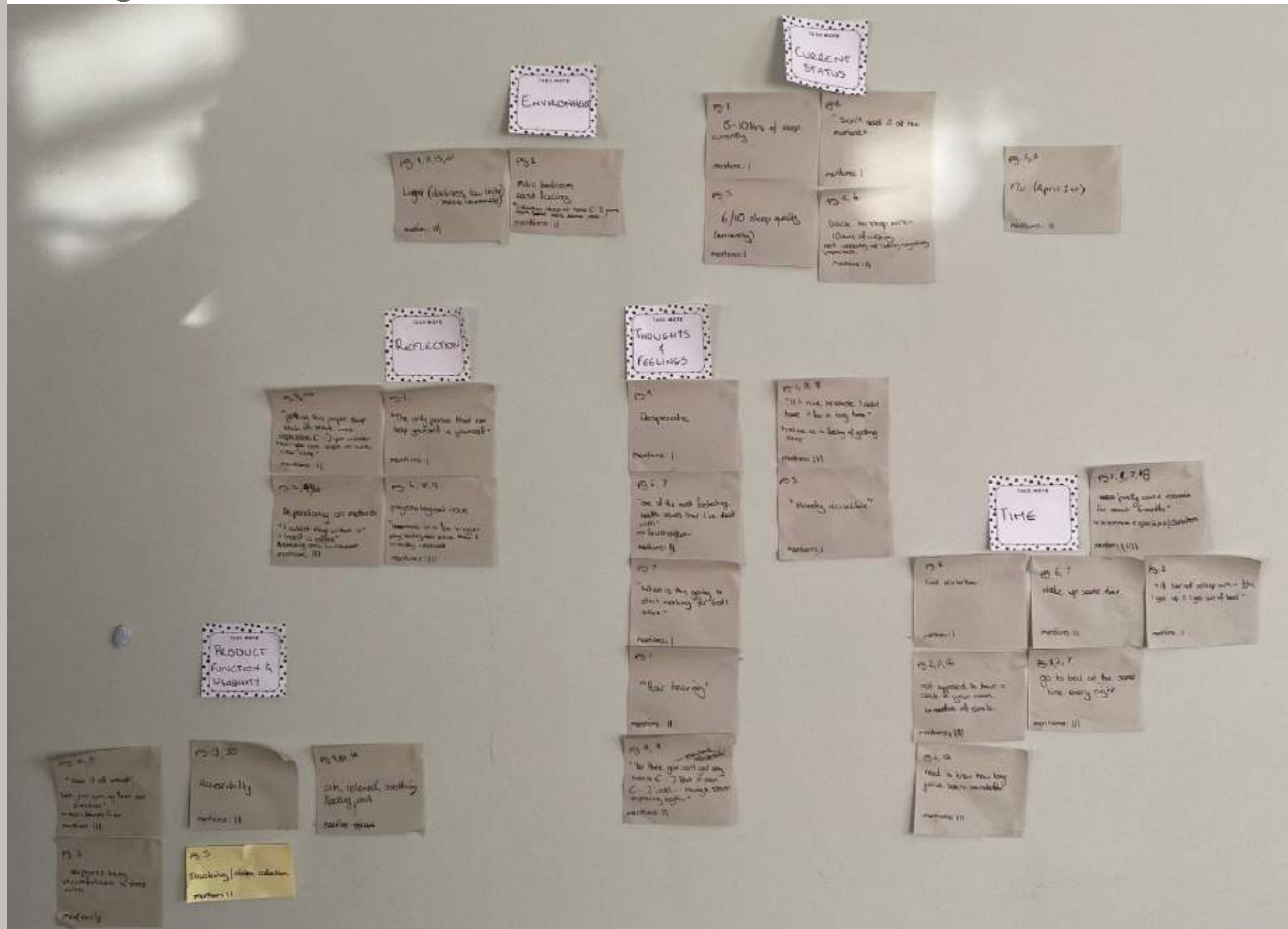
Interview Analysis

Coding - Iteration 2



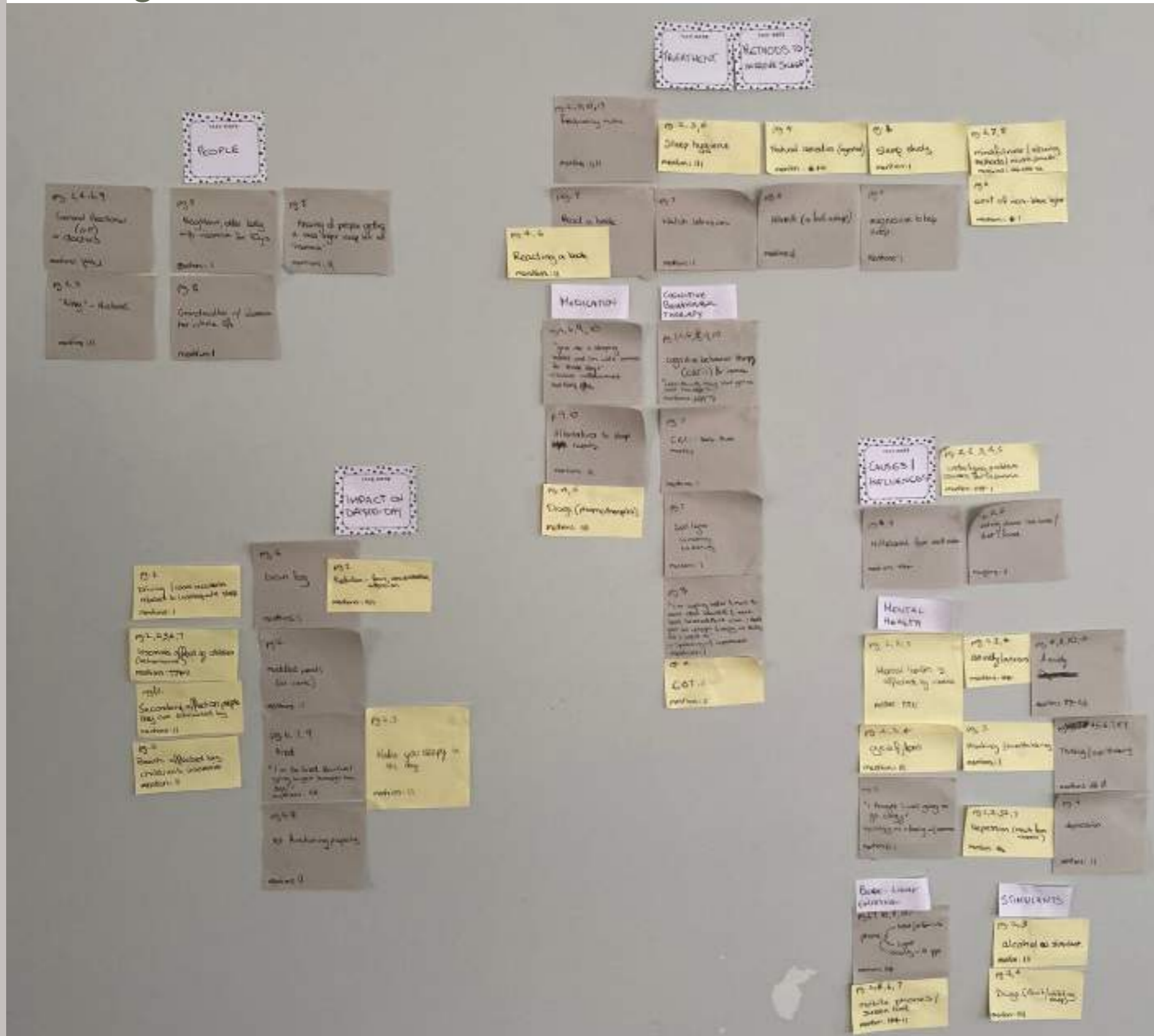
Interview Analysis

Coding - Iteration 2a



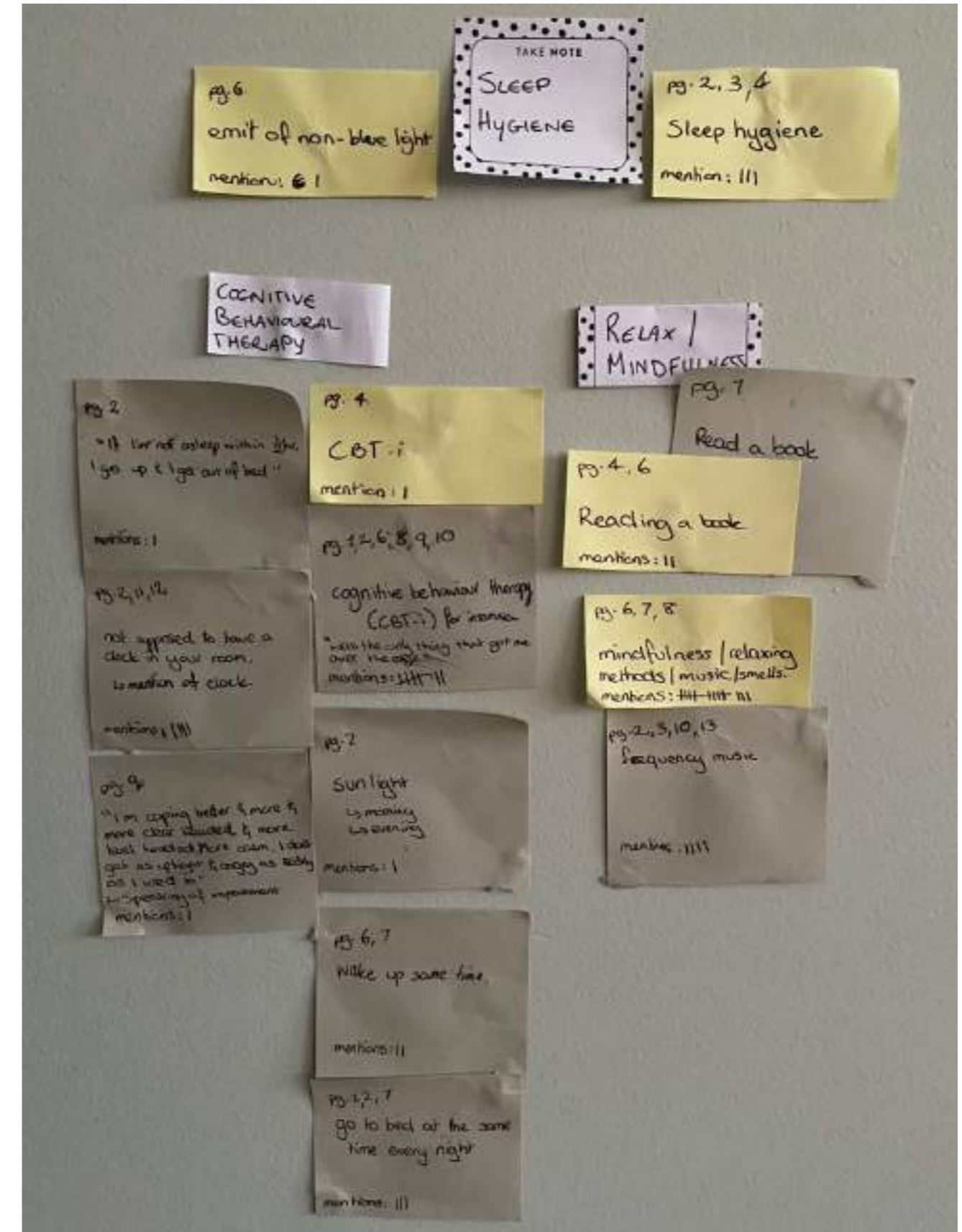
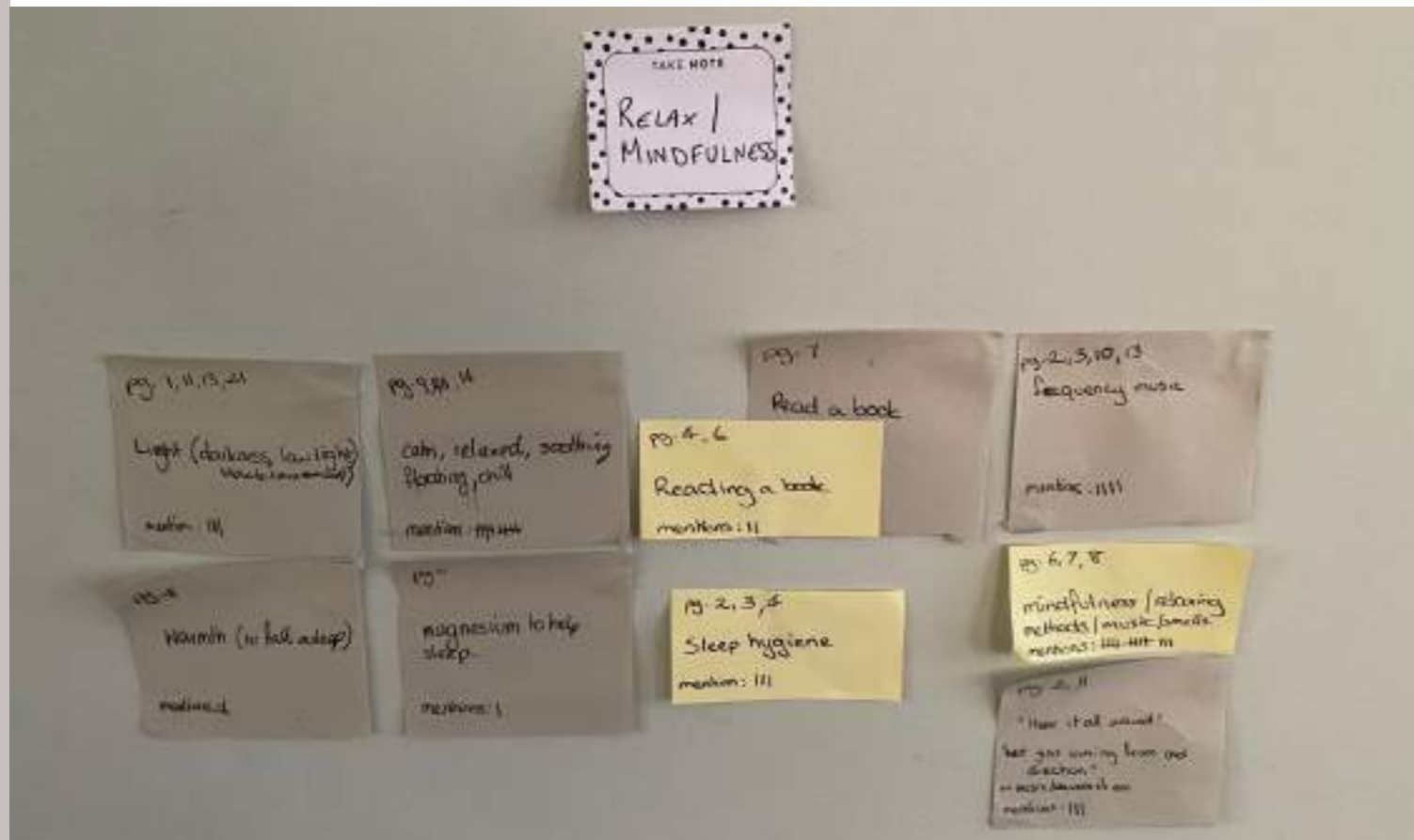
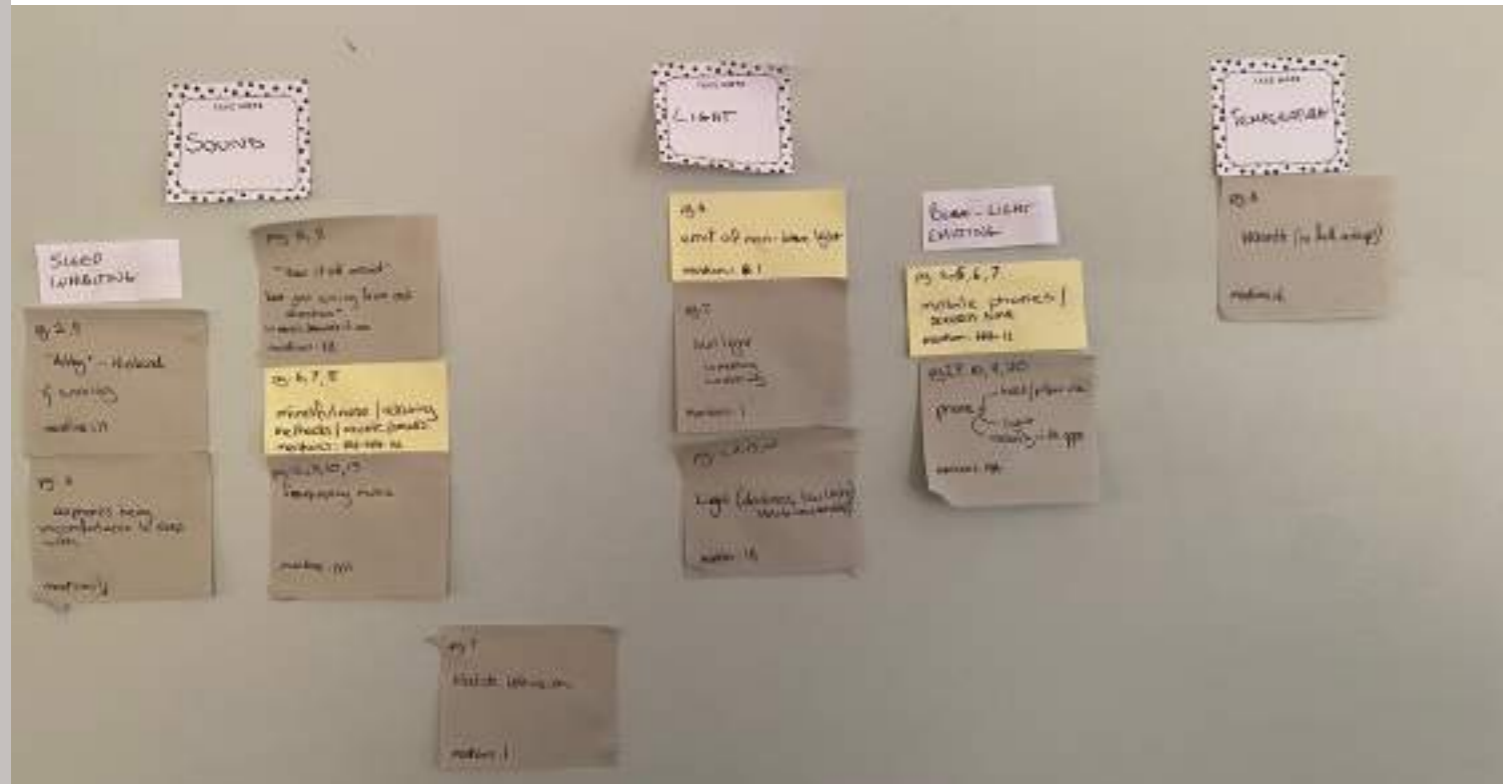
Interview Analysis

Coding - Iteration 2b



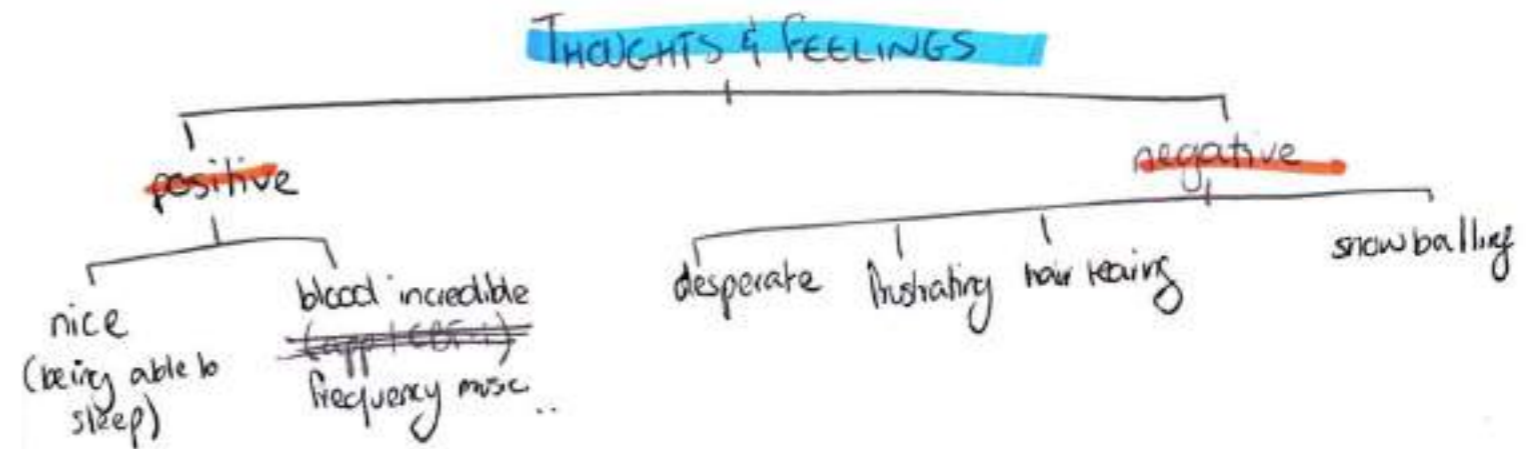
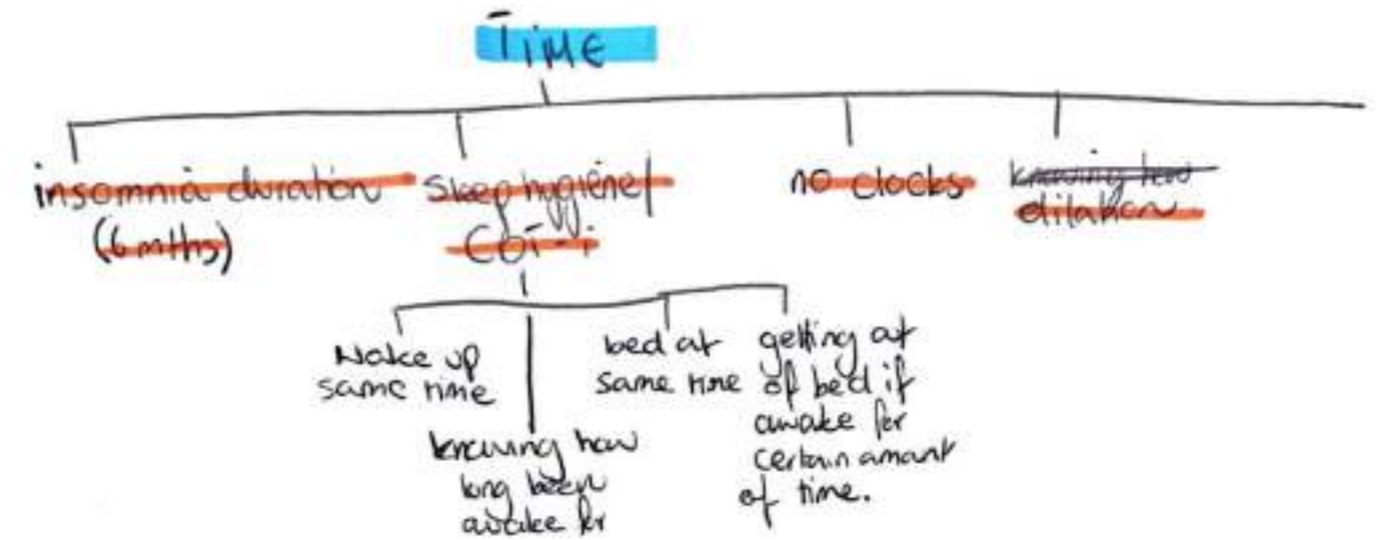
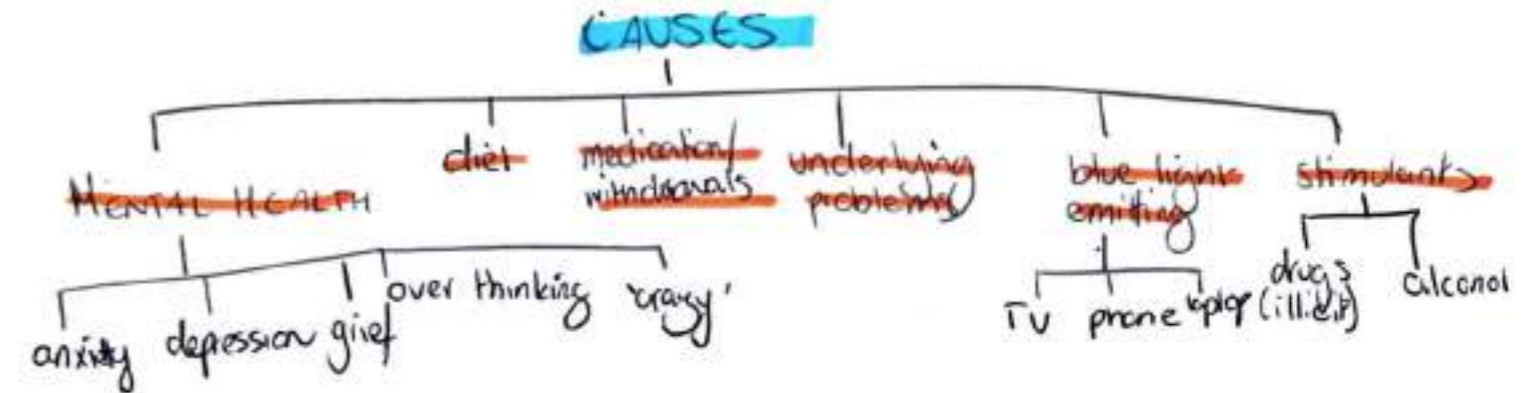
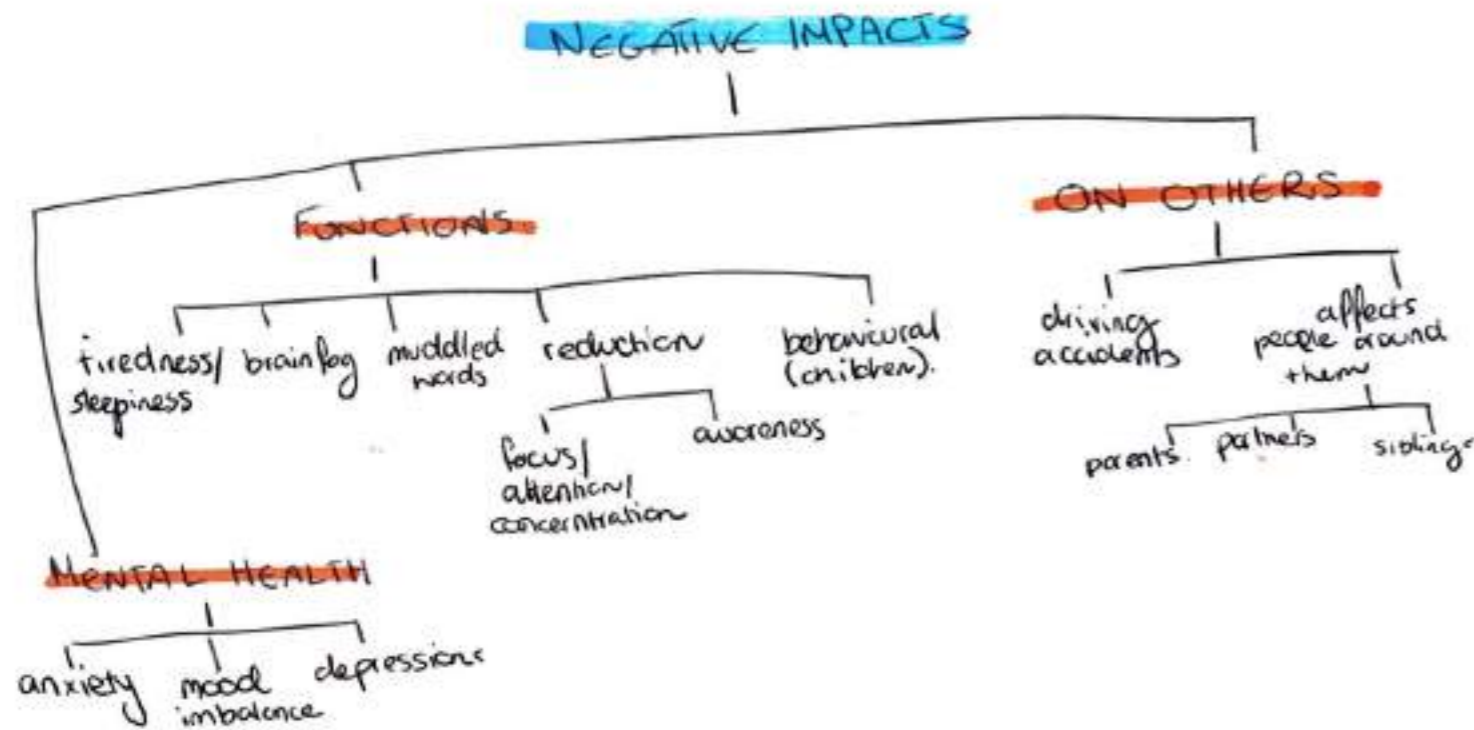
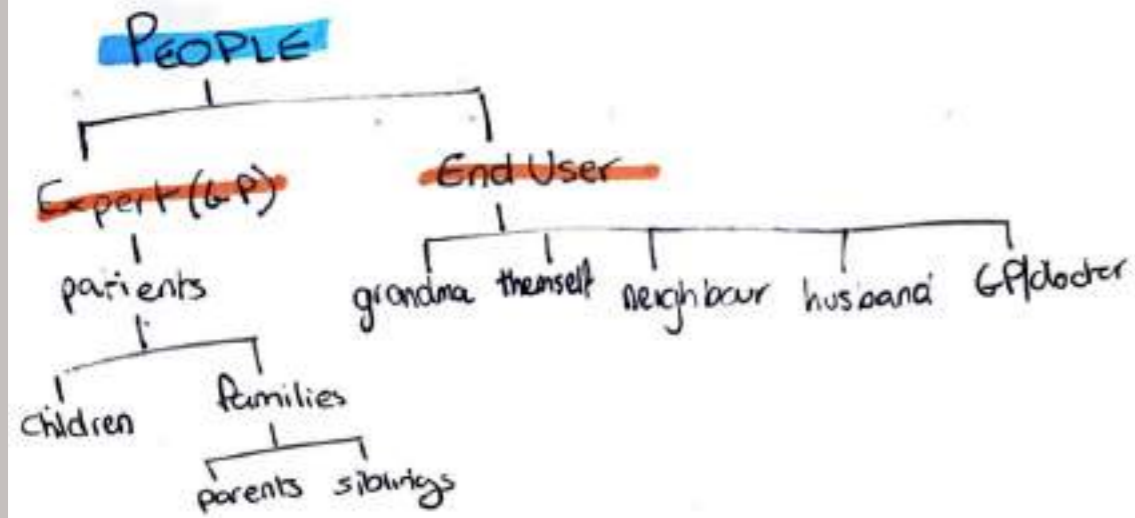
Interview Analysis

Coding- Iteration 3



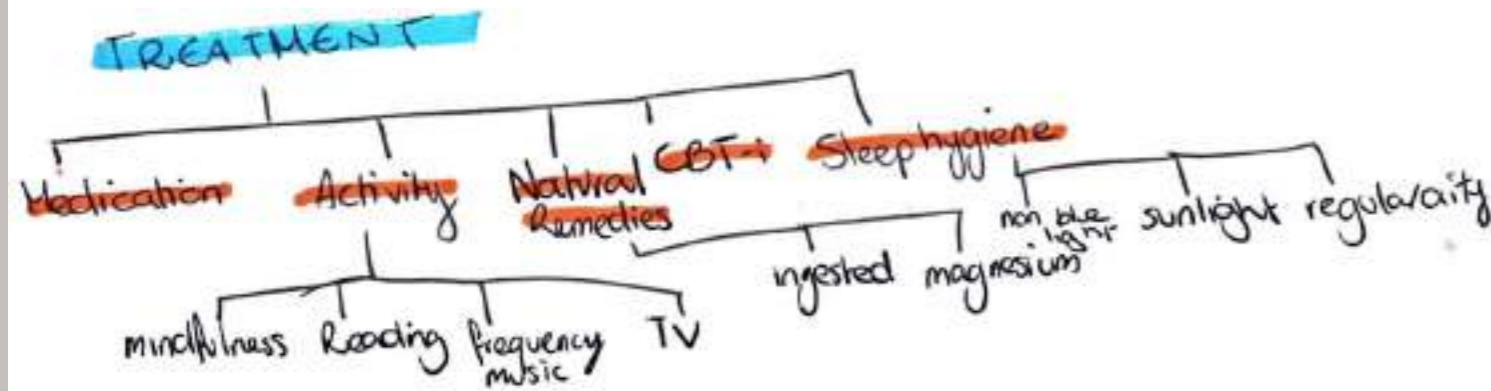
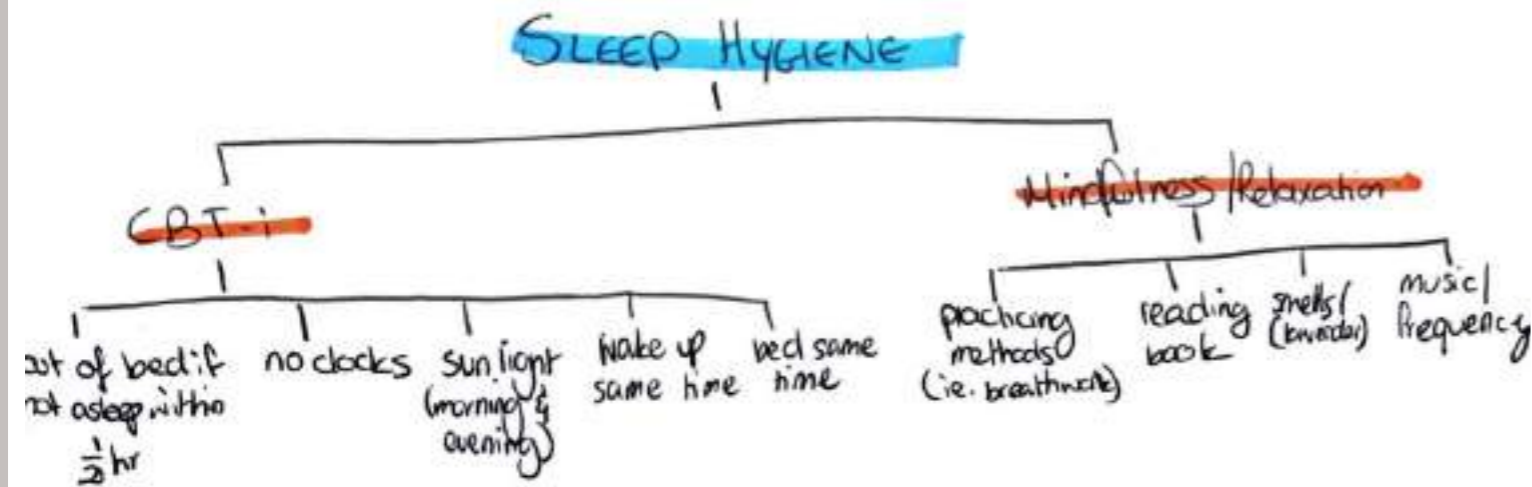
Interview Analysis

Coding- Mapping

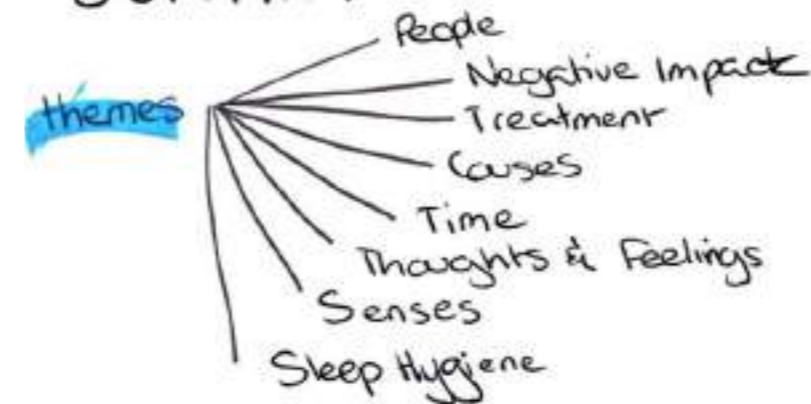


Interview Analysis

Coding- Mapping



SUMMARY:



Repeated Subthemes:



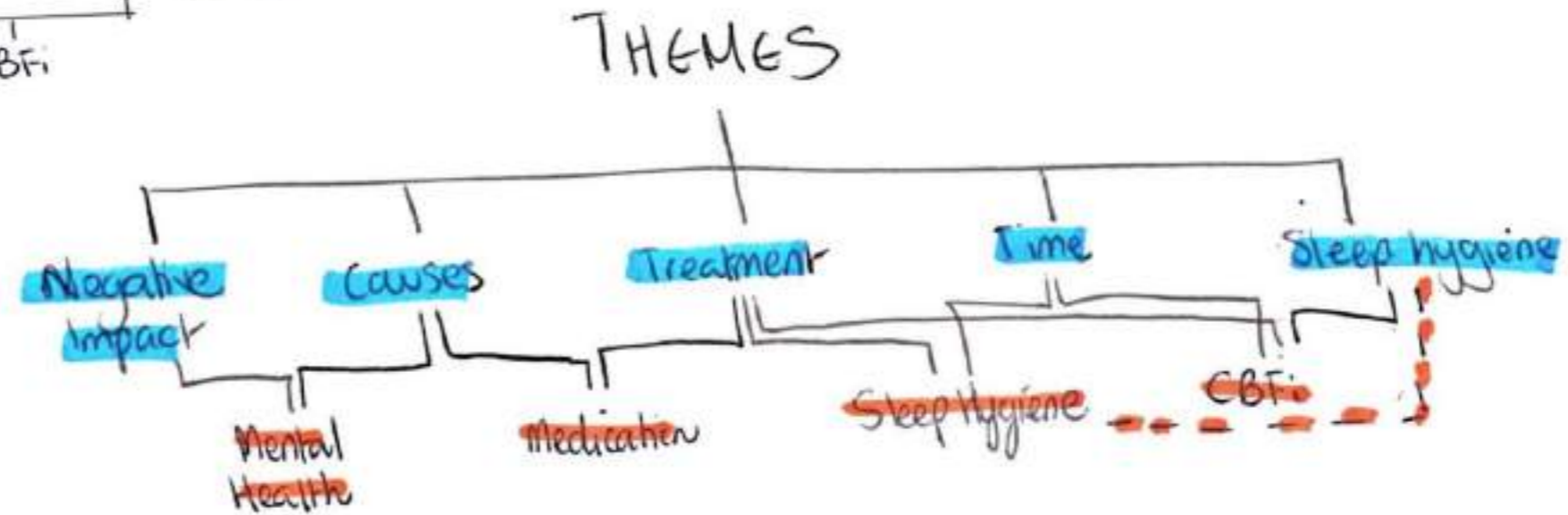
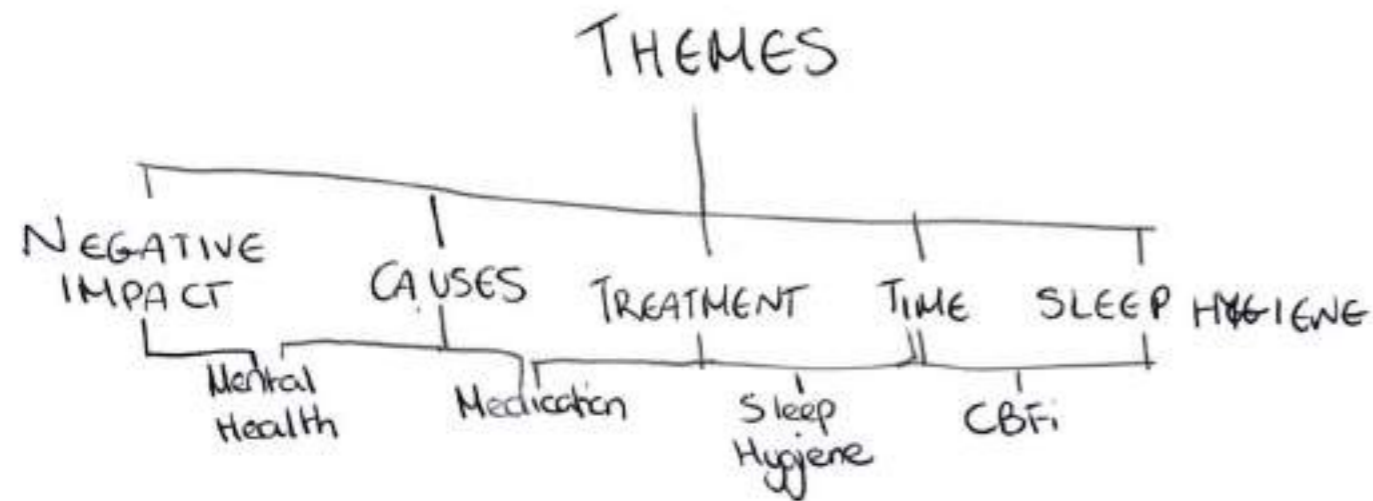
Common Themes:

Negative Impact x1
 Causes x2
 Treatment x3
 Time x2
 Sleep hygiene x1

★ Main themes to target in report

Interview Analysis

Coding- Mapping



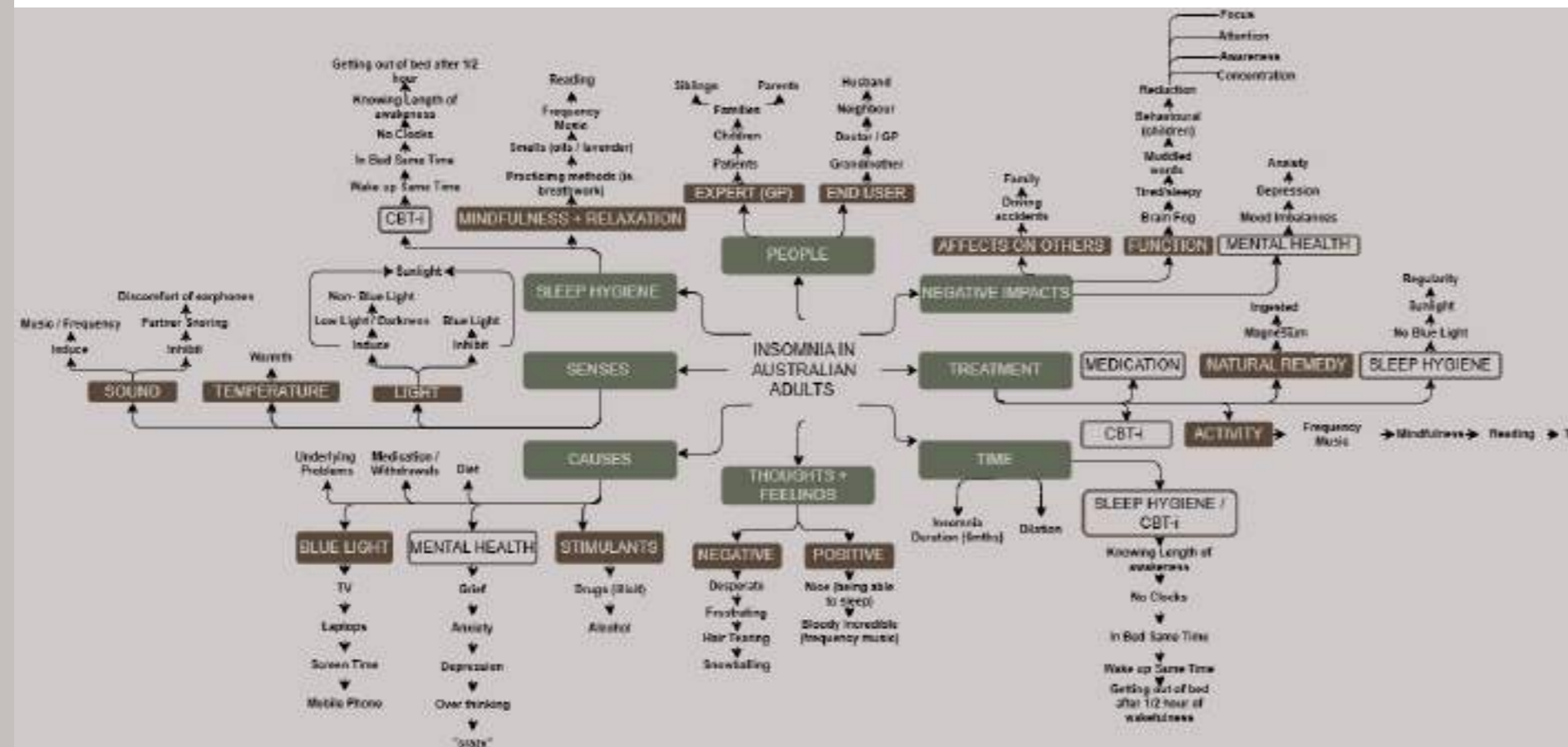
! Sleep Hygiene is a sub-theme of time & treatment !

Sleep Hygiene, Treatment & Time share the sub-theme of CBT-i.

prospect for product development

Interview Analysis

Report Codes



Theme

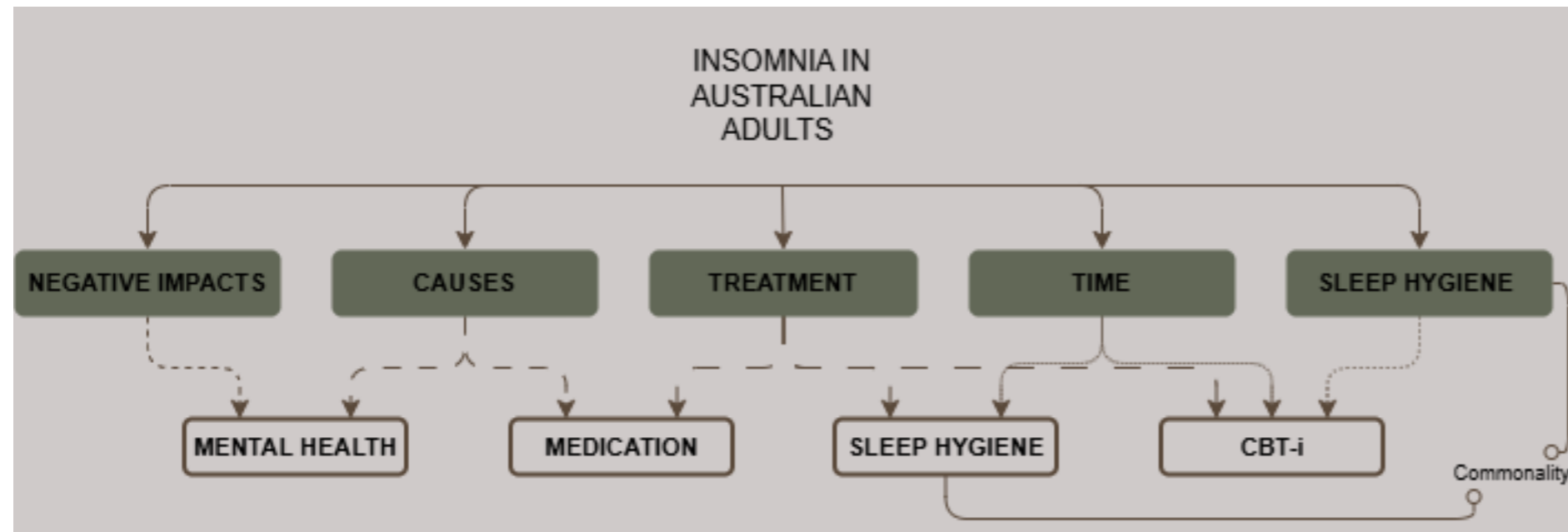
Sub-theme

Repeated
Sub-theme

MENTIONS per THEME		
THEMES	MENTIONS	EXAMPLES
CAUSES	48	Diet, Stimulants, Mental Health (anxiety, depression, grief etc.), Blue Light, Medication / Withdrawals, Diet
NEGATIVE IMPACTS	36	Mental Health (anxiety, depression, mood imbalances), on family, driving accidents, reduction in attention, concentration, focus and awareness, muddled words, brain fog
PEOPLE	25	Family (parents, children, siblings, grandparents), doctor/GPs, husband, neighbour
SENSES	54	Light / darkness, temperature, sound (music, rain, frequencies), smell
SLEEP HYGIENE	28	CBT-i, limiting screens before bed (blue light), routine (wake up same time, in bed same time), sunlight, mindfulness methods, relaxation methods
THOUGHTS + FEELINGS	17	Positive (incredible, calm, nice), Negative (snowballing, desperate, frustrating, crazy)
TIME	24	Bed the same time, Awake same time, duration of insomnia, dilation (percieved time)
TREATMENT	35	Medication, CBT-i, Mindfulness and relaxation methods, Activity (exercise, breathwork, reading), Music, Sleep hygiene, Natural therapies (herbal teas, magnesium)

Interview Analysis

Report Codes



Theme

Sub-theme

COGNITIVE BEHAVIOURAL THERAPY for INSOMNIA (CBT-i)		
THEMES	SUBTHEMES	EXAMPLES
TIME	Regularity	"That I learned best to go to bed at the same time every night"
	Clocks	"This [CBT-i] can take months, and if you're not structured enough within yourself to keep it going, go to bed at the same time, get up at the, same time"
TREATMENT	Activity	"Yes, don't have a clock, but you need one to see how long you've been awake."
	Medication	"And some kind of technology that would turn around and whisper, 'You have been awake for 40 minutes. It's time to get out of bed' rather than me laying there going 'Ohh. How long have I been awake for? Is it an hour? Is it half an hour' to turn and 'Ohh do I look at my clock yet? No give it another few minutes' "
SLEEP HYGIENE	Sunlight	"focusing on mindfulness, meditation, focusing on where rather where you rather be than where you are now can help"
	Consistency	"I normally recommend people to use that rare thing called a book, and read that leading up to sleep."
	Blue Light	"I used to listen to frequency music."

Part II : Initial Concepts

Product Ideation

Initial Concepts

CONTEXT AND OPPORTUNITY

Research and Context

The purpose of the research was to inform the development of a product that has the potential to aid and/or improve the quality and duration of sleep for Australian adults experiencing insomnia.

According to the Department of Health, State Government of Victoria (2024), a single night of insomnia can affect basic mental and physical function inclusive of reduction in memory, focus and attention, imbalances in hormone and mood regulation which often lead to mental health issues (ie, anxiety and depression), impaired immune system and higher risk of chronic diseases.

The research was conducted using a triangulation approach - 2 interviews and 38 surveys. Within this dataset, qualitative and quantitative data was analysed.

Results from the survey suggested that reducing Technology has a beneficial impact on sleep. It also suggested that certain noises within the environment will either inhibit (disruptive, loud) or induce (music, white noise) sleep. Figure 1 depicts the focused themes developed from the interviews. Sleep hygiene was identified to overlap as a major theme and also a sub-theme. One of the questions from the survey asked about the implementation of a product with regards to the sleep phases - Before, During and After (wake). There was a significant response to Before and Before and During (Figure 2), suggesting that the product should focus on this user experience.

Understanding the significant impact of insomnia reinforces the importance of sleep to an individual's quality of life. From the data gathered from the research, the following opportunities were established:

Opportunity 01: Utilising CBT-i and/or Sleep Hygiene Practices

Focusing on human behaviour before sleep, using methods found in sleep hygiene practices and CBT-i will incorporate another level to the functionality and usability of the product.

Opportunity 03: Combining Non-Blue Light and Sound

Despite there already being products on the market that combine sound and light, there is an opportunity to extend and improve the functionality and usability to a less intrusive, yet impactful product designed for improving insomnia.

Opportunity 02: Time and Mindfulness

Research conducted showed a major theme of time and it's impact on those with insomnia. Understanding that clocks in the room might heighten already existing anxiety around sleep, incorporating a system where time is known but not a primary focus could be implemented through mindful and meditative approaches. In doing so, there is potential to relax and allow sleep to be improved.

DNB311
ID7: Capstone

Giahn Swinbourne
n11240491

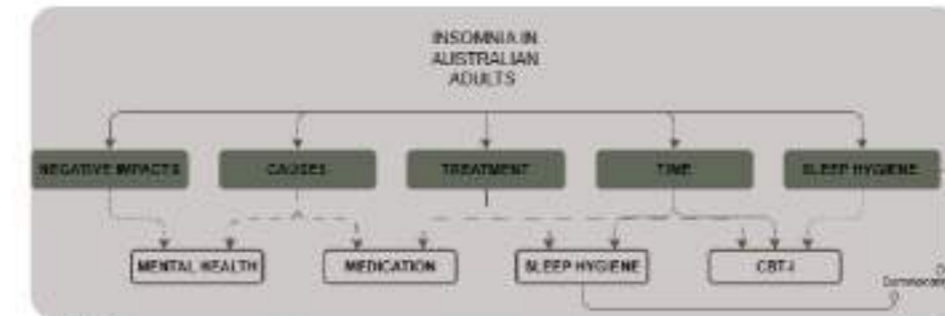


Figure 1

Breakdown of Time of Sleep Cycle for Product Usage:

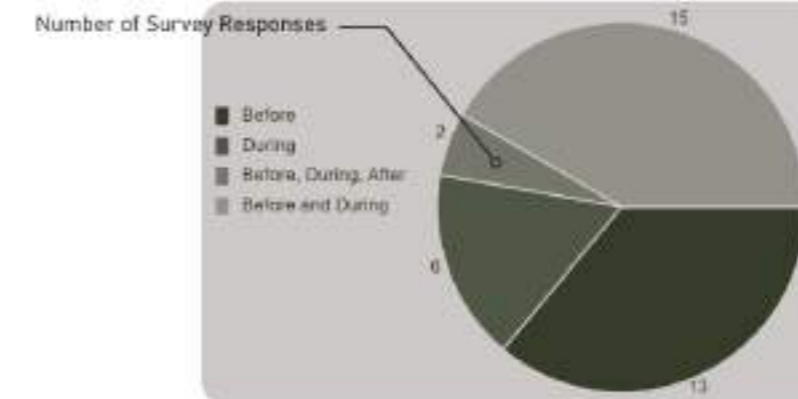


Figure 2

The following concepts have been developed in response to the research and opportunities presented

Initial Concepts

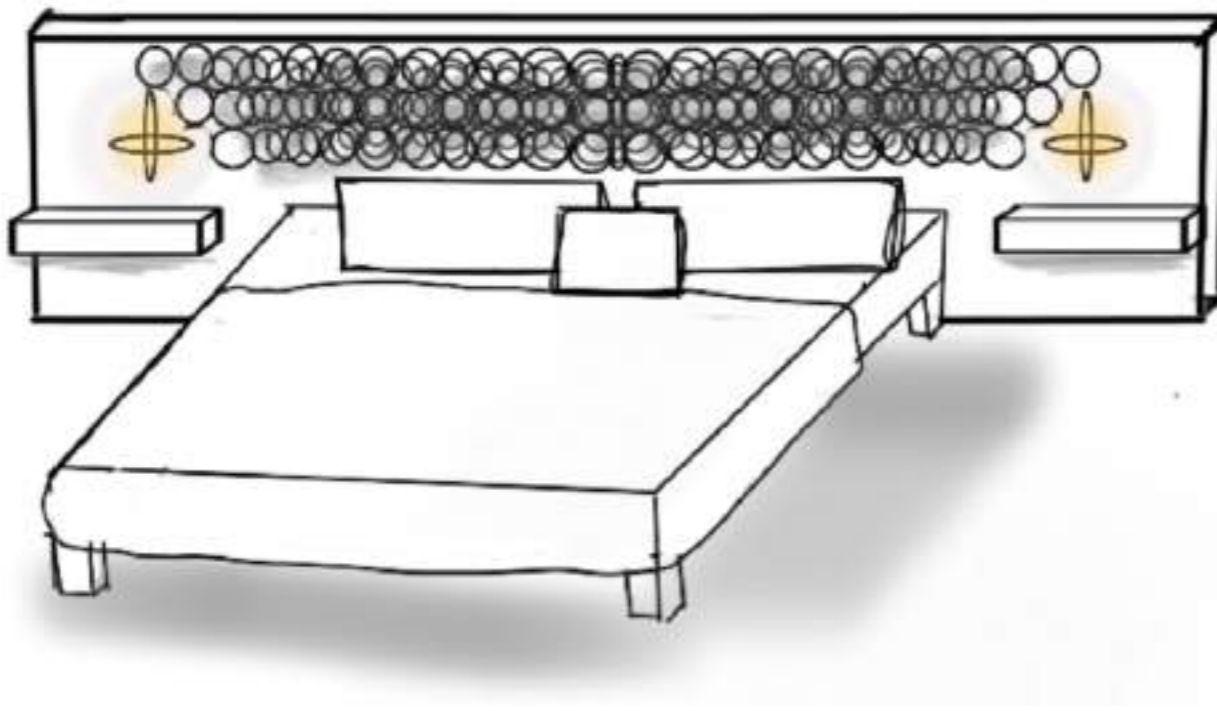
Concept 1

Technology-integrated Bedhead

Concept 01 takes the form of a bed head and has light and sound technology integrations. The purpose of this concept is to relax and prepare the user for sleep. The form itself encompasses a bed head and the potential for attached nightstands.

Features of this concept include:

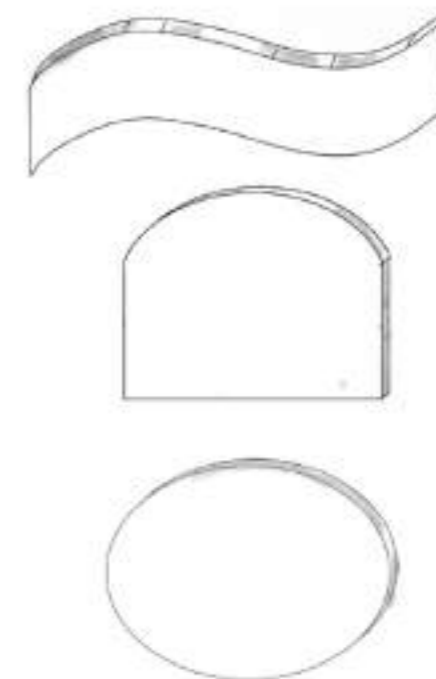
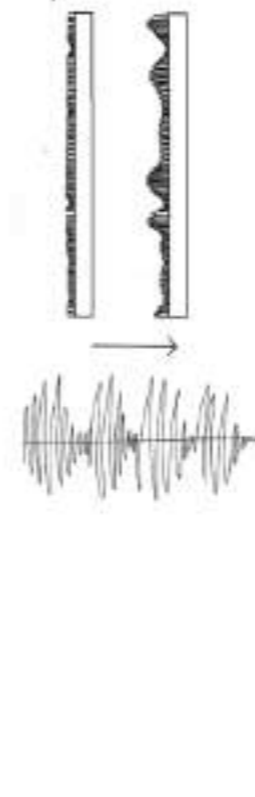
- Ambient lighting over each side of the bed - amber light (non-blue light)
- Lights are detachable for getting up at night (this avoids the use of bright lights for activities like bathroom trips)
- Speakers that play music (frequency, nature, mindful)
- Speakers have kinetic function that moves with the rhythm (mindful and relaxing to detract mind from own thoughts)



Targeted Sleep Phase:

Before

During



Targeted Opportunities:

Opp 01

Opp 02

Opp 03

Initial Concepts

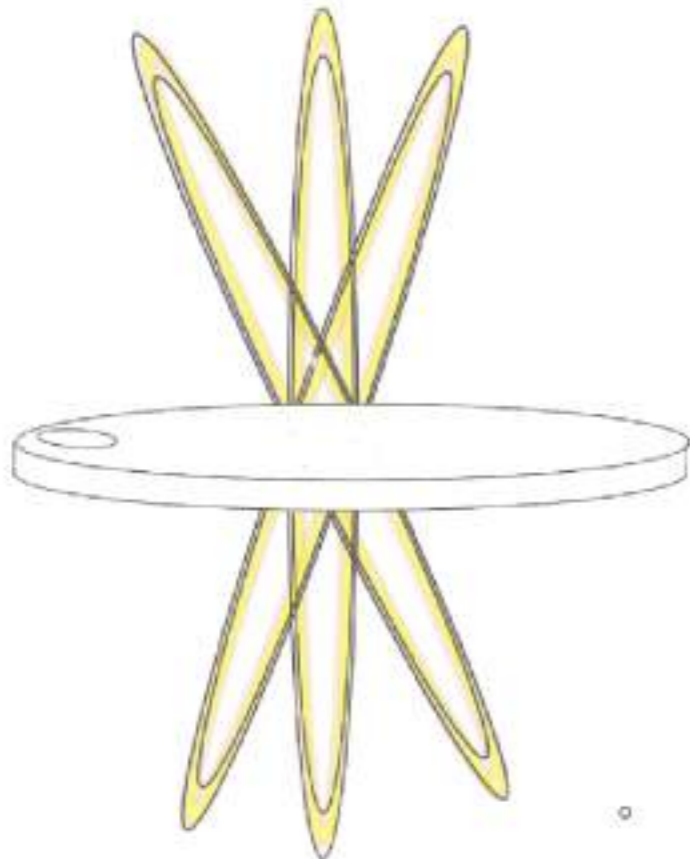
Concept 2

Nightstand with Lighting

Concept 01 takes the form of a nightstand and features a large and visually appealing light source. The purpose of this concept is to aid users before they fall asleep and also to help them get back to sleep if/when they wake up at night. It also encourages habits associated with CBT-i.

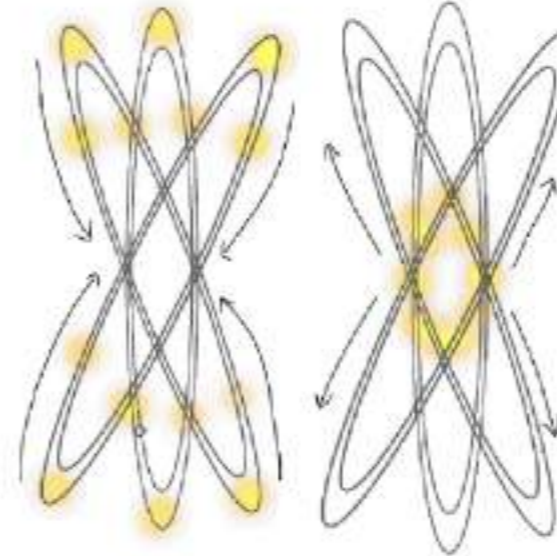
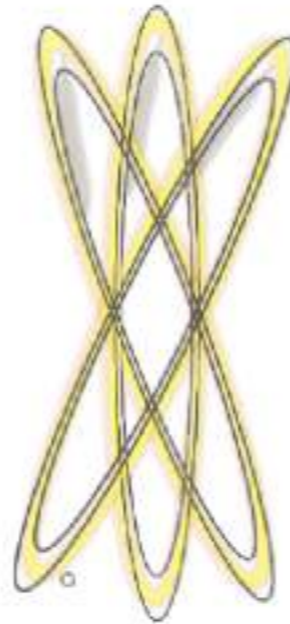
Features of this concept include:

- Large, low lux (amber light) in an organic form
- Lights have two settings - static and dynamic and can be accessed through touch button on night stand
- Dynamic function is set for 20mins (as recommended by CBT-i) and moves in a way that mimics breathing to relax users into sleep
- Timer function turns light off after set time and if the user is still awake after this period of time then they will know to get out of bed, do something and return once they feel tired enough to fall asleep (this will limit associations of wakefulness with the bed)



Before

During



Targeted Opportunities:

Opp 01

Opp 02

Initial Concepts

Concept 3

Technology-integrated Curtains

Concept 03 is a response to the dissatisfaction users have with sound-absorbing curtains on the current market. The purpose of these curtains is to block out light from the external environments whilst also providing circadian based lighting to the internal environment. For this concept, two iterations were made.

Features of this concept include:

- Lighting that changes according to time of day - bright light (morning and during day) to warm, amber light in the evening and dimmer amber light during the night.
- Remote controlled speakers where the lights could react according to the rhythm (avoids use of phone controlled music)
- Concept 03a is made from thick fabric an woven in a way that absorbs external noise
- Concept 03a features the lights, woven into the fabric itself (unique, starlight aesthetics)
- Concept 03b is multi-layered to block out light and provide a unique aesthetic to the environment
- Concept 03b features lights and speakers from the base of each panel - lights diffuse upwards for ambience



Concept 03a



Concept 03b

Targeted Sleep Phase:

Before

During

After



Targeted Opportunities:

Opp 01

Opp 02

Opp 03

Initial Concepts

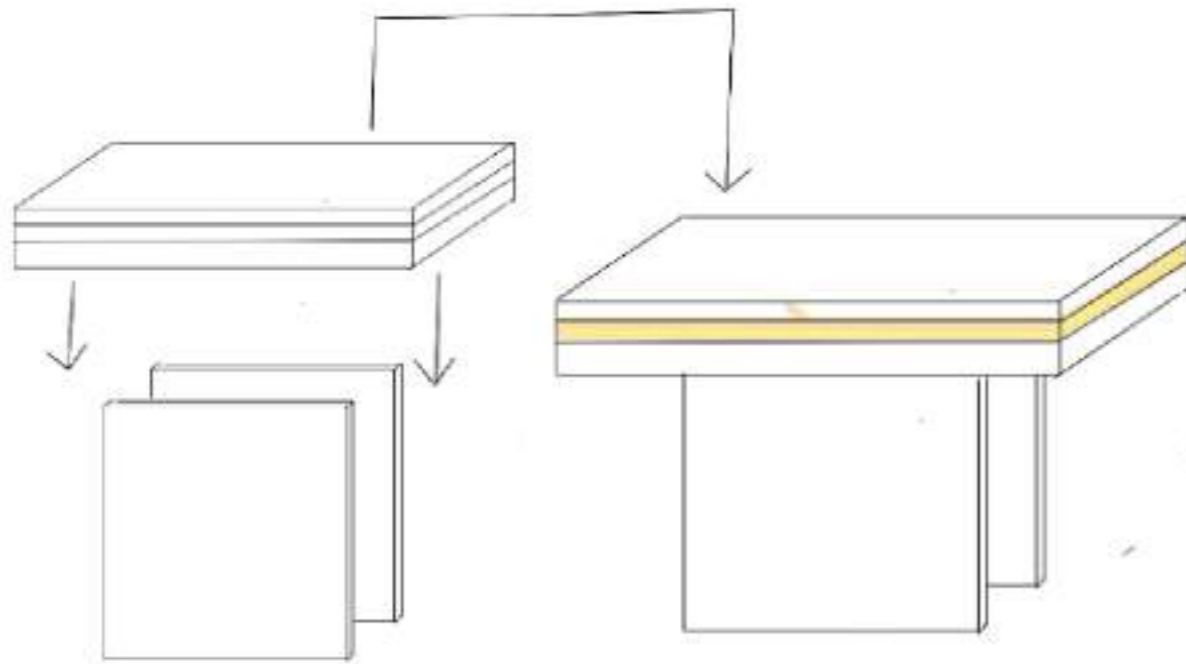
Concept 4

Modular / Multipurpose Shelving System

Concept 04 utilises one main base to create 2-3 distinct furniture pieces - shelving, side table and/or nightstand. The purpose of the modular furniture is to provide an unobtrusive and physical system into the home. This system, can be used in every room, encouraging hygienic practices before sleep.

Features of this concept include:

- Light panels that change according to time of day - bright light (morning and during day) to warm, amber light in the evening and dimmer amber light during the night.
- When there are multiples of the same product, no matter the form, they can connect to sync lighting options
- Dynamic light setting for mindfulness (pulses similar to heartbeat or breathing) turns off after 20mins
- Potential for a motion sensor that can be turned on/off depending on the user's preference (off is best for nightstands but can be useful for shelving if moving through space during the night)
- Easy to assemble and change according to user preferences

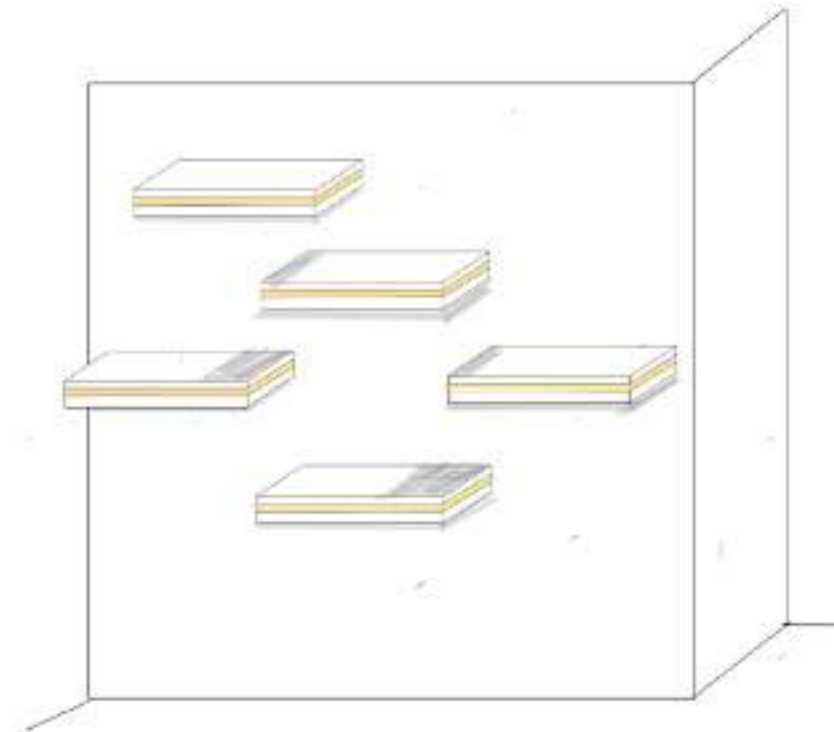


Targeted Sleep Phase:

Before

During

After



Targeted Opportunities:

Opp 01

Opp 02

Opp 03

Initial Concepts

Concept 5

Kinetic Sculpture Shelf

Concept 05 takes the form of a modular shelf that aims to relax users into sleep via a kinetic sculpture. Shelving unit is modular to suit user needs and use within the environment.

Features of this concept include:

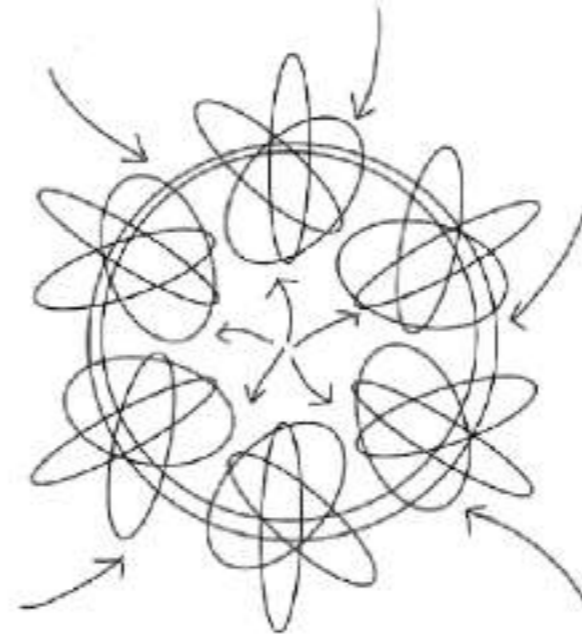
- A dim amber central light to display the kinetic sculpture (is not bright enough to light up entire room/keep users awake)
- Shelving unit is easily assembled/dissembled and can be used alongside other shelving units
- Shelving unit can rotate arms to align or alternate according to user preferences
- Provides a place for phones and other items to be stored
- Kinetic sculpture for mindfulness moves to align with breathing patterns and turns off after 20mins (in accordance with CBT-i methods)



Targeted Sleep Phase:

Before

During



Targeted Opportunities:

Opp 01

Opp 02

Initial Concepts

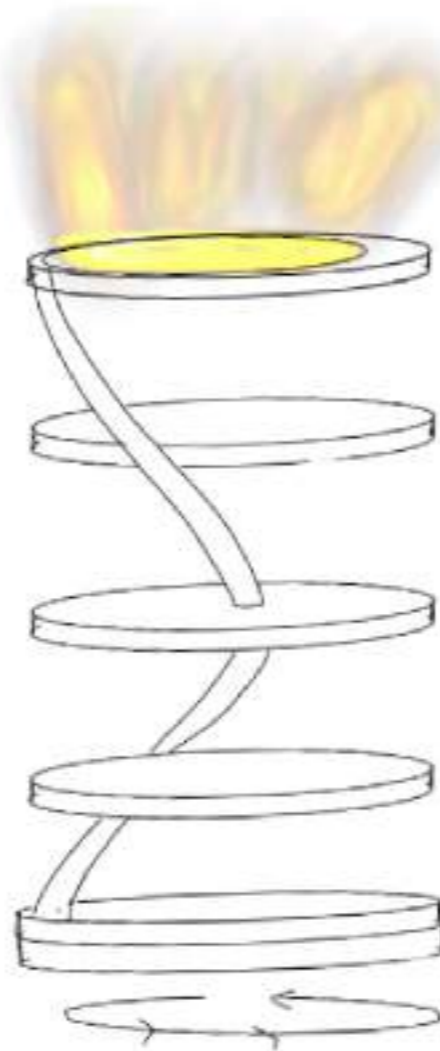
Concept 6

Spinning Shelf

Concept 06 takes the form of a shelf that can be used in any room within the home. The central purpose is to produce light that aligns with the circadian rhythm. It also has the ability to spin slowly, creating a relaxing illusion.

Features of this concept include:

- Light on the top that changes with time of day - bright light (morning and during day) to warm, amber light in the evening and dimmer amber light during the night.
- If there is more than one in the same home, they can sync and provide ambient light
- Frame spins from the base to aid with mindfulness and when used in bedroom, is aimed to help user fall asleep (has timer set to 20mins)
- Motion sensor for the light so users don't have to turn on bright lights when awake at night



Targeted Sleep Phase:

Before

During

After

Targeted Opportunities:

Opp 01

Opp 02

Initial Concepts

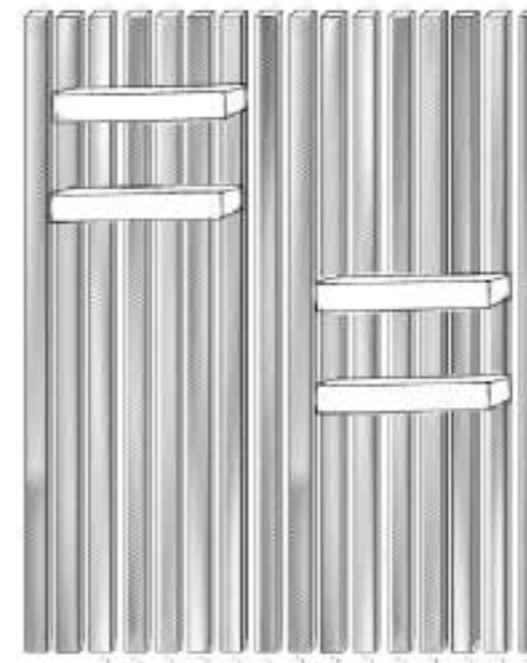
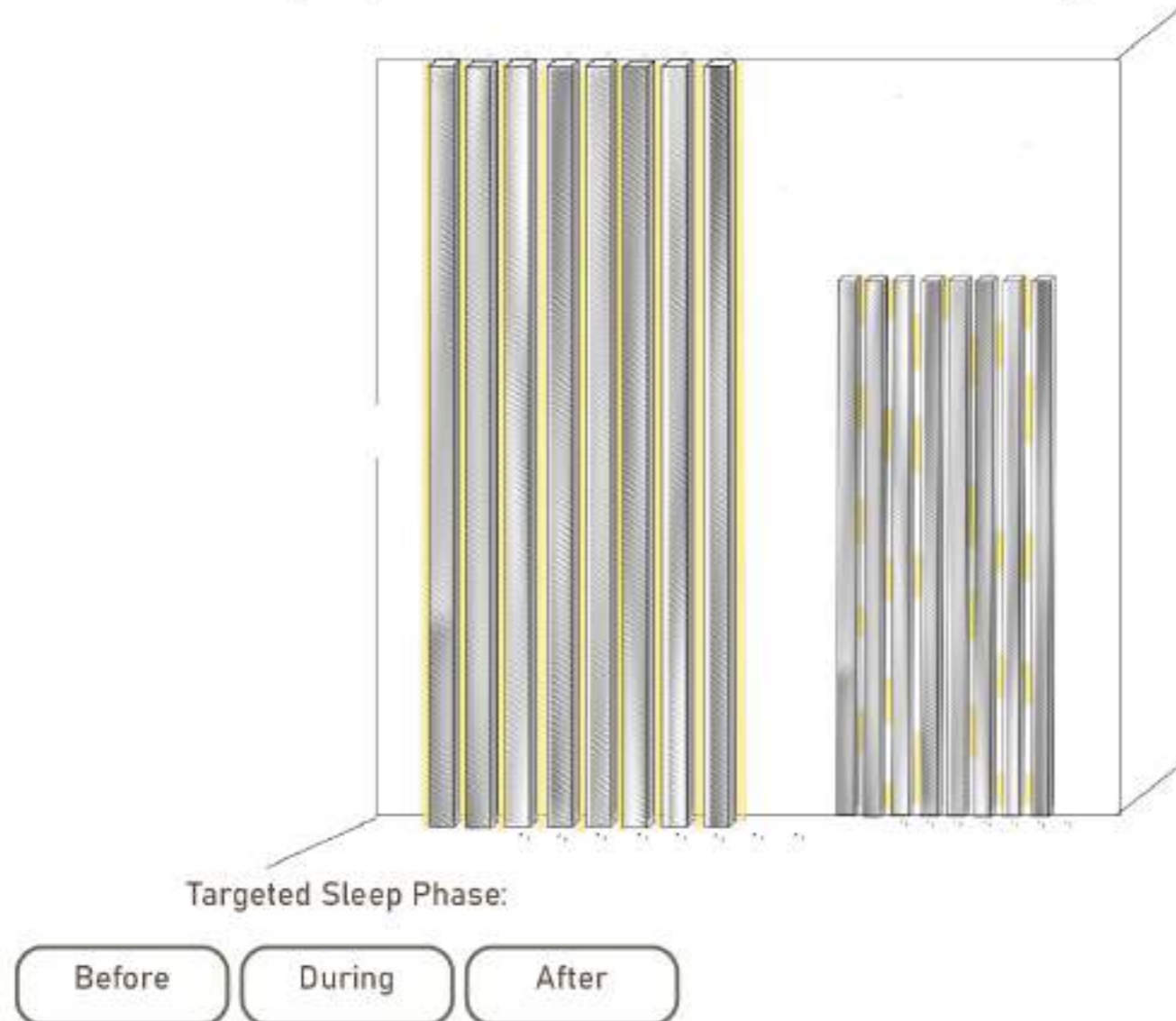
Concept 7

Modular Panel System

Concept 07 is a modular shelving system with integrated light and sound technology. Panels can be attached to walls and ceilings in any room to create a functional furnishing that aids users with their sleeping habits.

Features of this concept include:

- Light panels that focus on circadian rhythm - bright light (morning and during day) to warm, amber light in the evening and dimmer amber light during the night.
- Remote controlled lights and stereos to avoid phone use during the evening / night
- Dynamic light setting for that turns off after 20mins (ie. rain music = lights move like a waterfall)
- Modular shelving and panels allows for user preferences and is adaptable to every wall - no matter how narrow/wide
- Modular shelving and panels can also be utilised as a bed head and night stands



Targeted Opportunities:

Opp 01

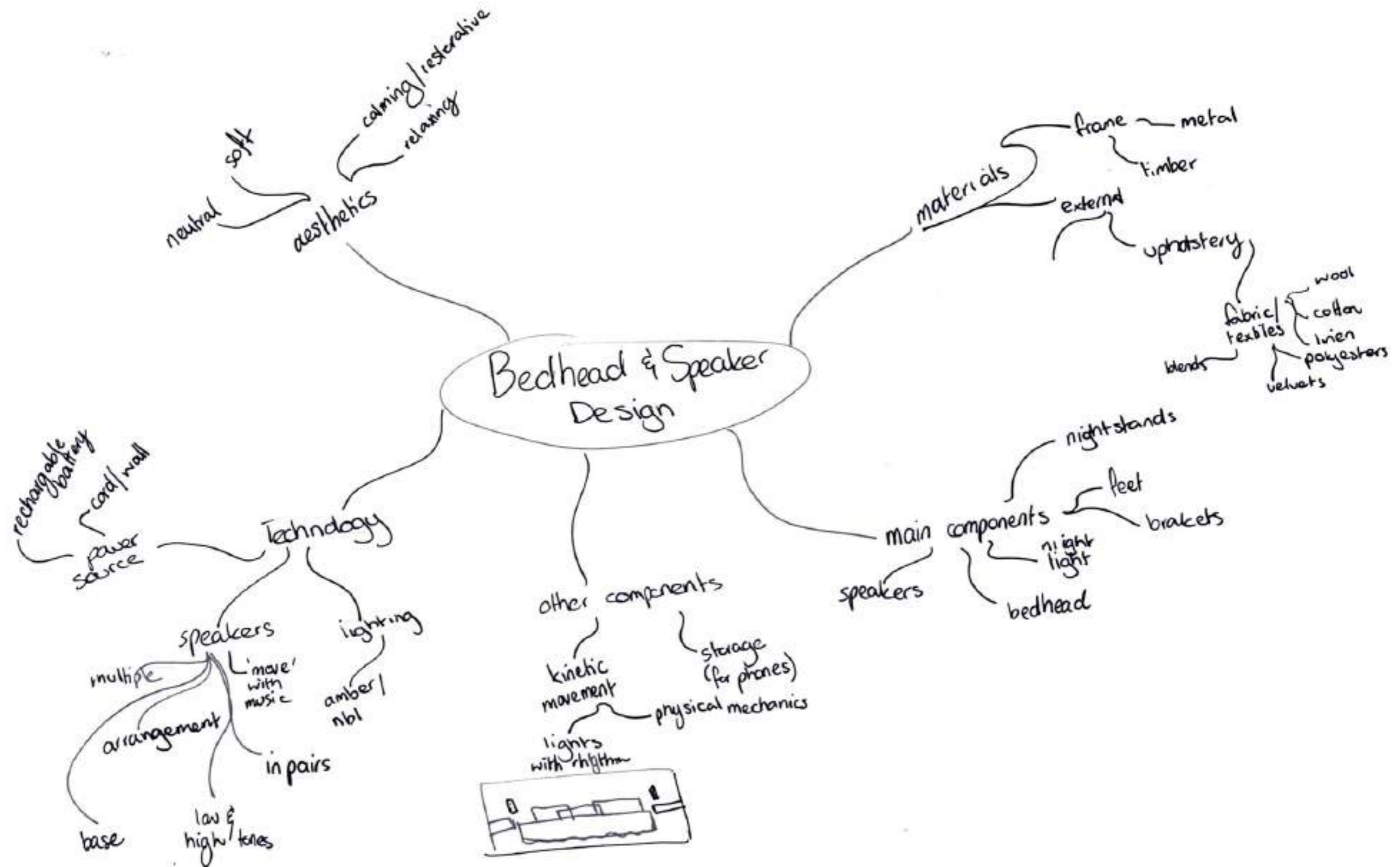
Opp 02

Opp 03

o Part III : Concept Development o

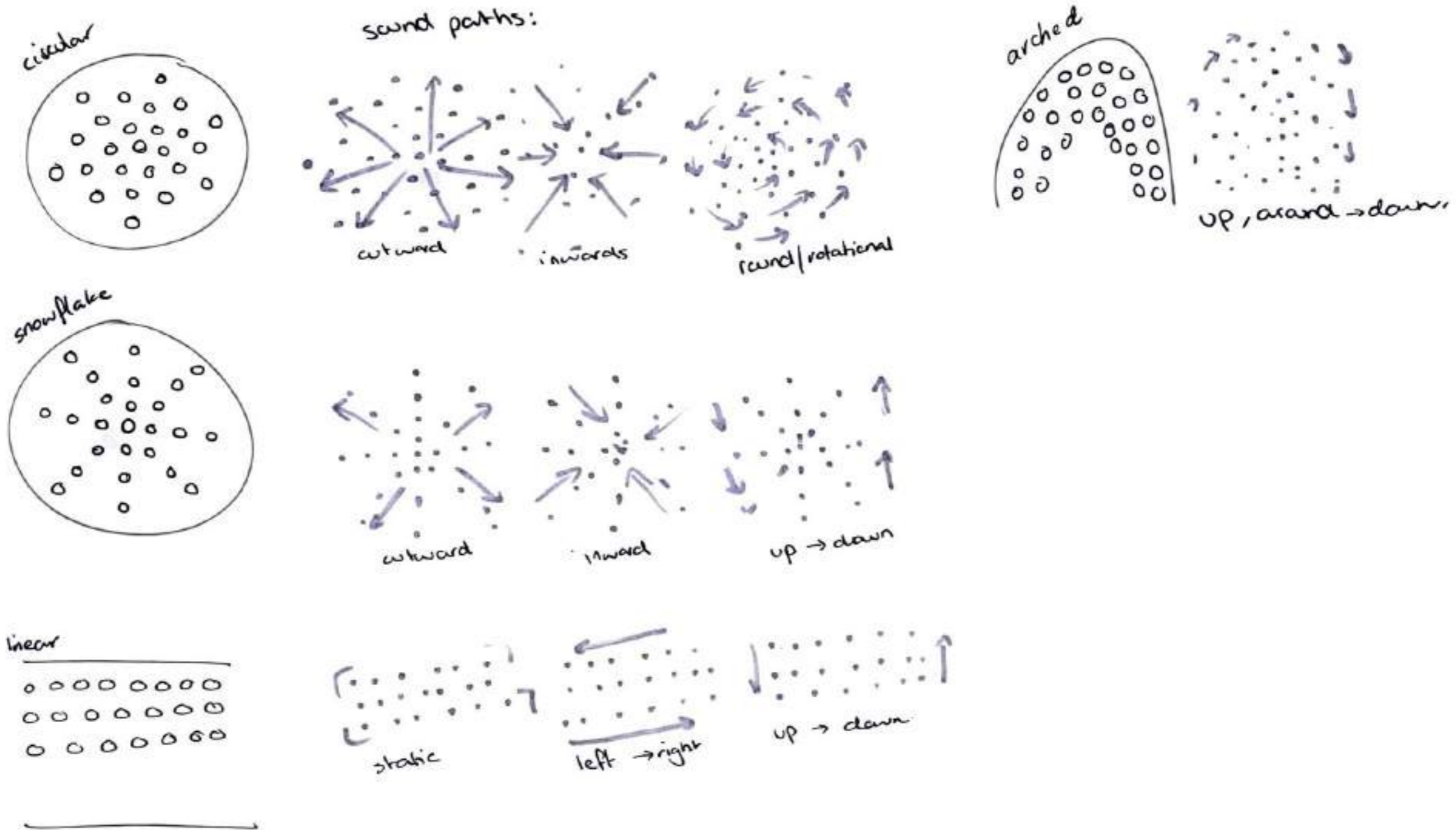
Concept Development

Tech-integrated Bedhead



Concept Development

Speaker Arrangement Ideation



Concept Development

Speaker Research

Using ChaptGPT to help filter information:

Could you please tell me what are the key components of a speaker that is designed to produce sound 3 dimensionally?

Multiple Drivers:

- » Tweeters (High Range Frequencies)
- » Mid-range Drivers (Mid-range Frequencies)
- » Woofers (Mid to Low Range Frequencies)
- » Subwoofers (Low Range Frequencies)

Crossover Design:

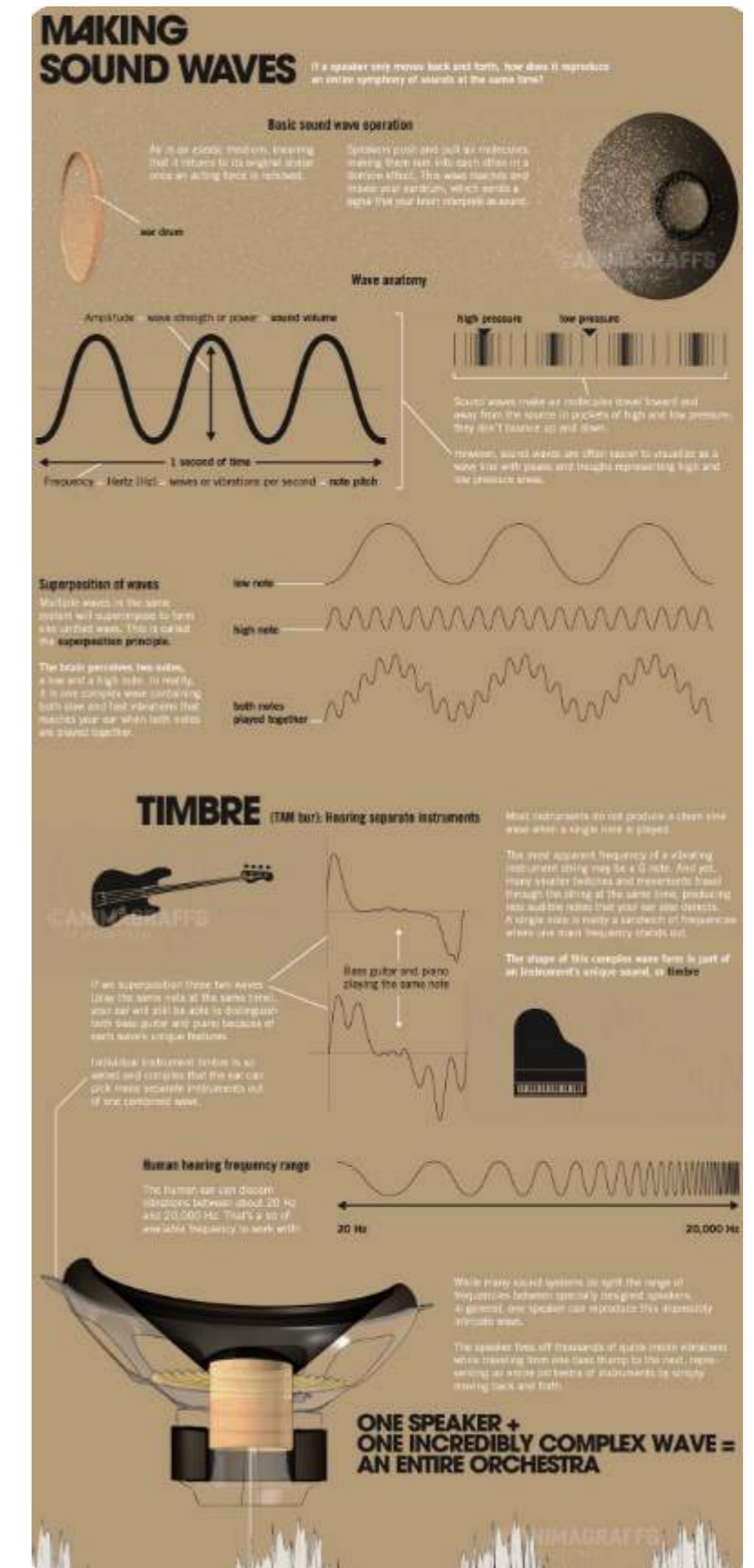
- » Use appropriate crossover frequencies to direct sound to the correct drivers
- » Subwoofer Crossover- Typically set around 80 Hz to 120 Hz, allowing only low frequencies to reach the subwoofer.
- » Woofer and Mid-Range Crossover- Set the crossover between the woofer and mid-range drivers around 200 Hz to 500 Hz.
- » Mid-Range and Tweeter Crossover- Set between 2,000 Hz and 5,000 Hz for optimal clarity and detail in the high frequencies.

Placement:

- » Upward firing speakers to create height channels
- » Front speakers should be slightly angled towards the listening area
- » Surround speakers placed at ear level or slightly above, positioned to the sides and behind the listener

Speaker Enclosure:

- » Speaker box is necessary to aid with the projection of sound from the speaker
- » Purpose is to contain the sound from a speaker, ensuring that it is projected in an efficient and balanced way
- » Different types of enclosures- infinite baffle, Sealed Enclosure, Bass Reflex Enclosure, Bandpass Enclosure Transmission Line Enclosure



Concept Development

Speaker Research



HomePod mini

A\$149

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Surprising sound for its size

Full-range driver

Dual force-cancelling passive radiators

—

—

Stereo pair-capable²

Multiroom audio¹

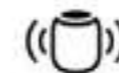


HomePod

A\$479

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[Learn more >](#)



Immersive, high-fidelity audio

High-excursion woofer

Five beamforming tweeter array

Spatial Audio[®]

Room sensing

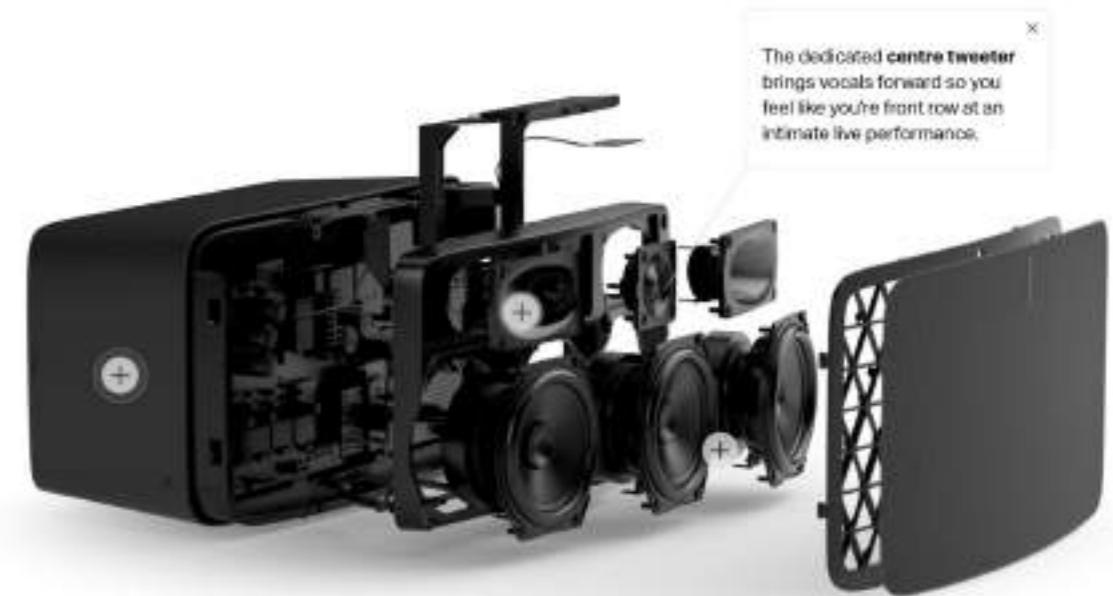
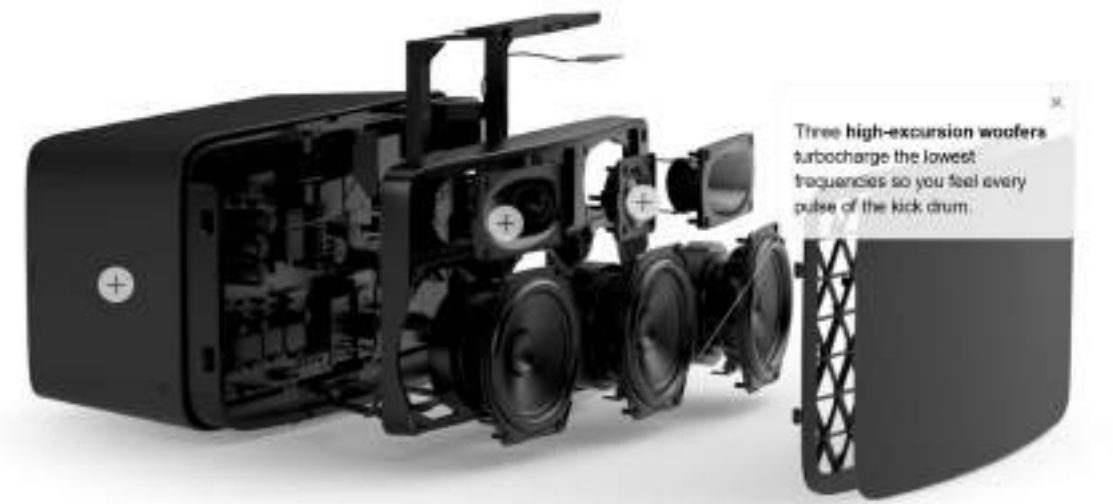
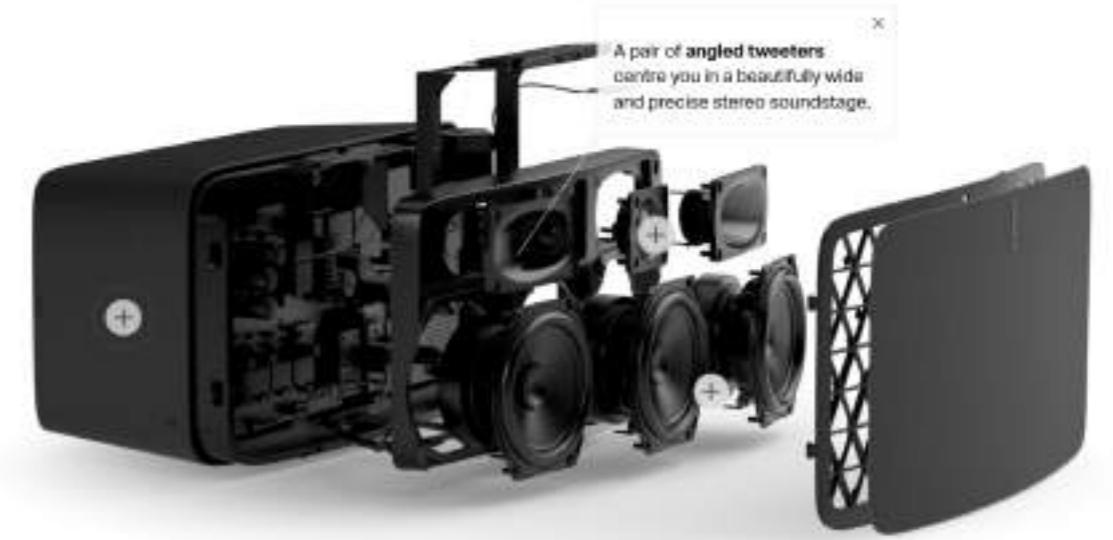
Stereo pair-capable²

Multiroom audio¹



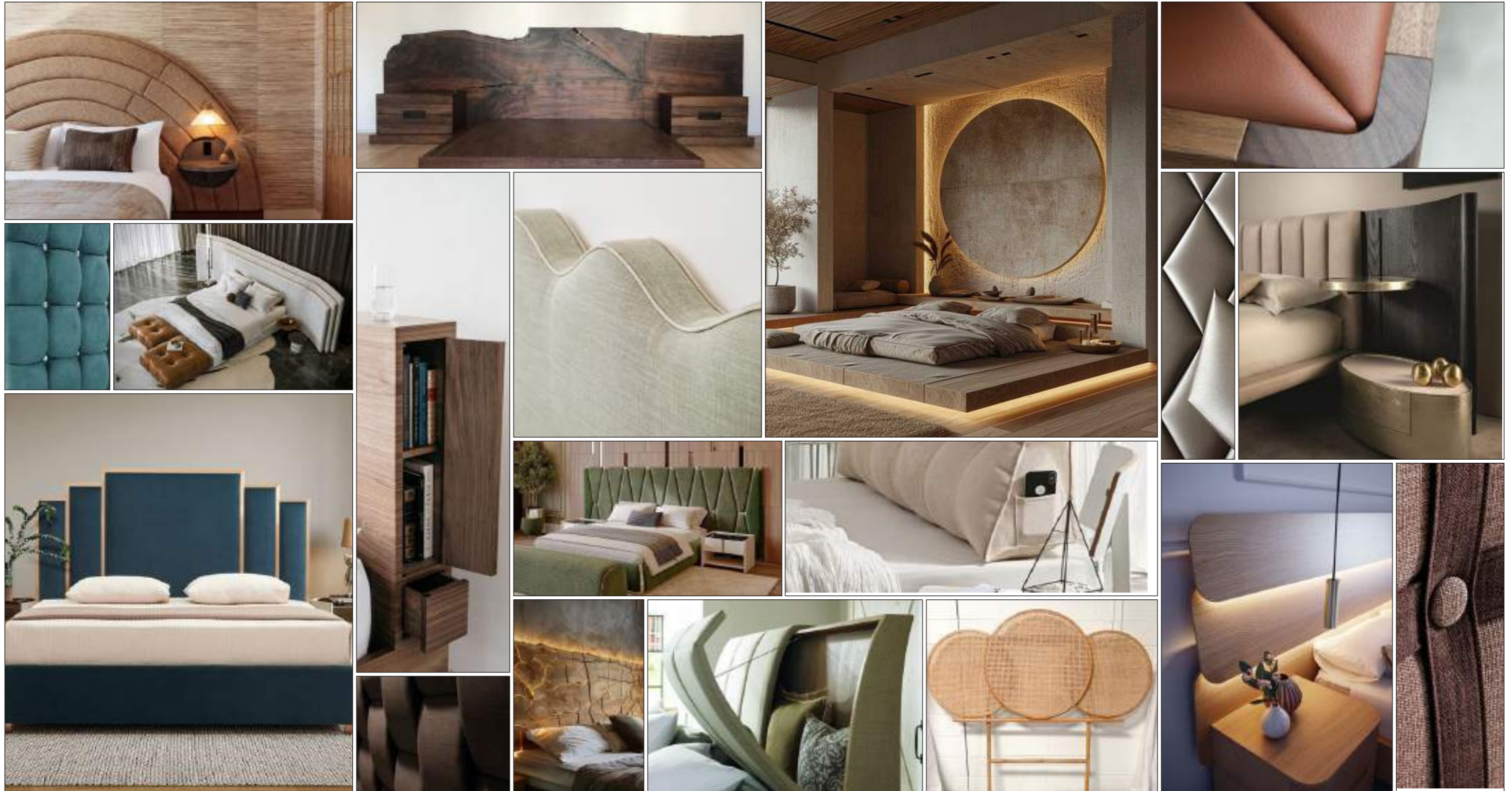
Concept Development

Speaker Research



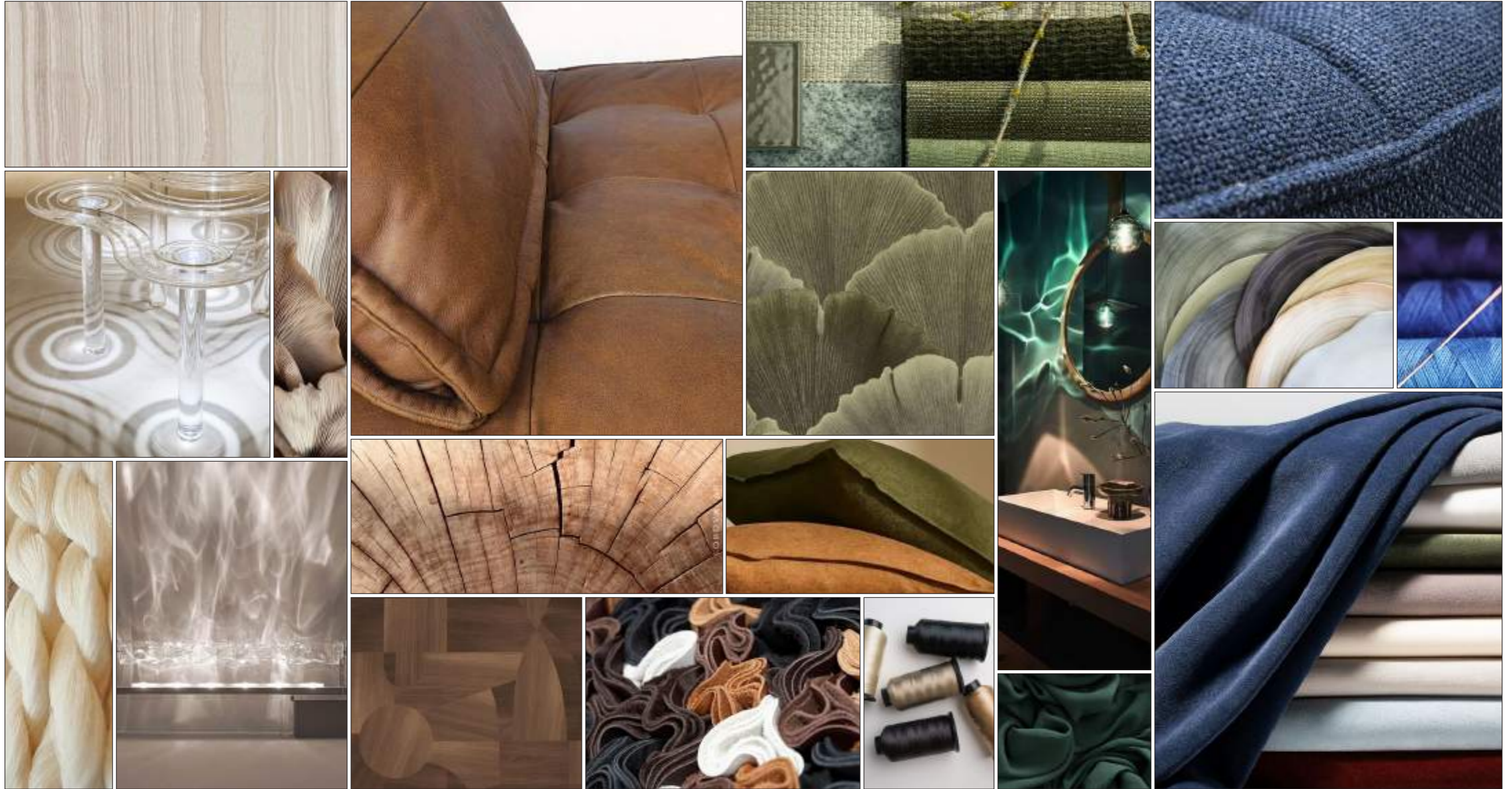
Moodboard

Bedhead Design



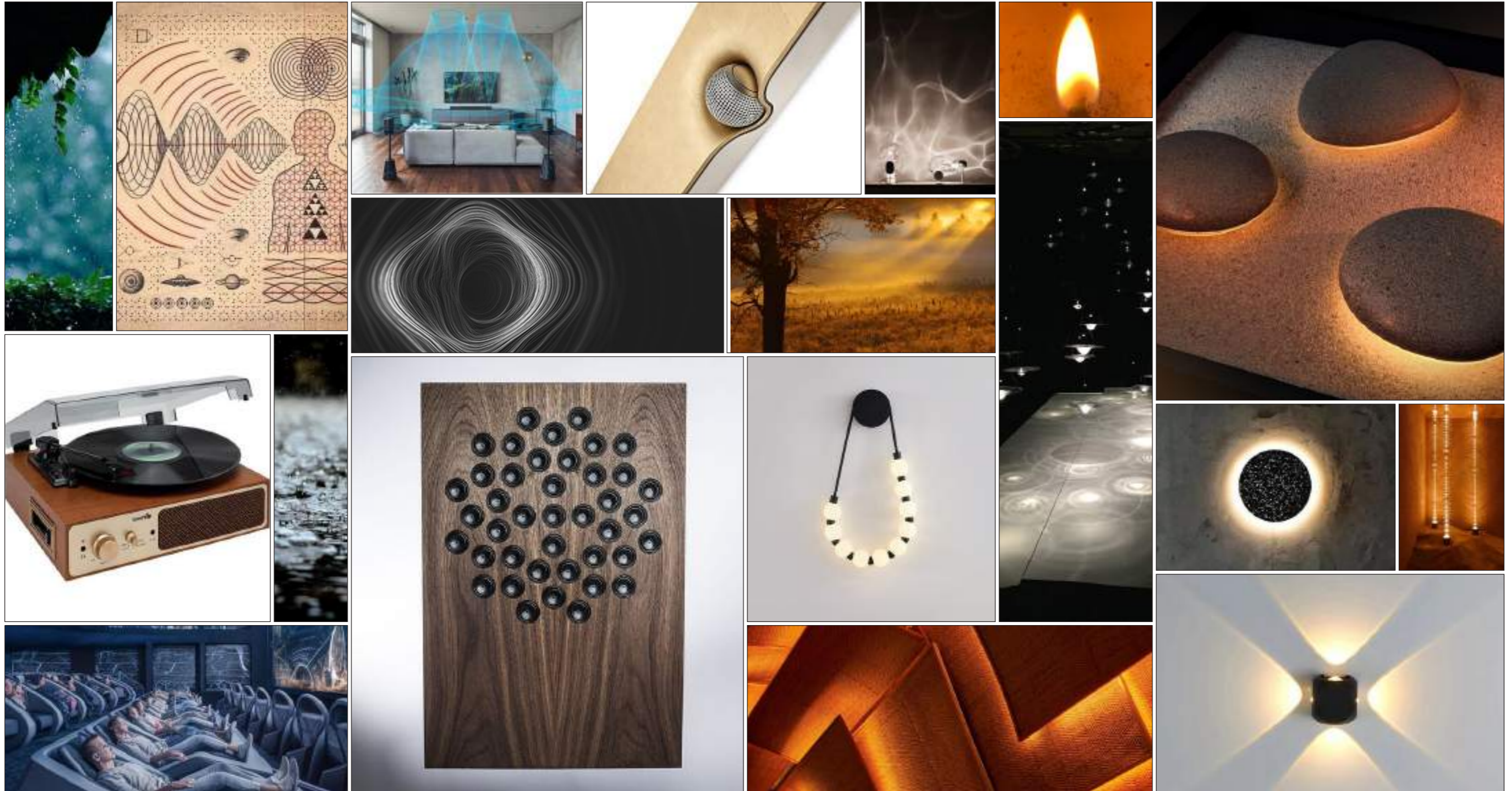
Moodboard

Colour, Material, Finish



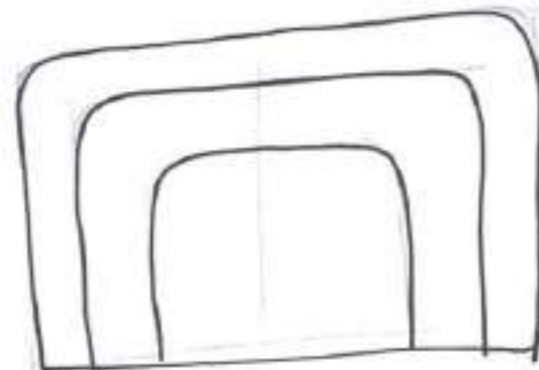
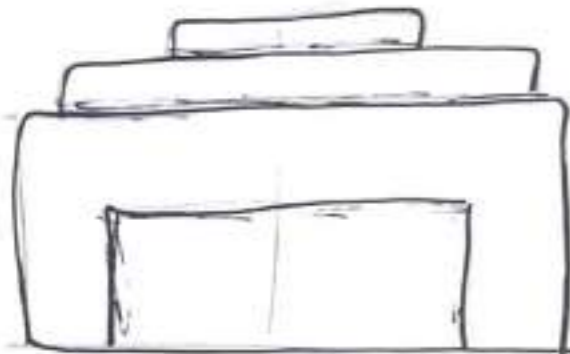
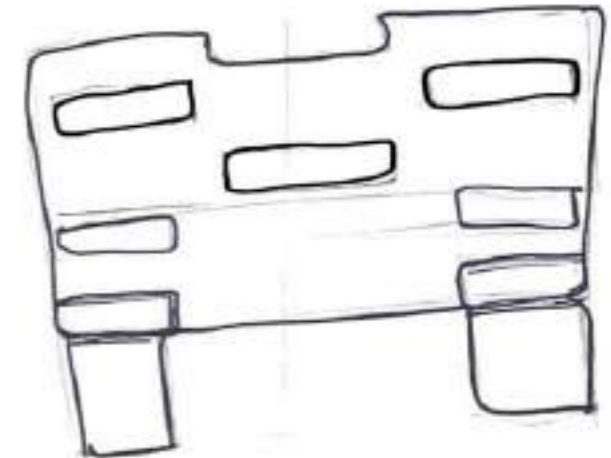
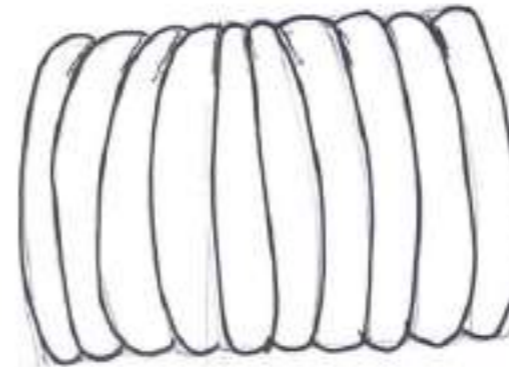
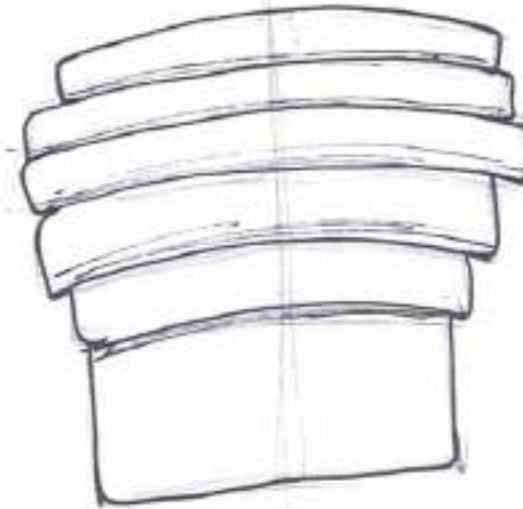
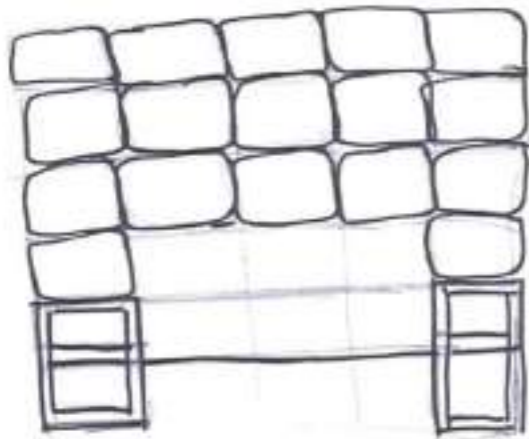
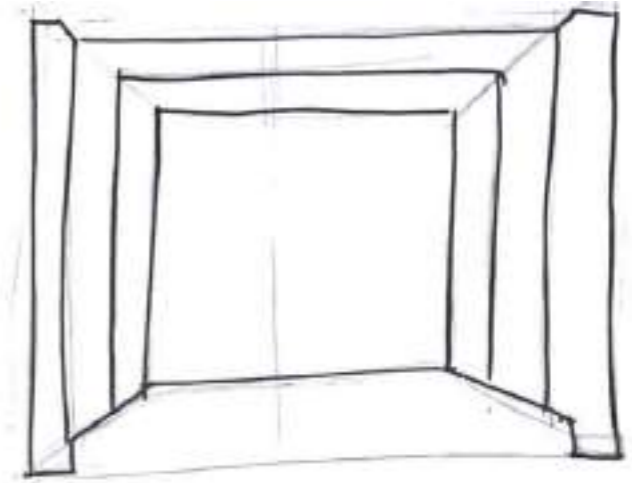
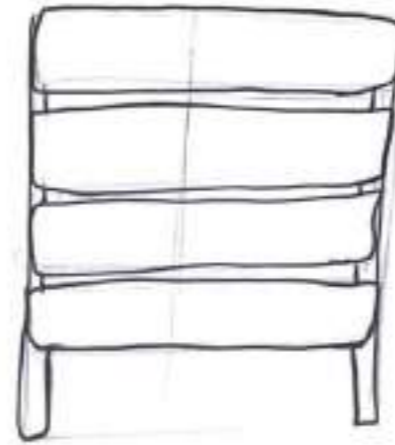
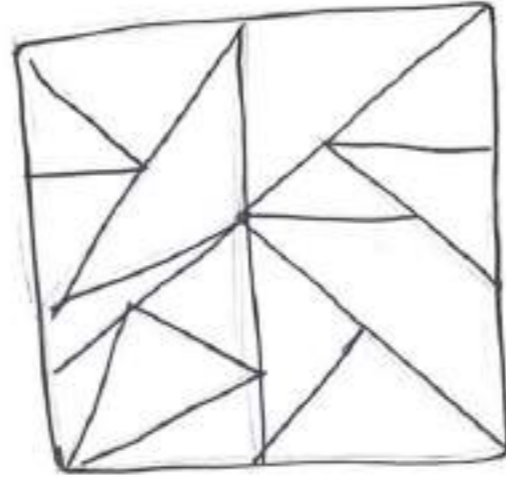
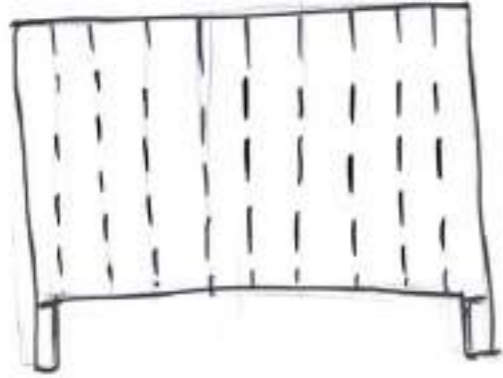
Moodboard

Light and Sound



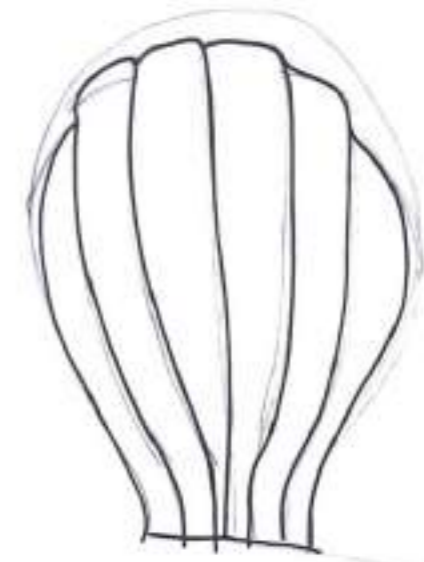
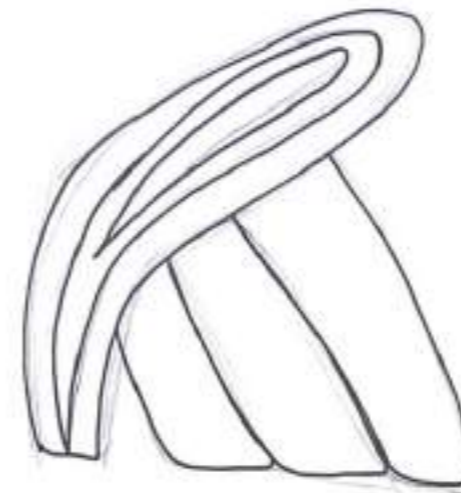
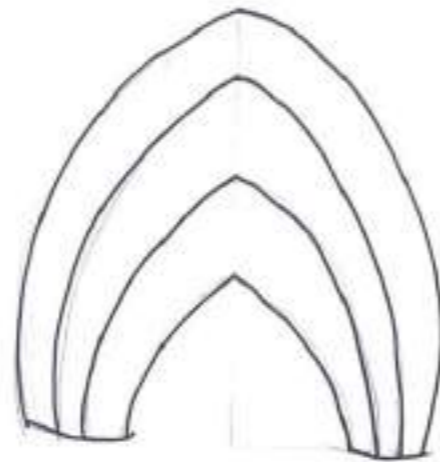
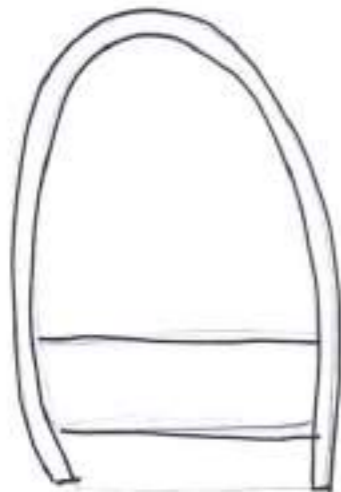
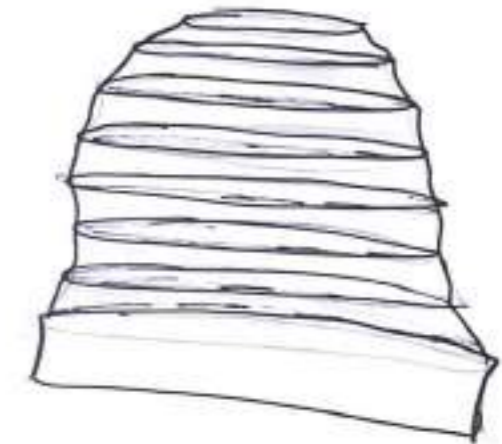
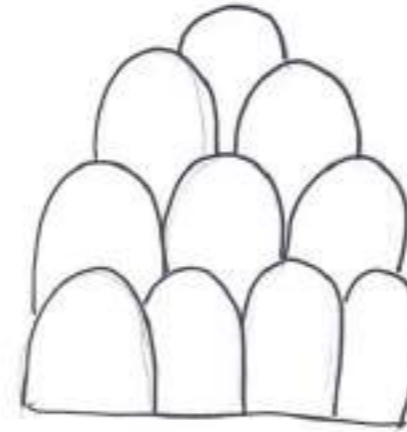
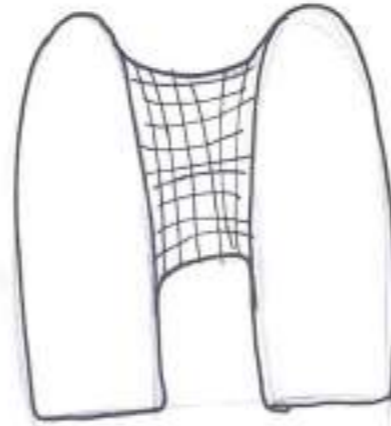
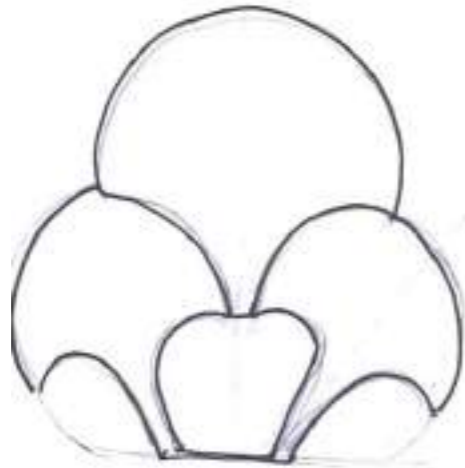
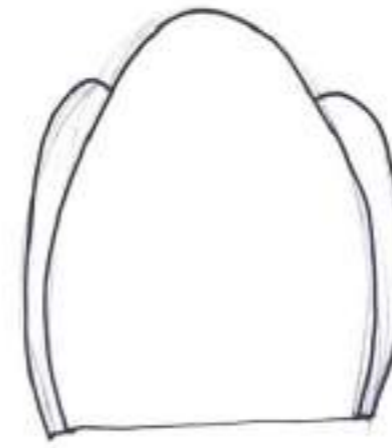
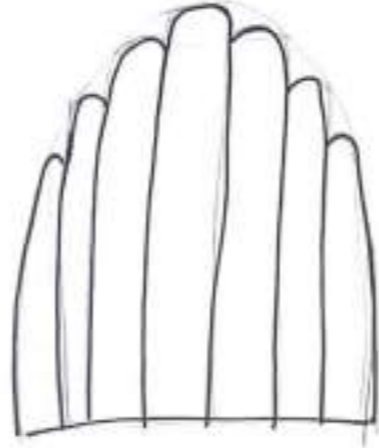
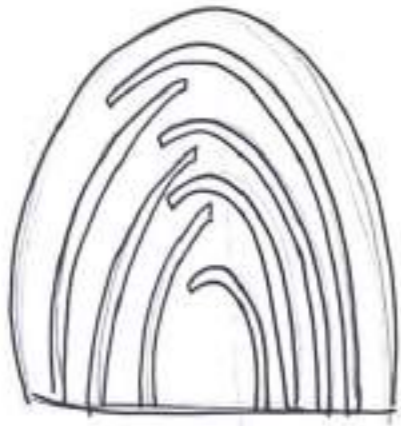
Form Ideation

Rectangular Form



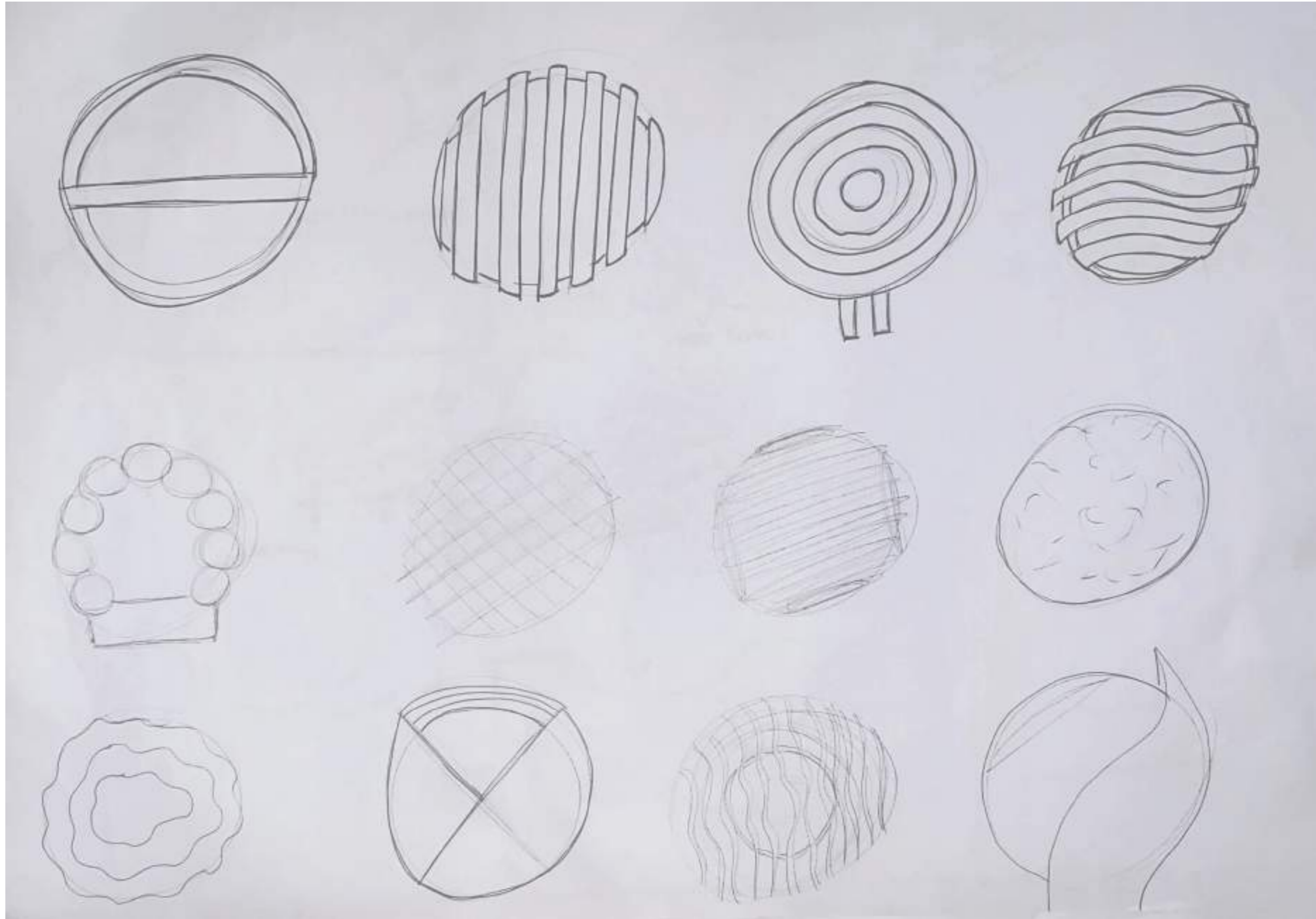
Form Ideation

Arched Form



Form Ideation

Circular Form



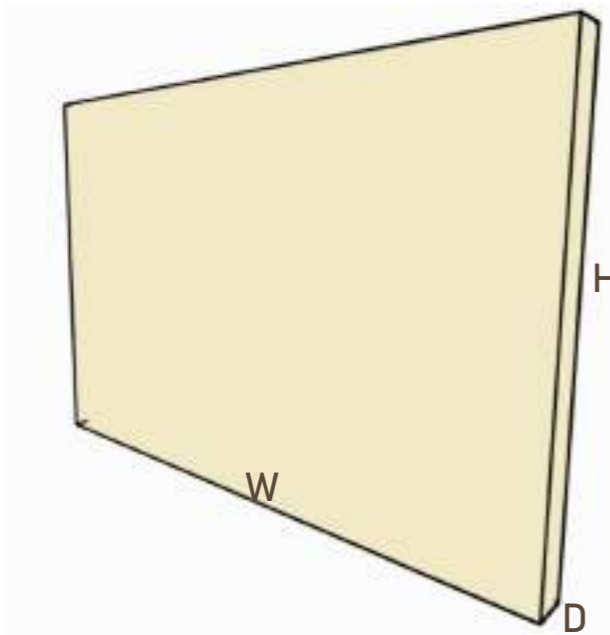
Bedhead Research

Sizing and Specs

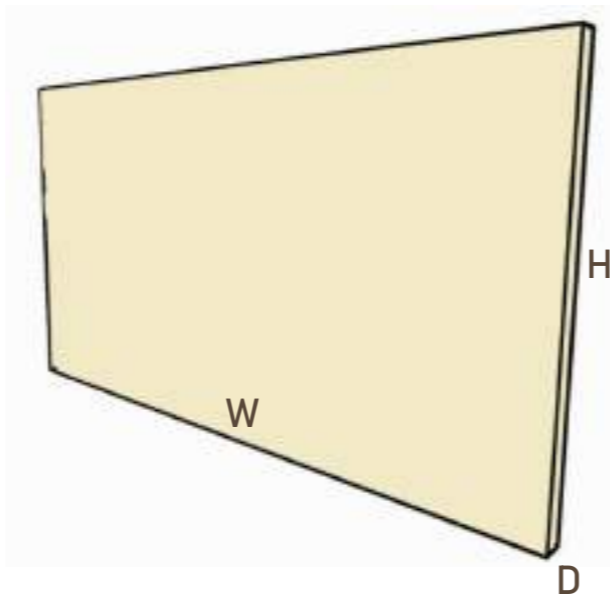
Queen Size Bed = 1520mm x 20230mm



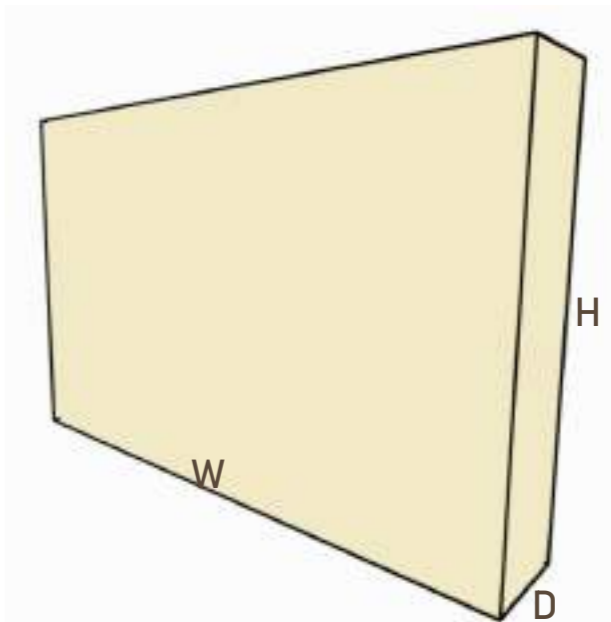
Name: Memphis Cream Boucle Bedhead
Brand: Adairs
Price: \$799.99
Dimensions: 1930mm (W) x 115mm (D) x 1320mm (H)
Materials: Pinewood, Plywood (Frame) Plastic Pads (Legs) Boucle, Polyester (Upholstery)



Name: Lucian Upholstered Bedhead
Brand: Temple & Webster
Price: \$139.99
Dimensions: 910mm (H) x 1600mm (W) x 55mm (D)
Materials: Pinewood (Frame), Polyester (Upholstery), High Density Foam (Padding)



Name: Cordette Queen Bedhead
Brand: Fantastic Furniture
Price: \$499
Dimensions: W 1770mm x D 290mm x H 1160mm
Materials: Pine timber, MDF (Frame), Polyester (Upholstery)



Prototyping

Realising Form

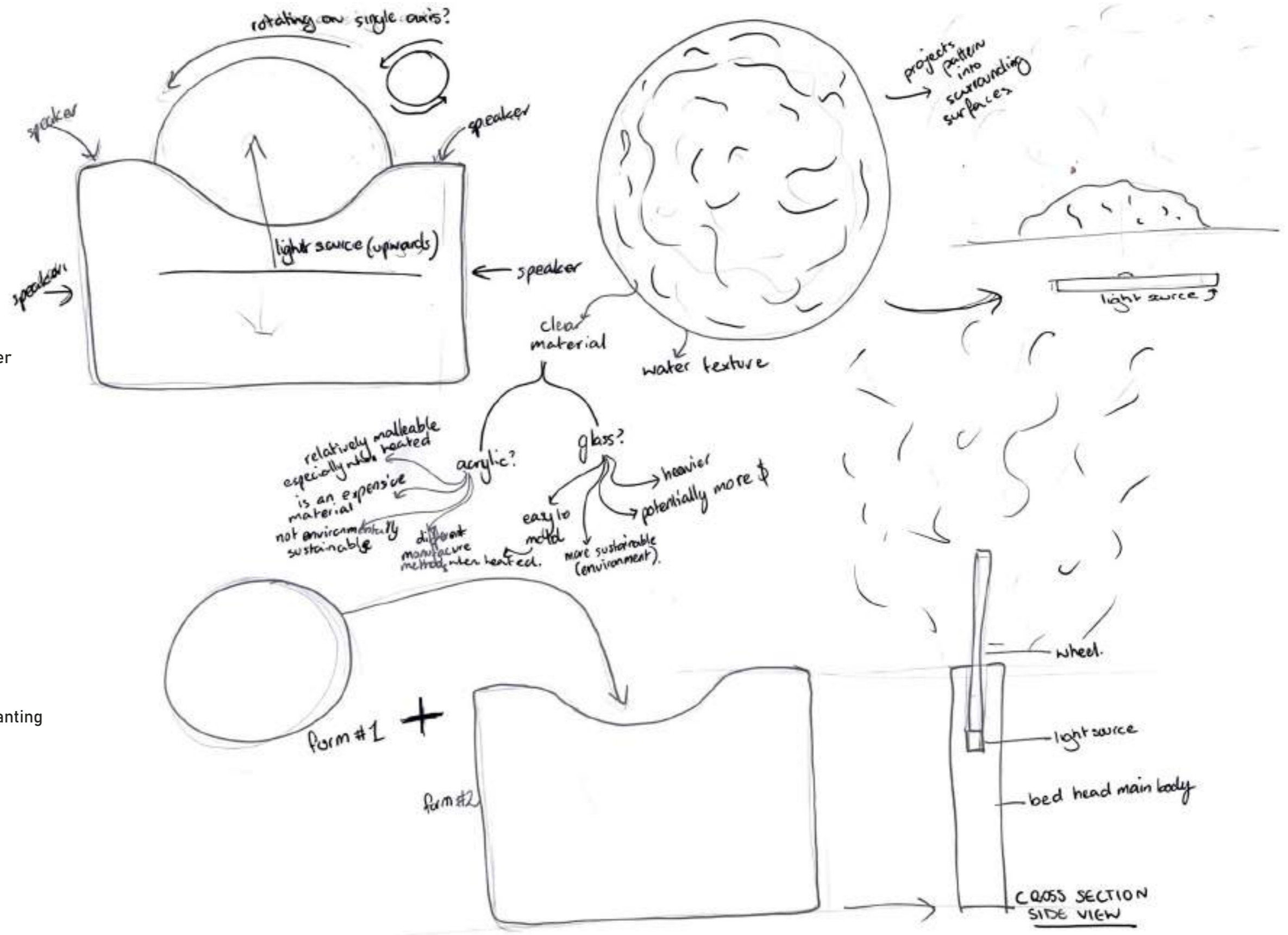


Inspired by the form of a record player
What if it was vertical?



Water texture with light has an enchanting
 and immersive visual experience

What if it can help relieve anxiety?



Prototyping

Understanding Dimensions



To visualise the acrylic disc on a 1:1 scale, measurements were placed along a Queen size bed - the reference size for this project.

The first was tested at the initial size 1000mm Diameter.
Compared to a standard QB, it looked out of place and too large.

This size would also be impractical for manufacture and to carry.

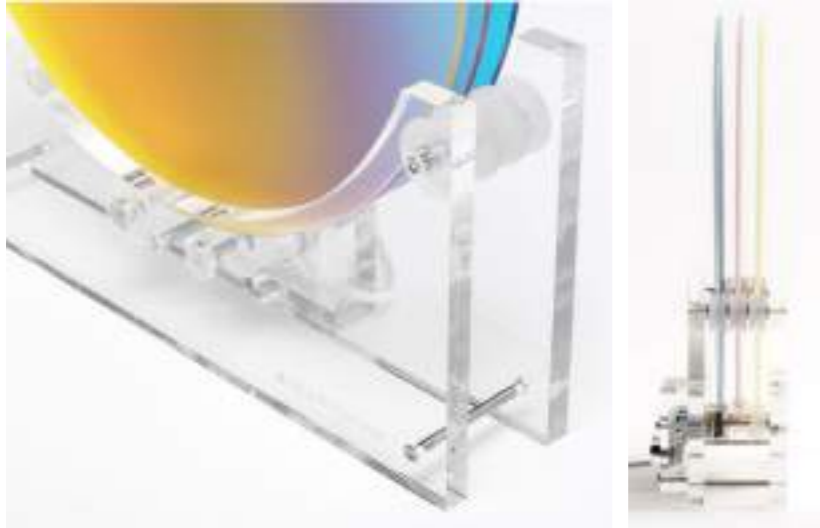


At 600mm Diameter, it was still large enough to create a stand out visual but small enough that it doesn't detract away from the rest of the bed head.

At this size, it would be easier to carry and cost less to manufacture.

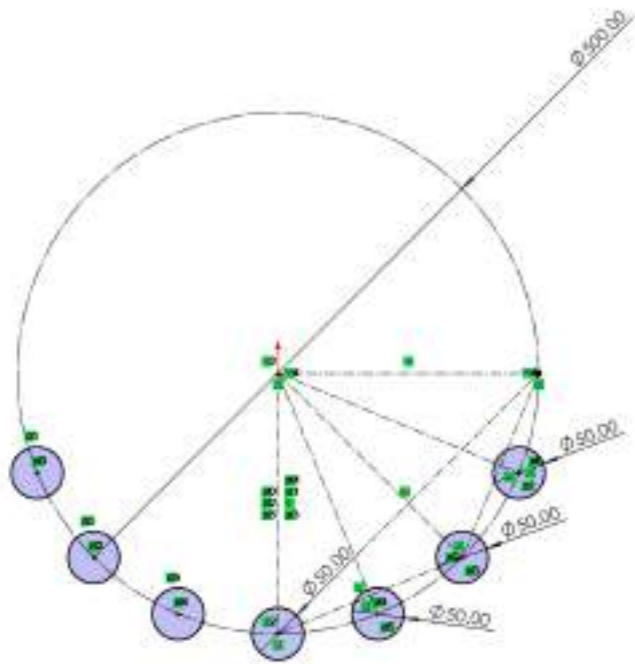
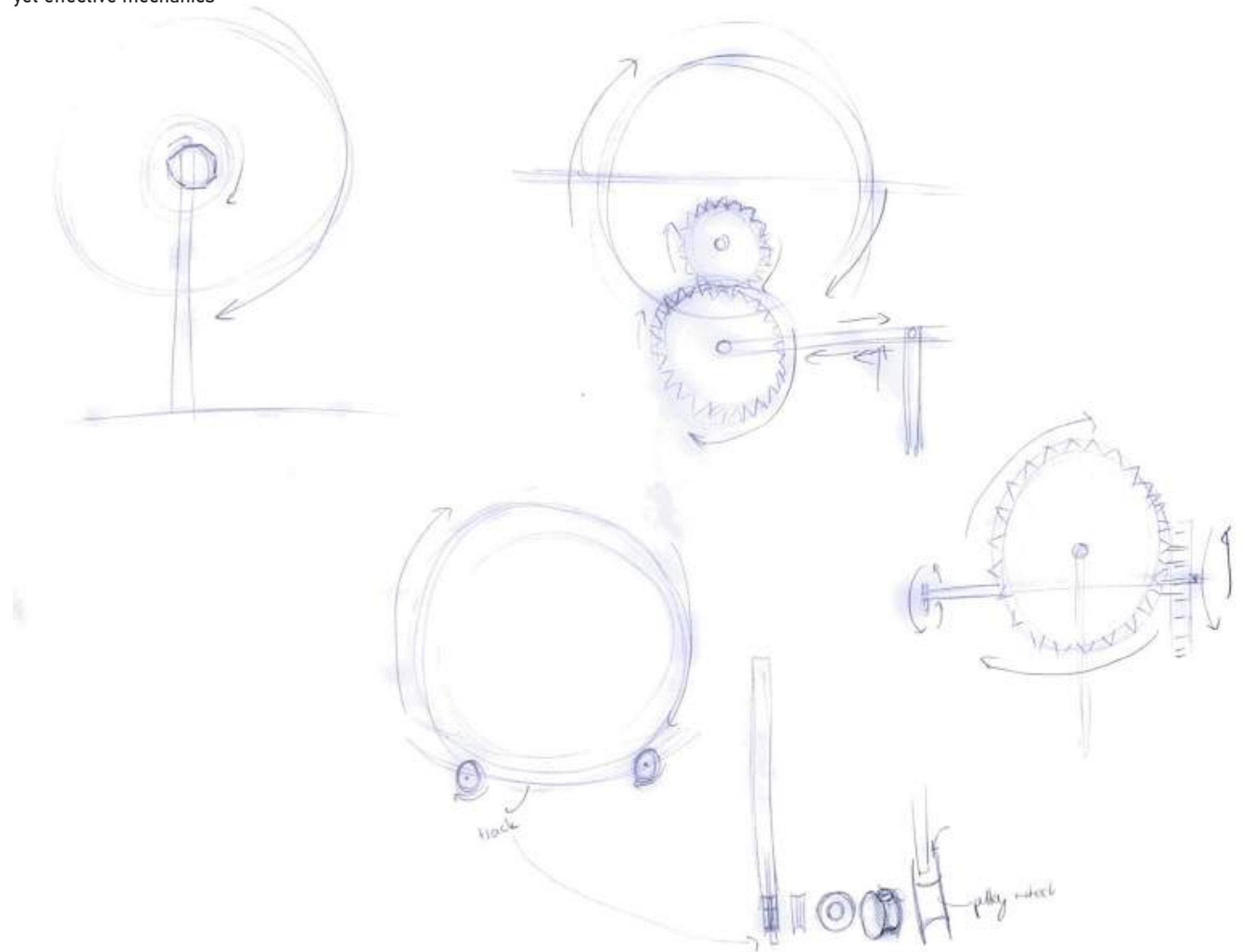
Prototyping

Investigating Rotational Movement



Disc could spin on a pulley wheel system - powered by a single motor

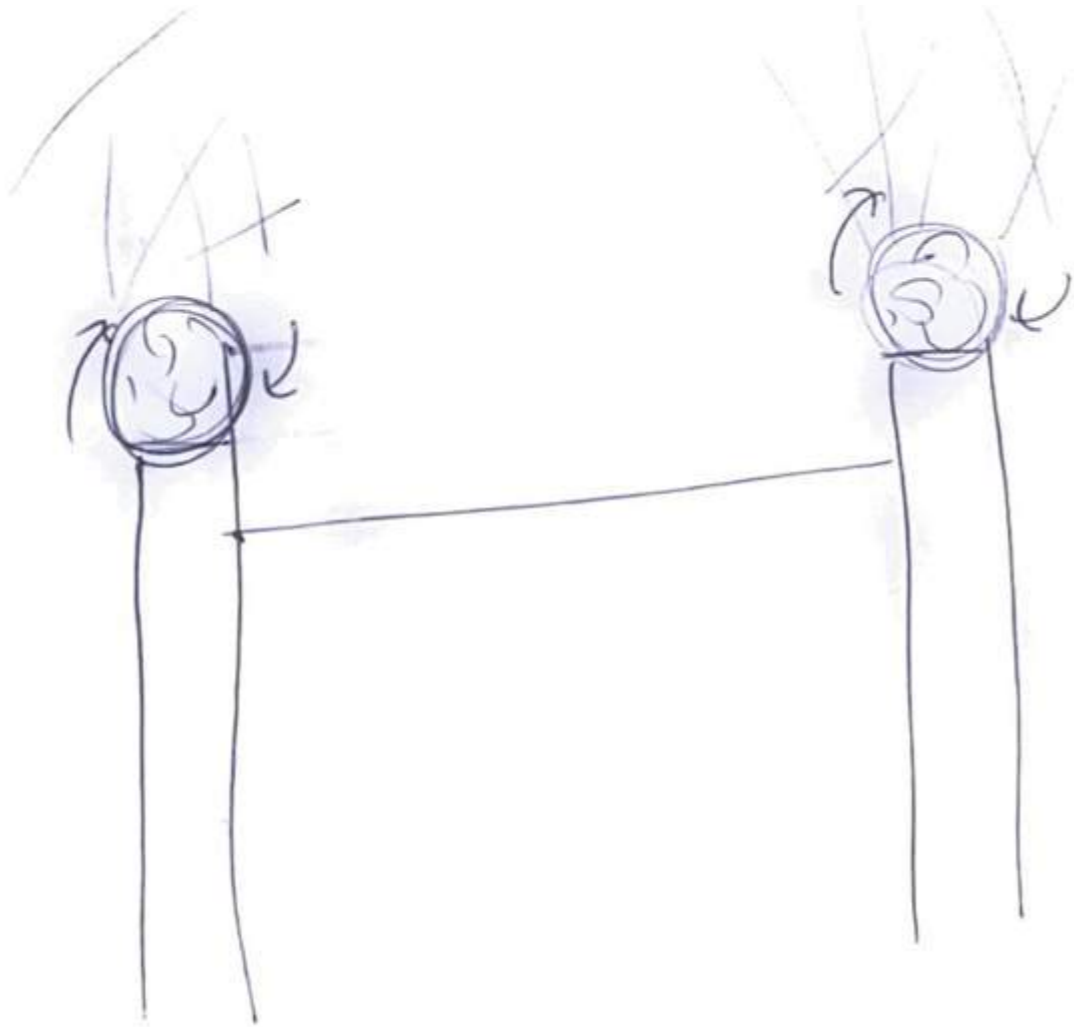
Ideating ways for the mechanism to work - looking into simple yet effective mechanics



Demonstration of layout of each pulley wheel

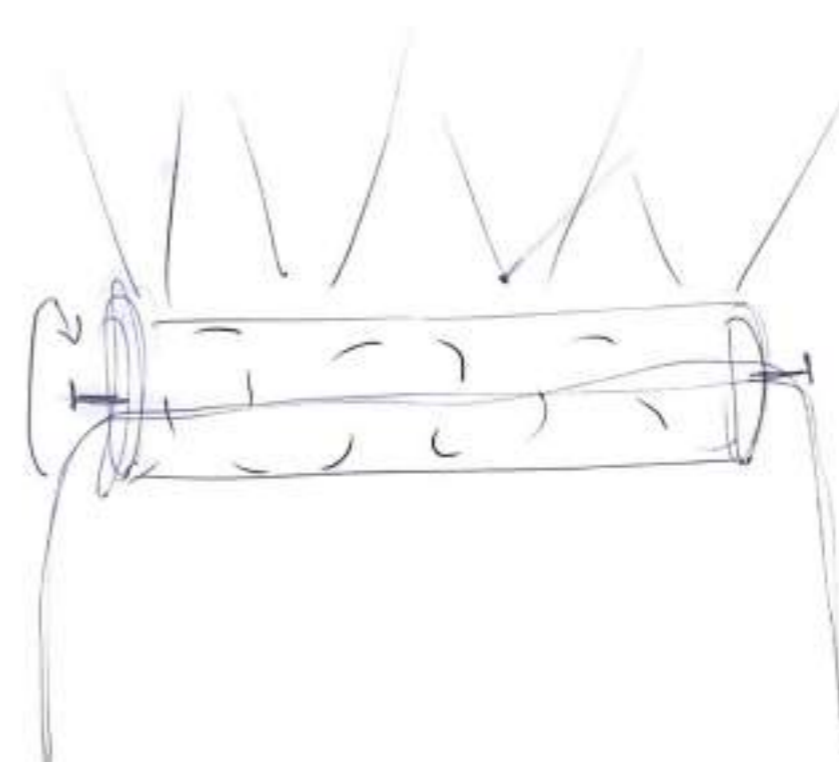
Alternative Acrylic Forms

User Interaction and feedback

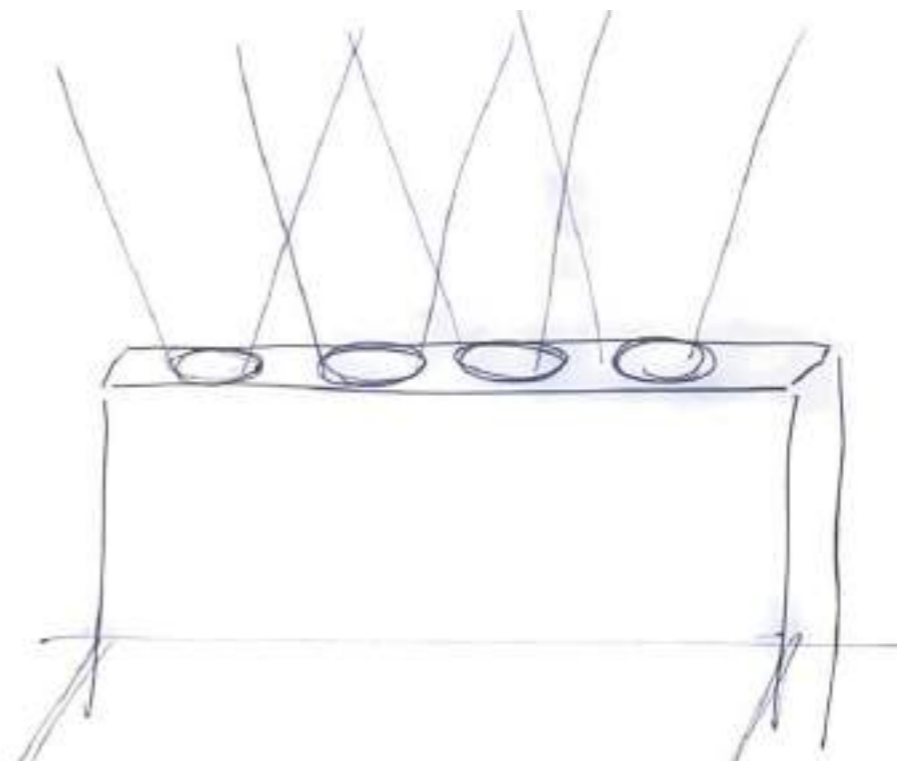


Really liked the globes but thought it might be too distracting when trying to fall asleep

Ultimately, the End User preferred the larger singular disc compared to alternate form. As such, it was decided to move ahead with this.



Wasn't the biggest fan - thought it would make the form a little boring and potentially chunky

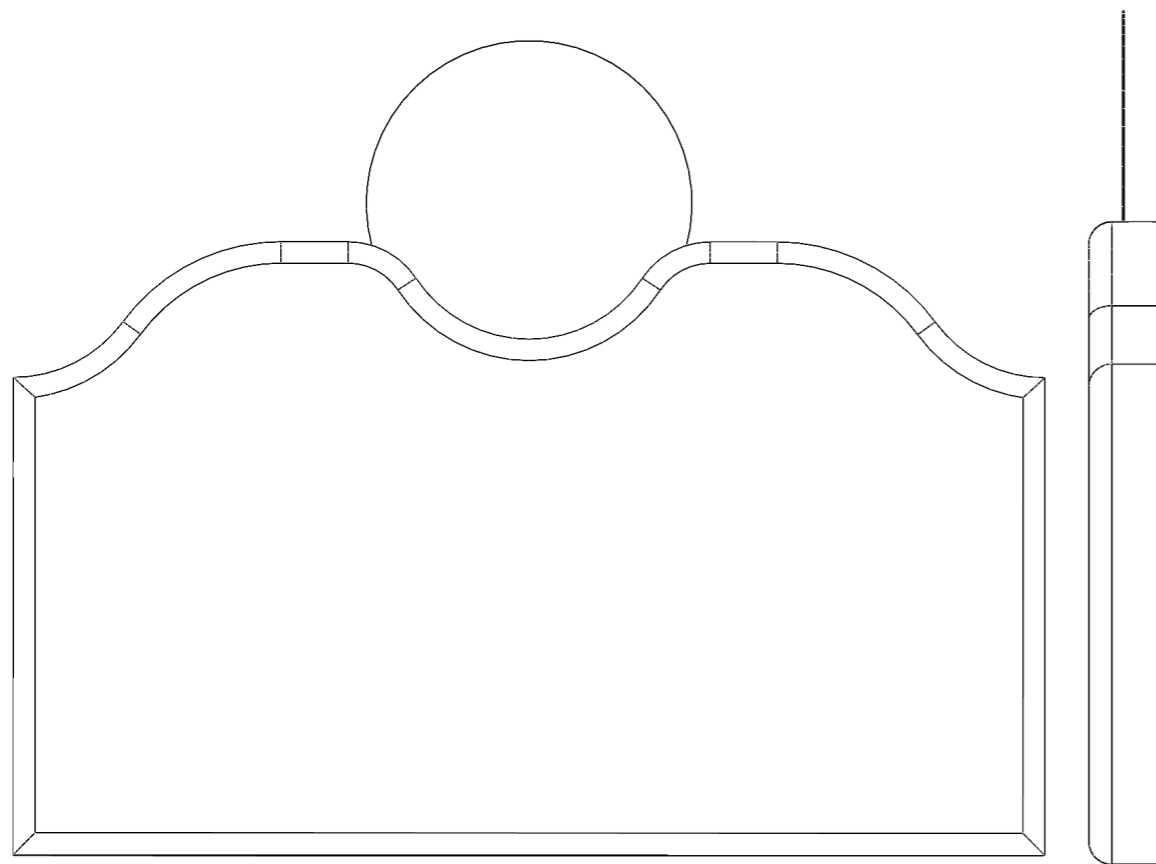
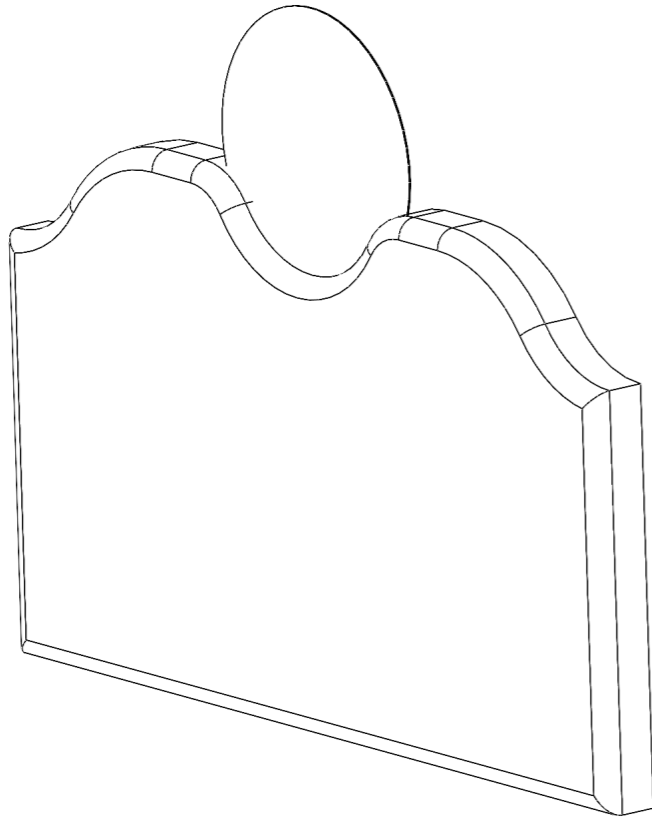


Also liked the mini discs but much preferred the singular disc. Was concerned about hearing the motors as there would be more than one

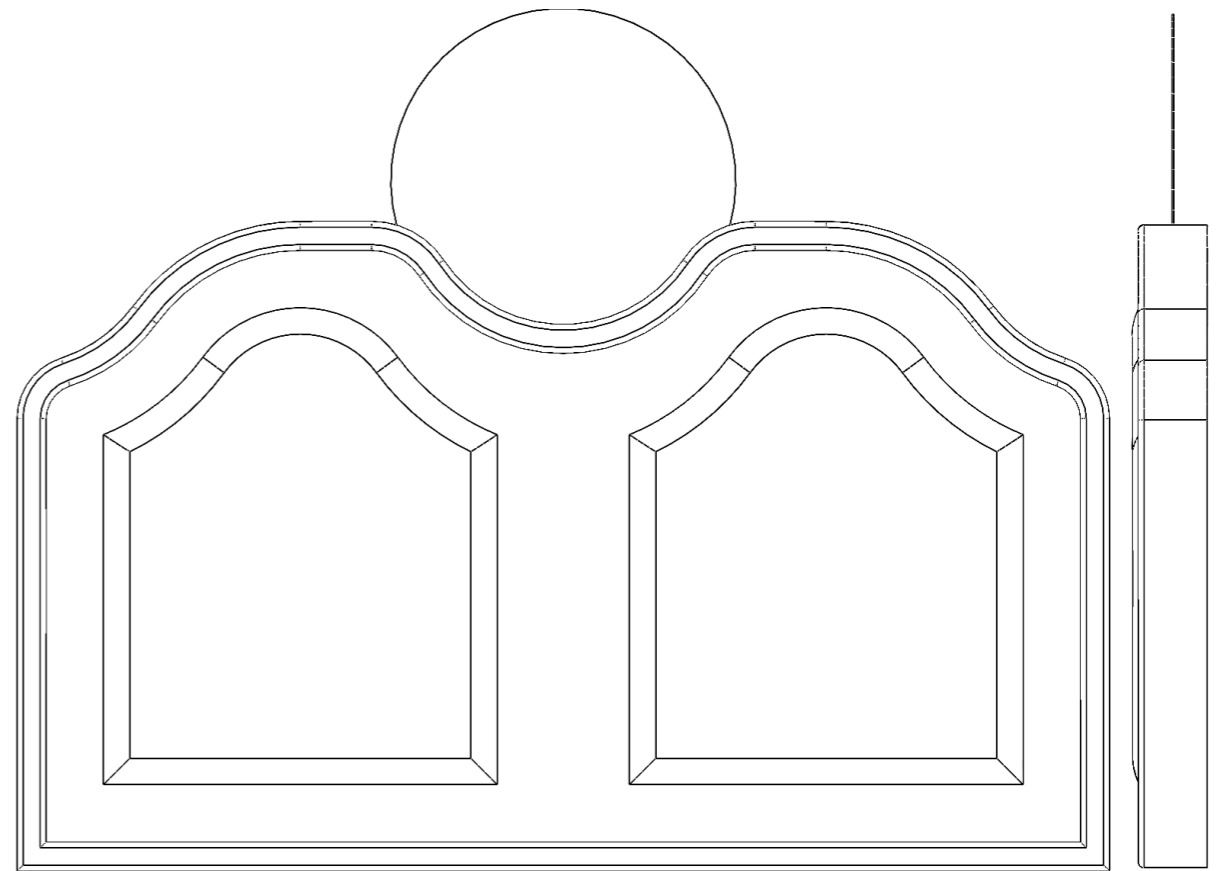
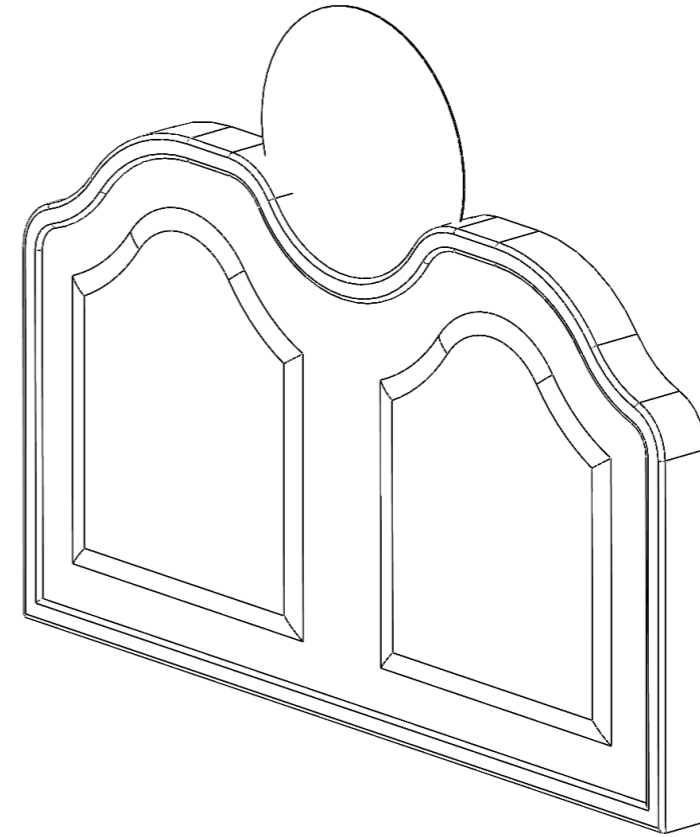
Prototyping

CAD Form Iterations

1.



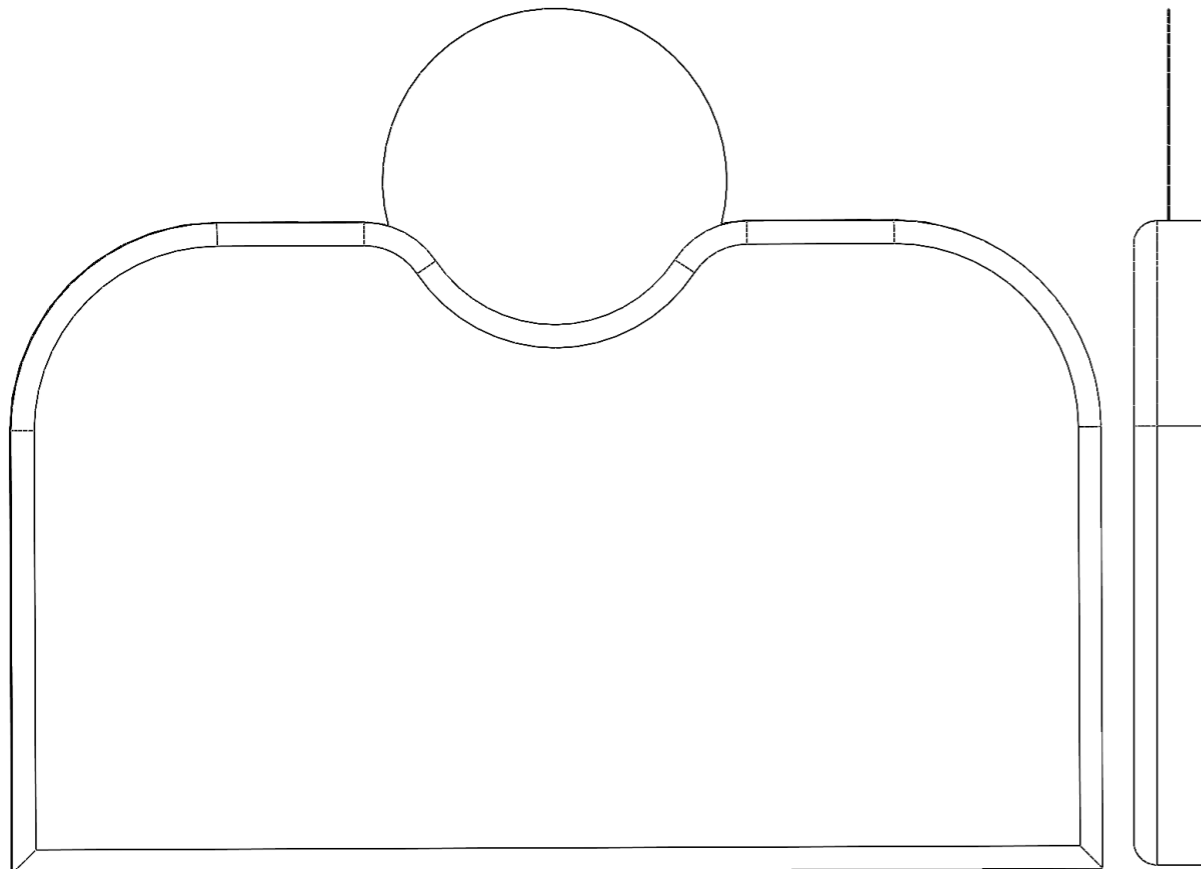
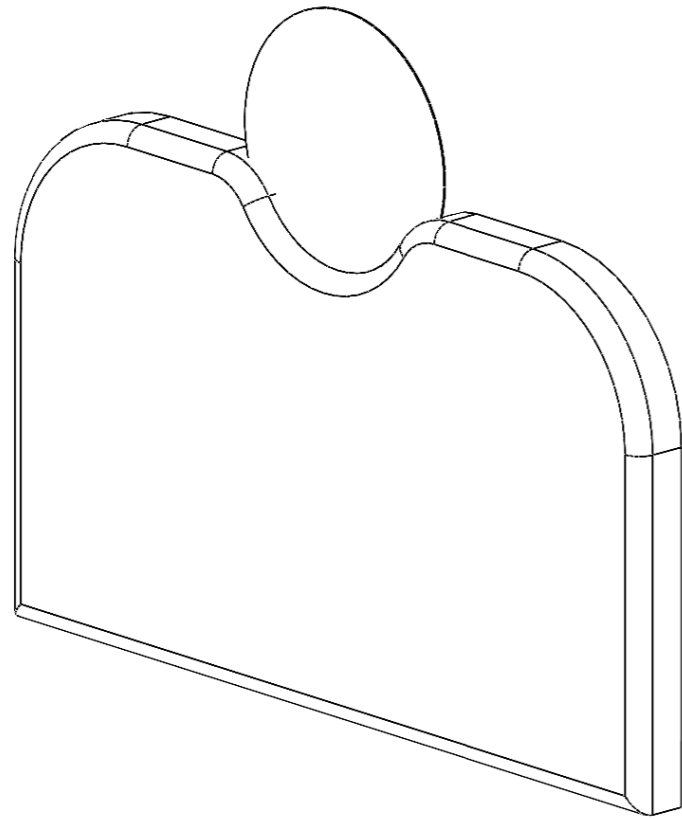
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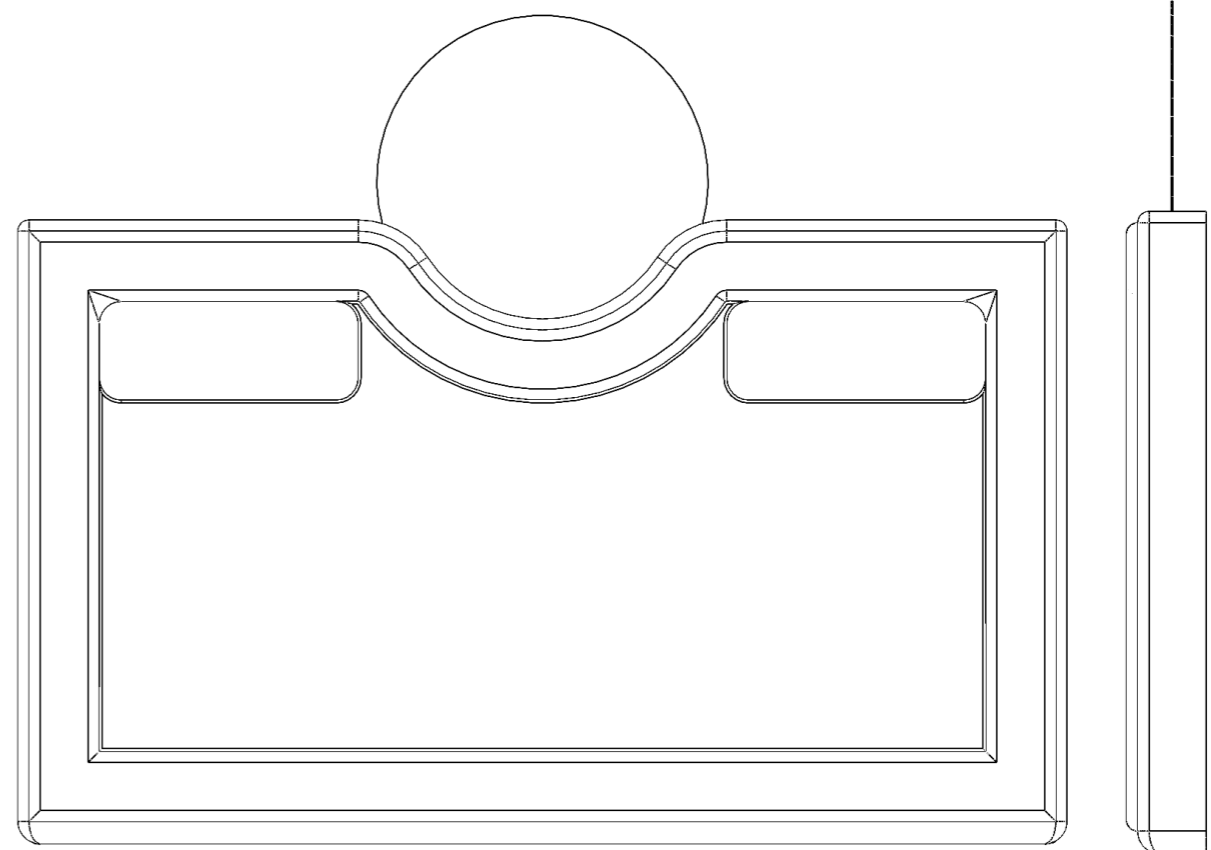
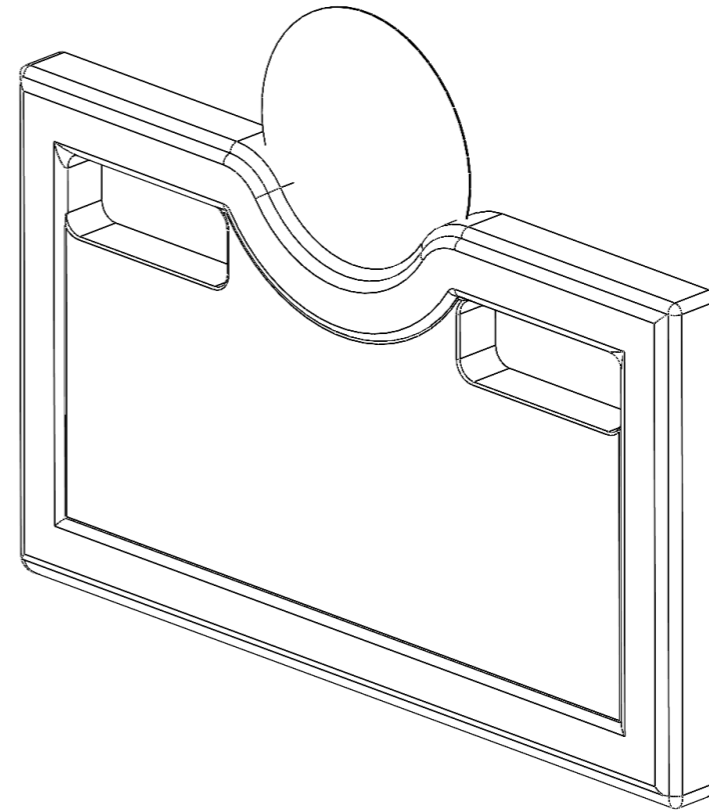
Prototyping

CAD Form Iterations

3.



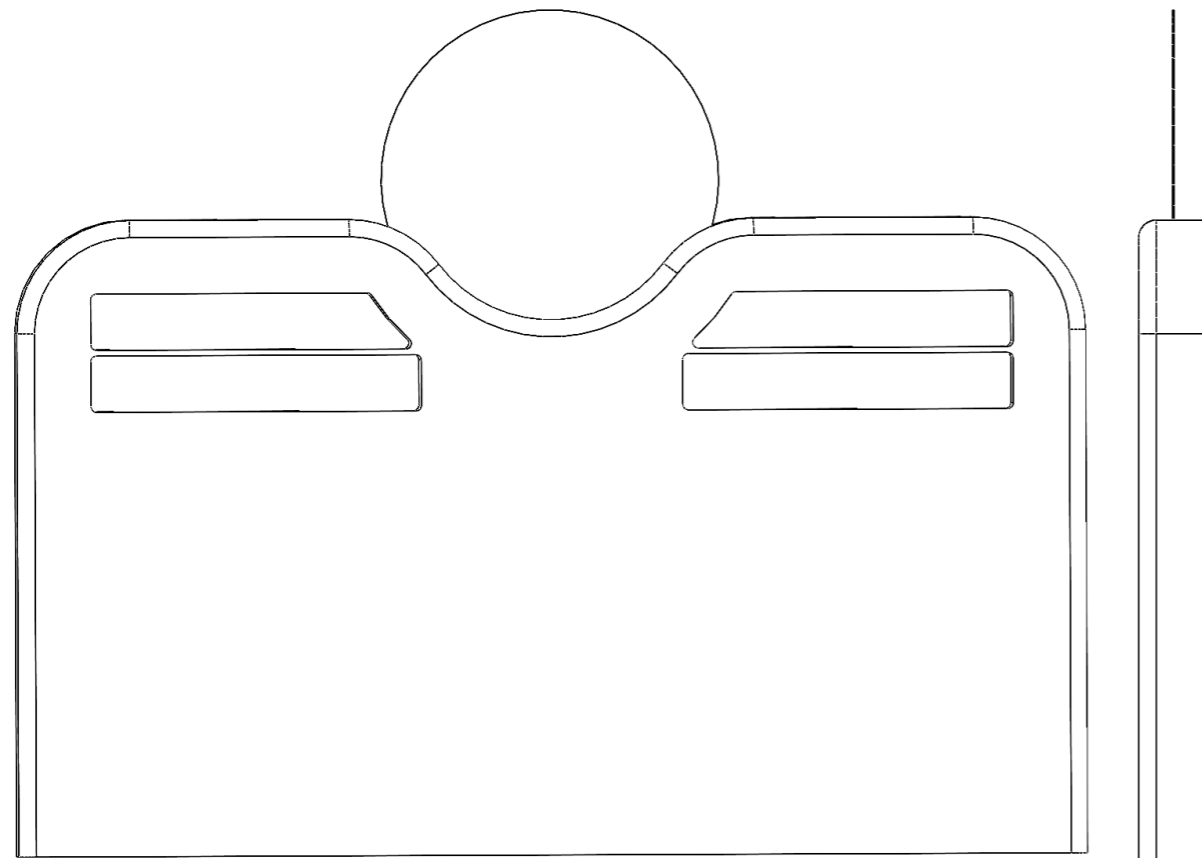
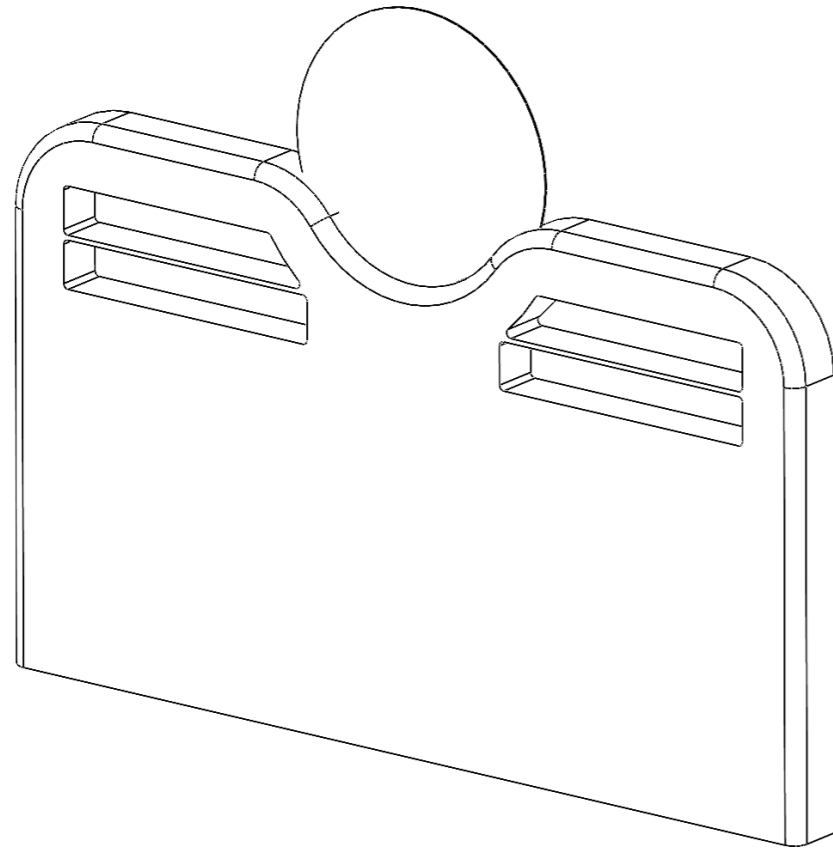
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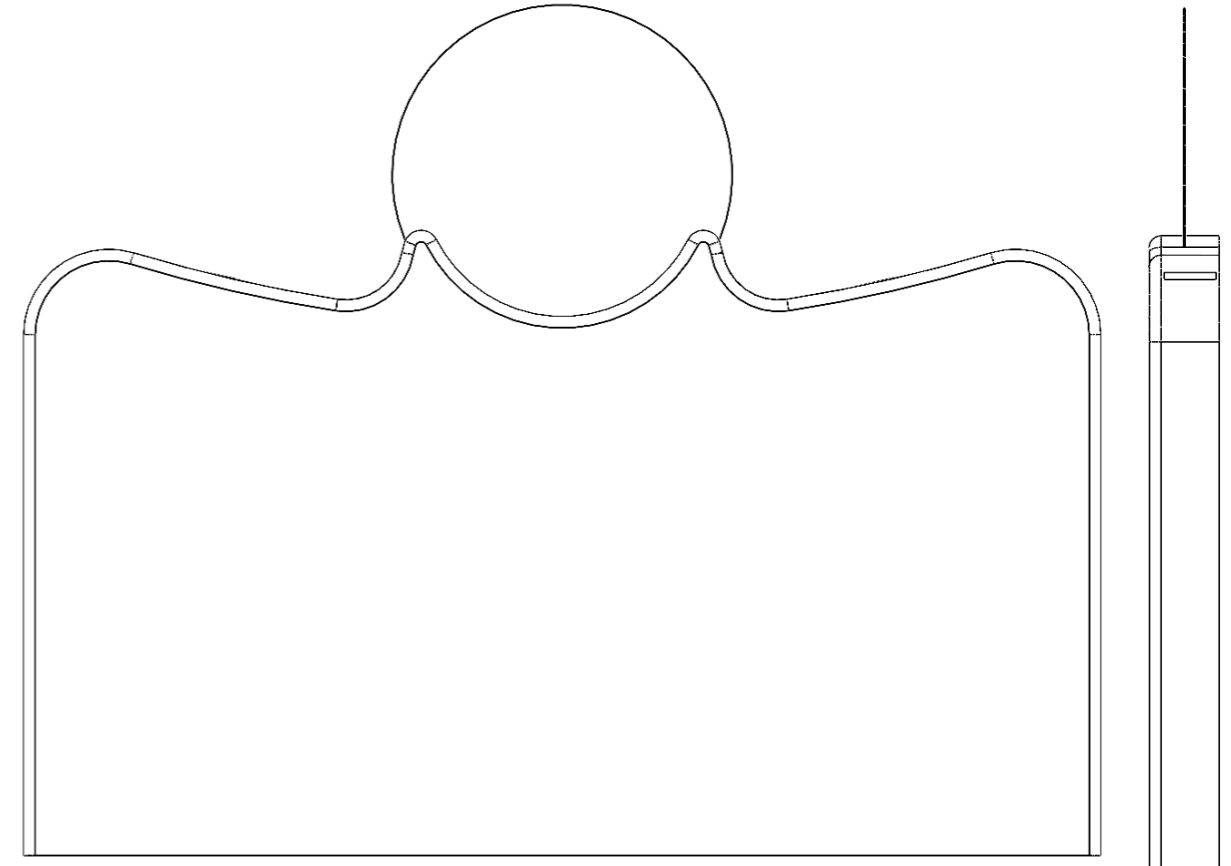
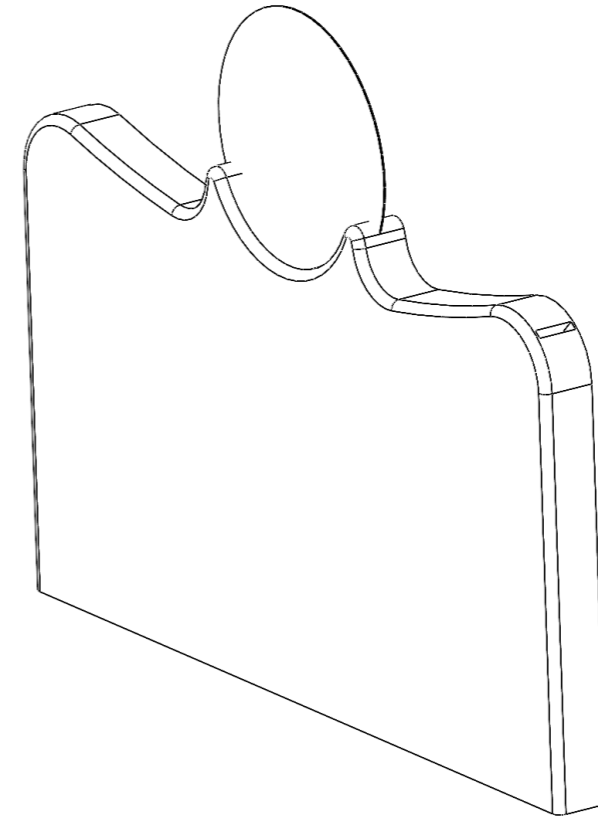
Prototyping

CAD Form Iterations

5.



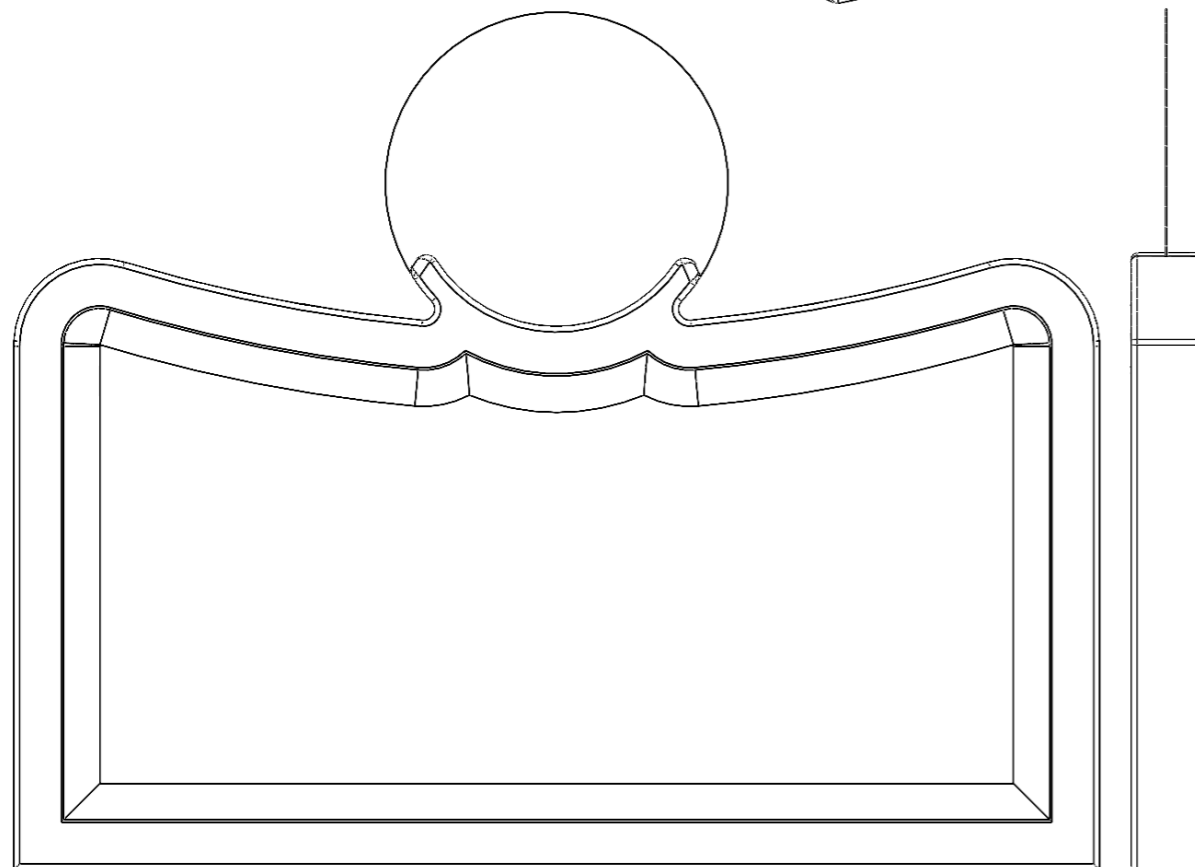
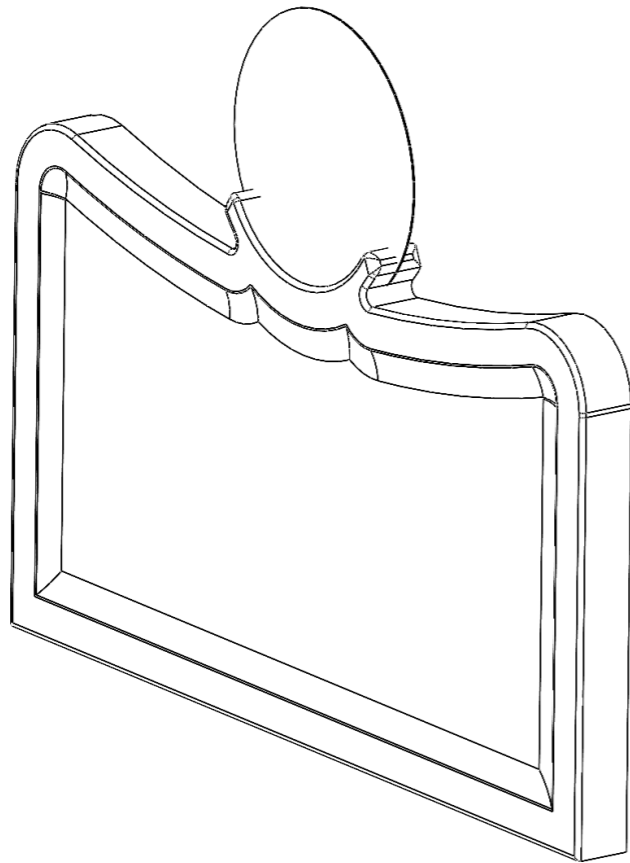
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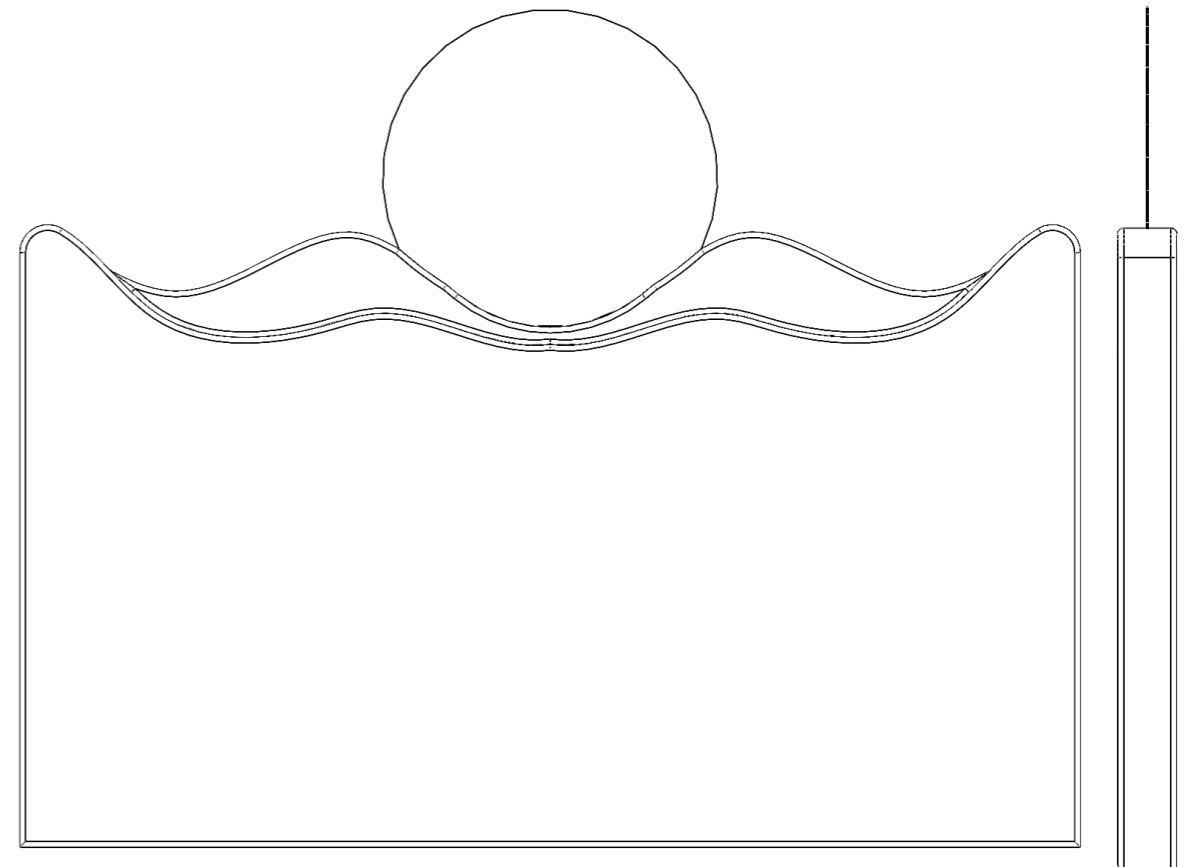
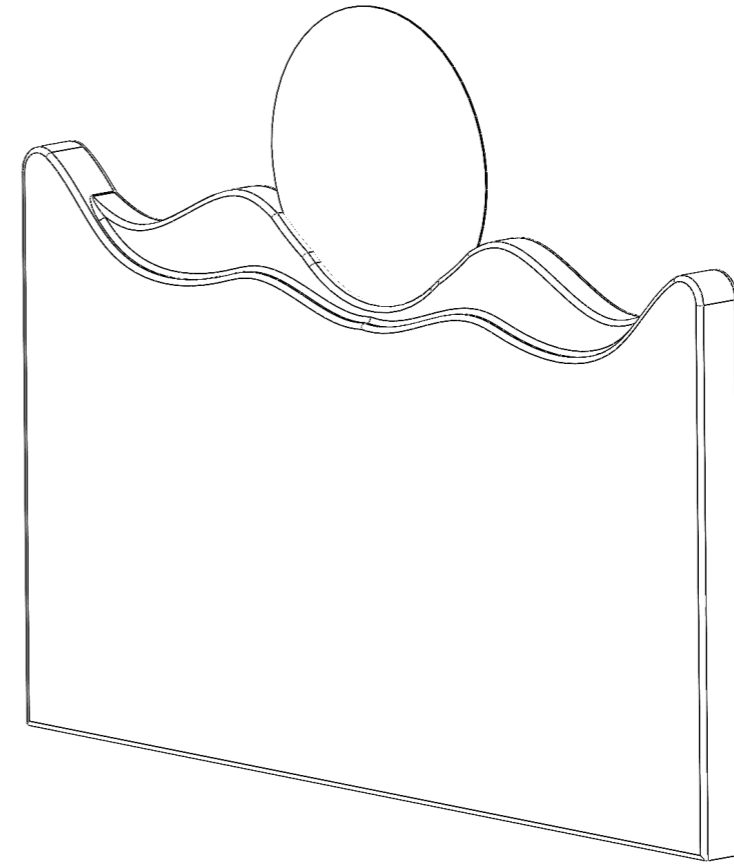
Prototyping

CAD Form Iterations

7.



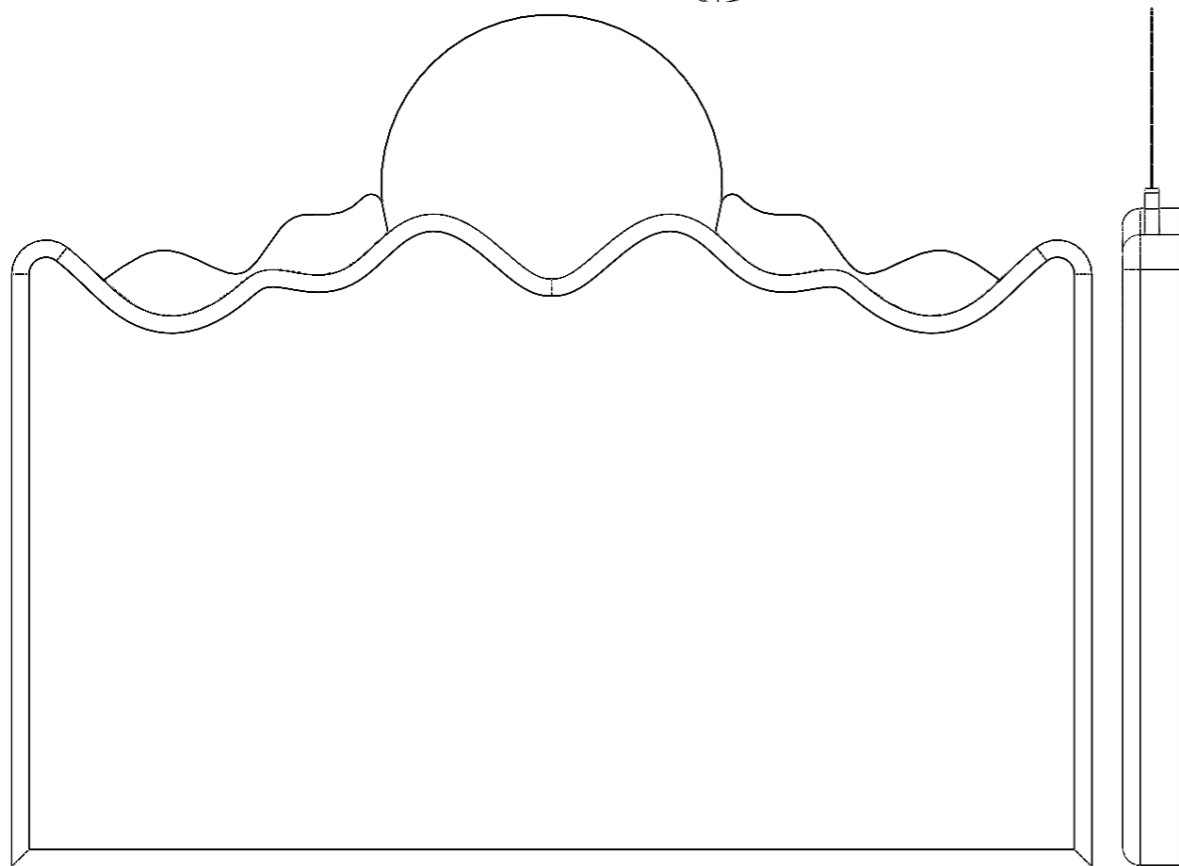
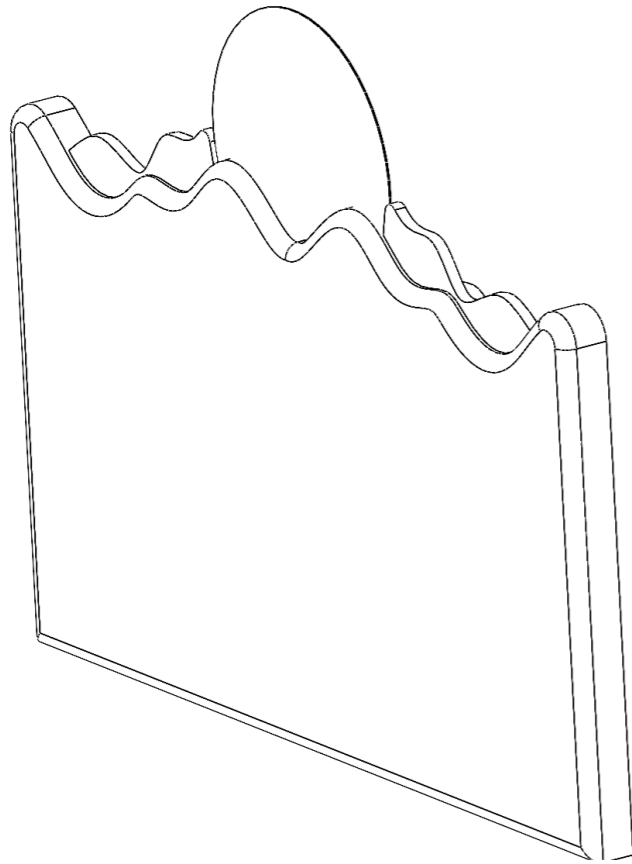
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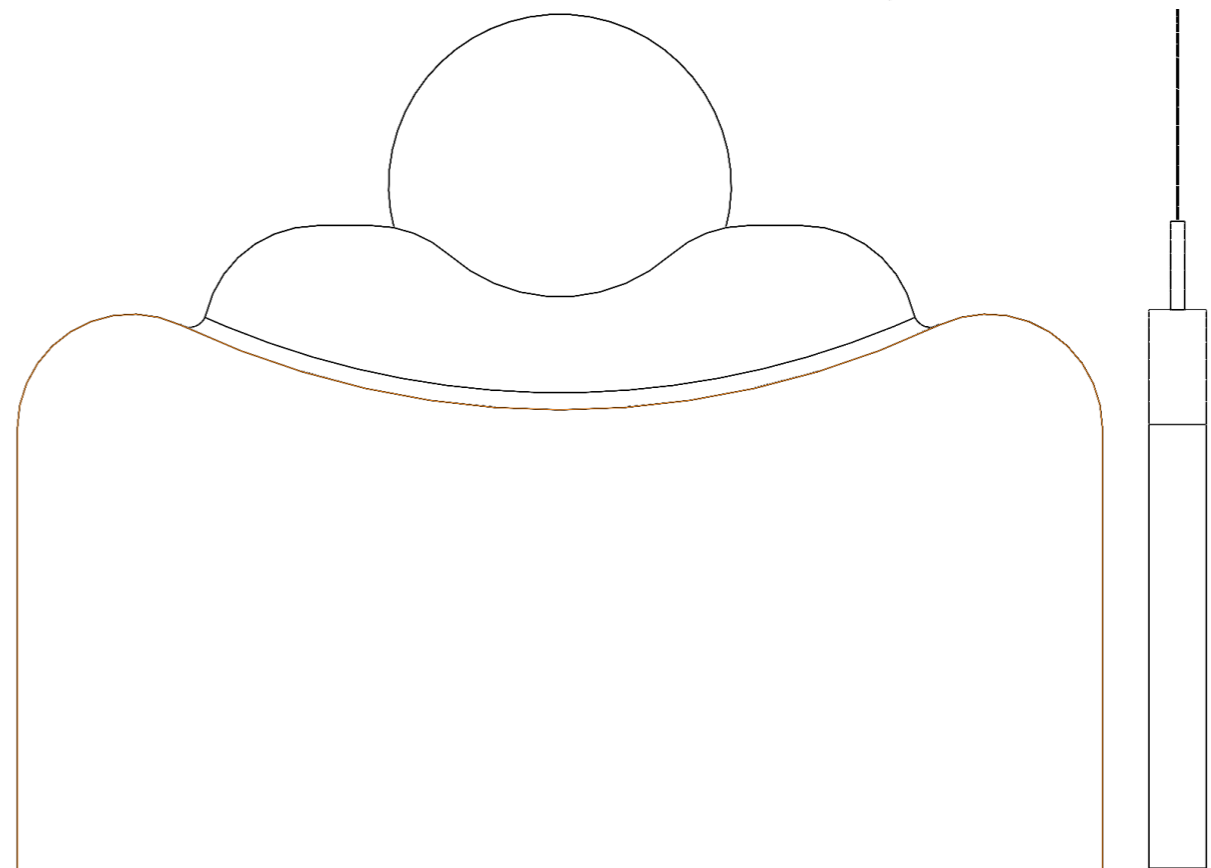
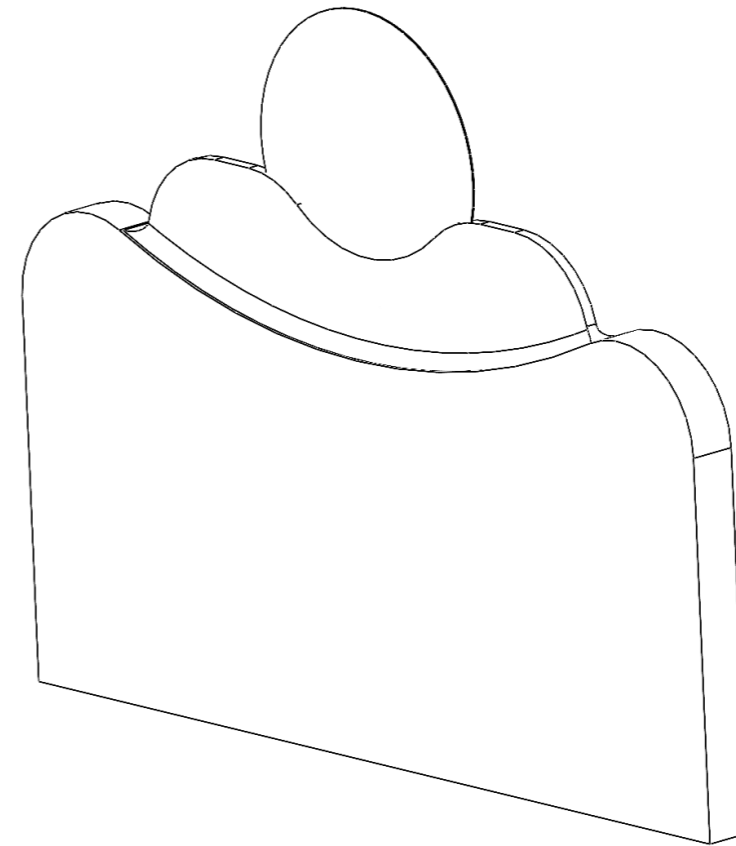
Prototyping

CAD Form Iterations

9.



10.



Prototyping

Acrylic Testing



Proof of Concept - Using a light source and projecting it through laser cut acrylic. You are able to see the laser cut marks on the ceiling



Using Glue to create a texture - this was able to project a different pattern onto the ceiling however, because it was translucent, not all the light was refracted

Prototyping

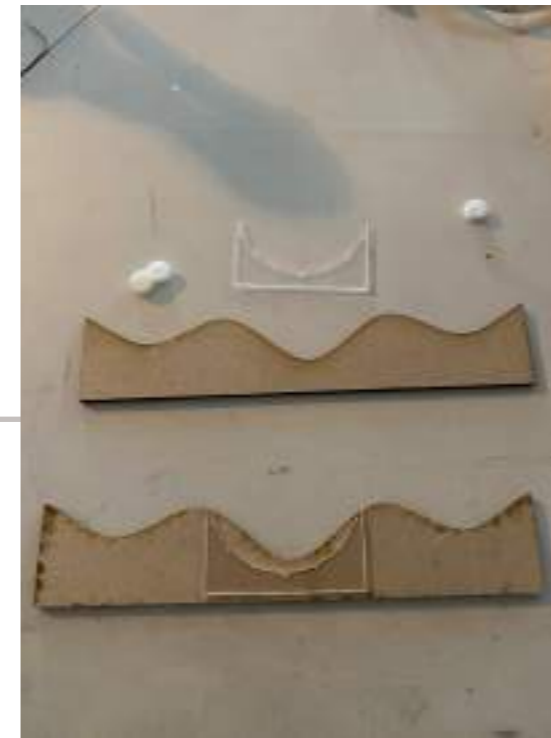
Acrylic Testing



Bending the acrylic was able to reach the desired effect. This was a successful prototype as proof of concept.

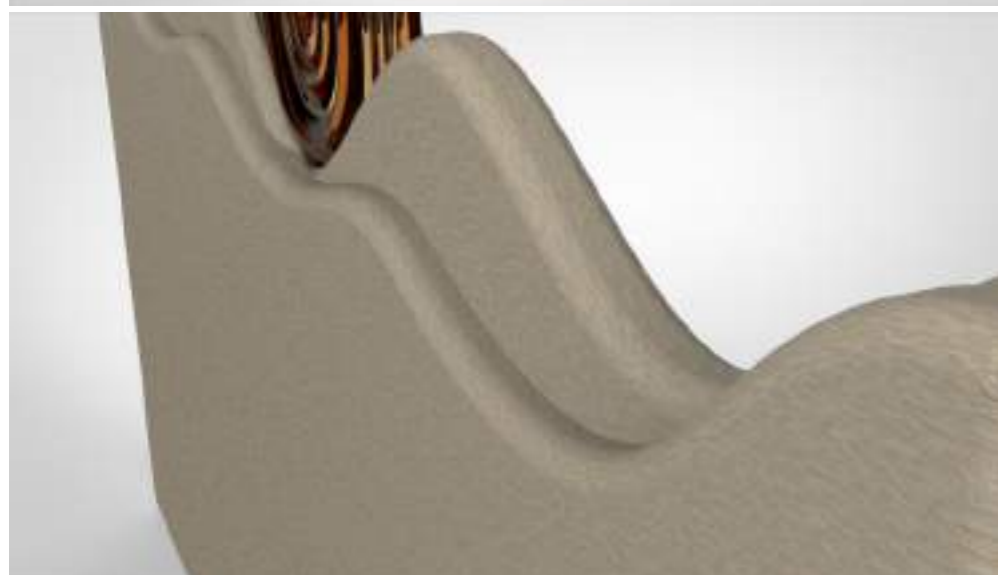
Final Model

Process



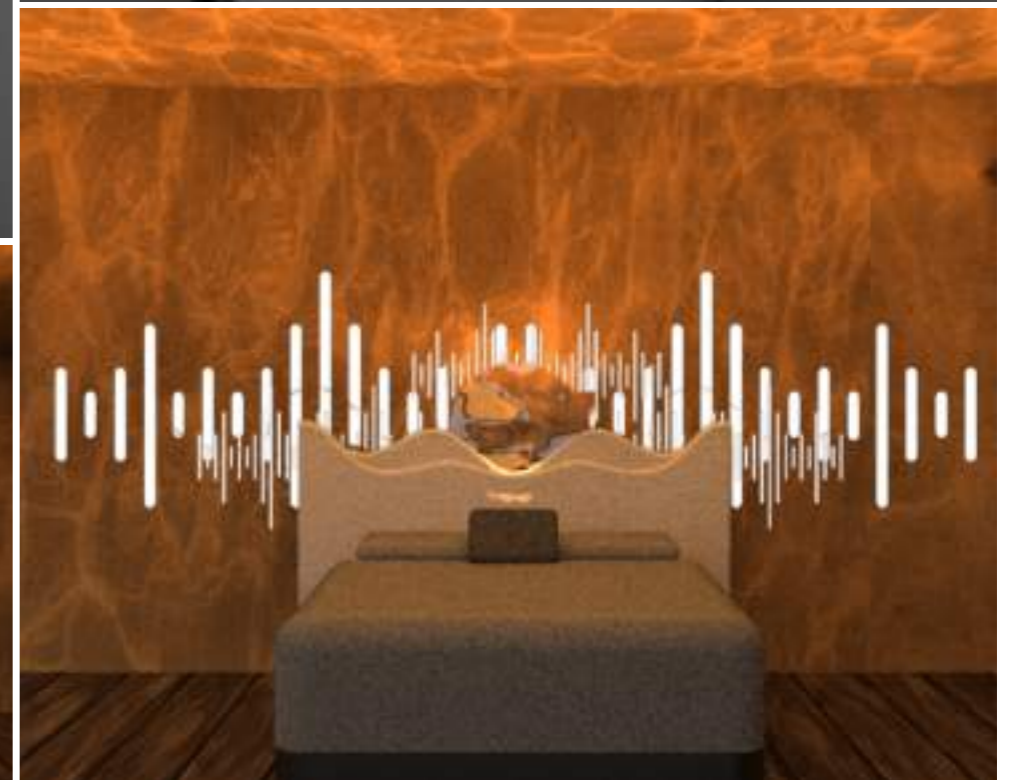
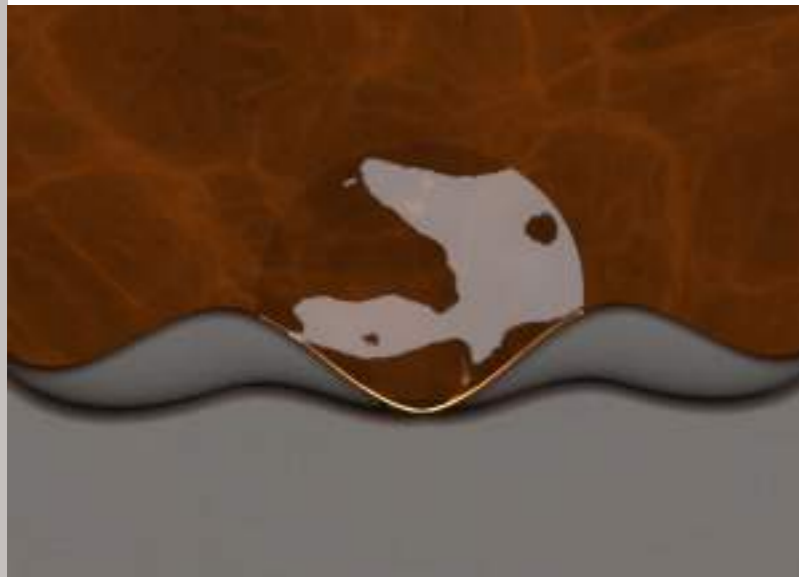
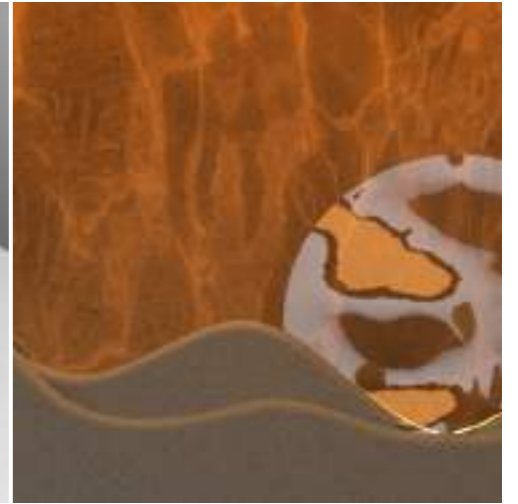
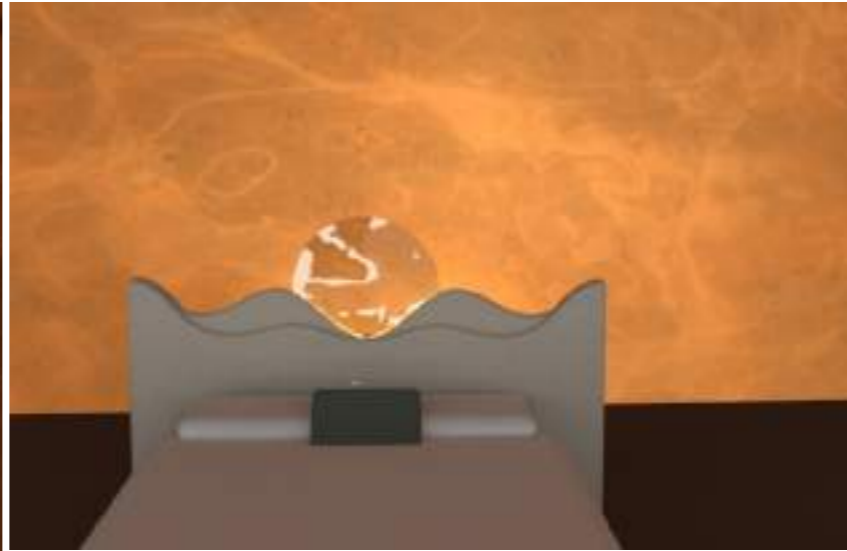
Renders

First Round



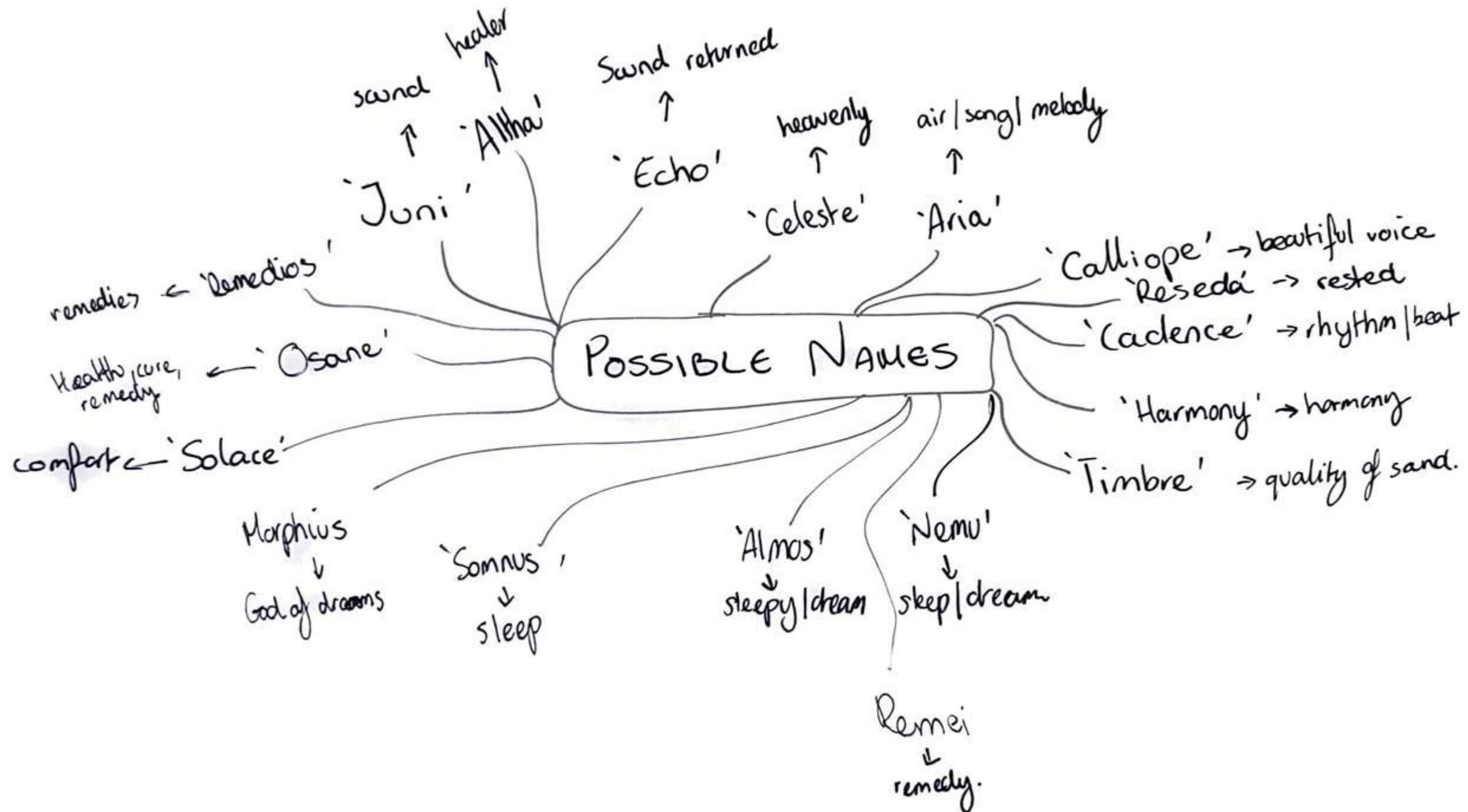
Renders

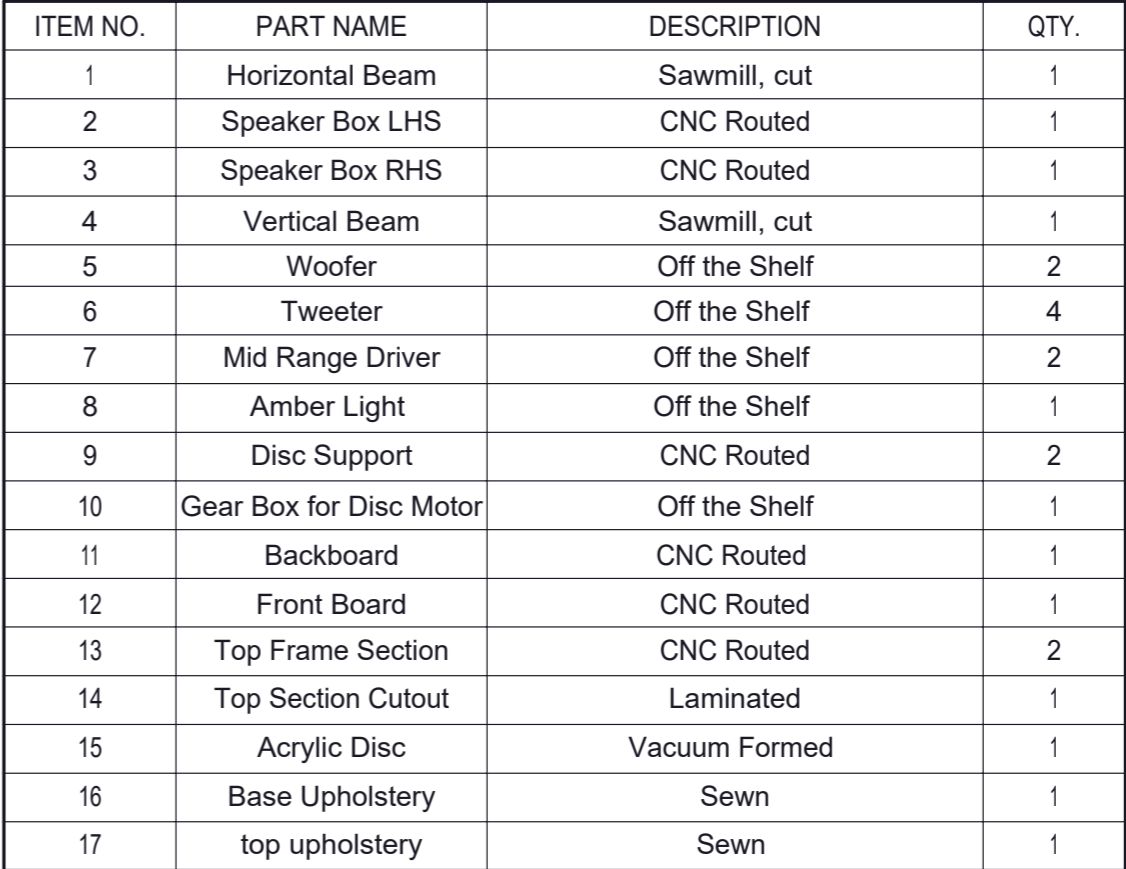
Second Round



Naming the Bedhead

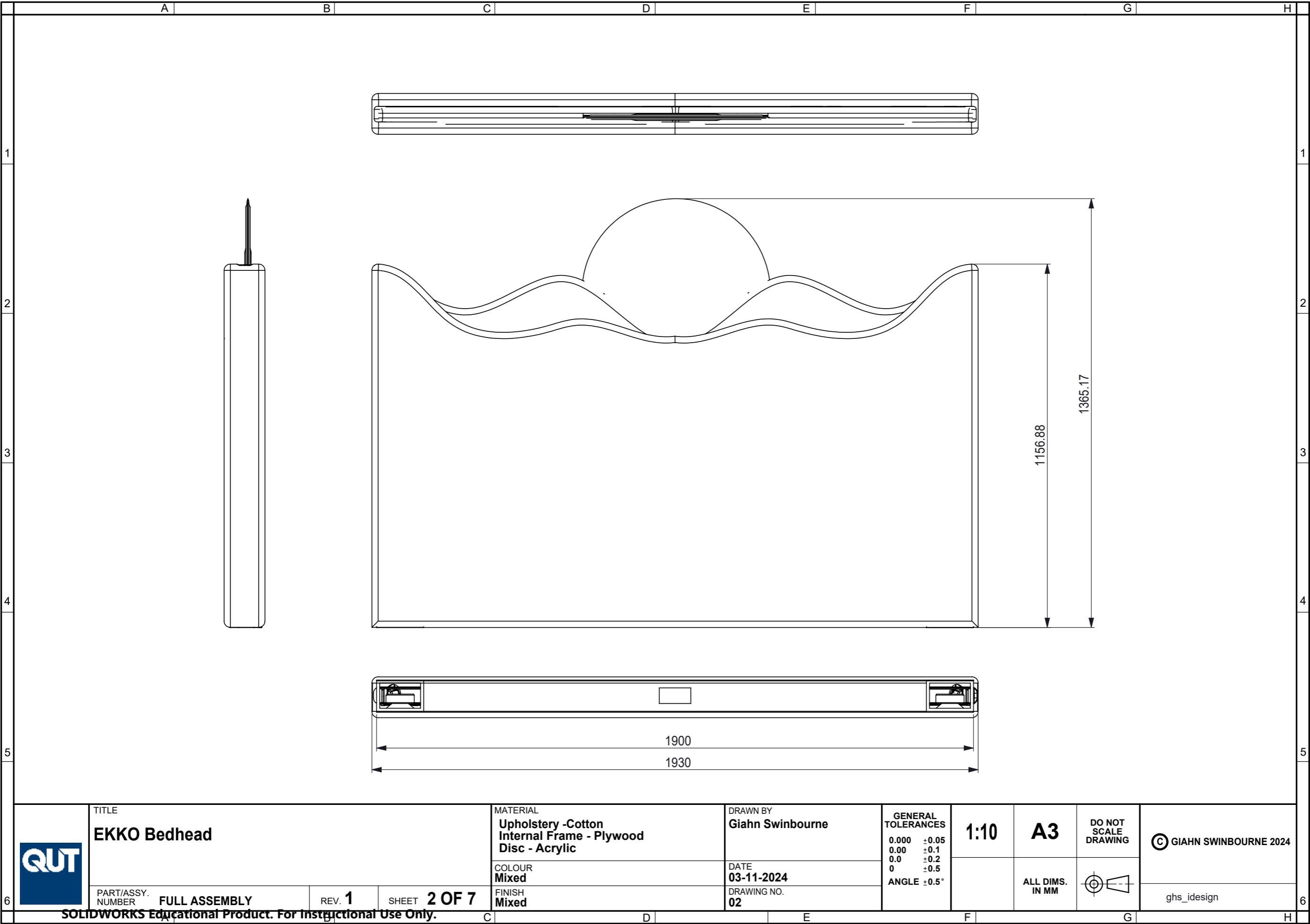
Based off names meaning sound or similar

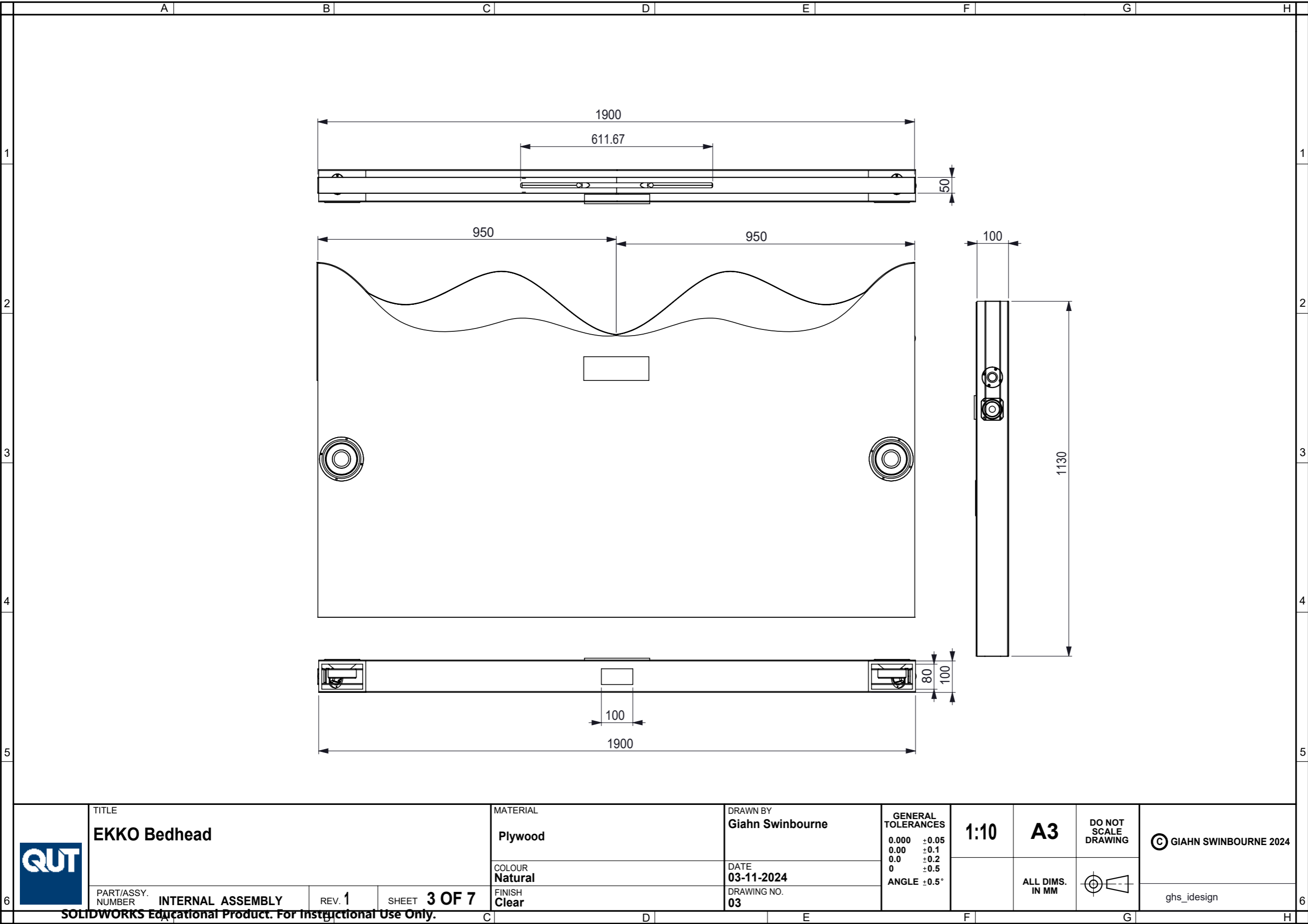


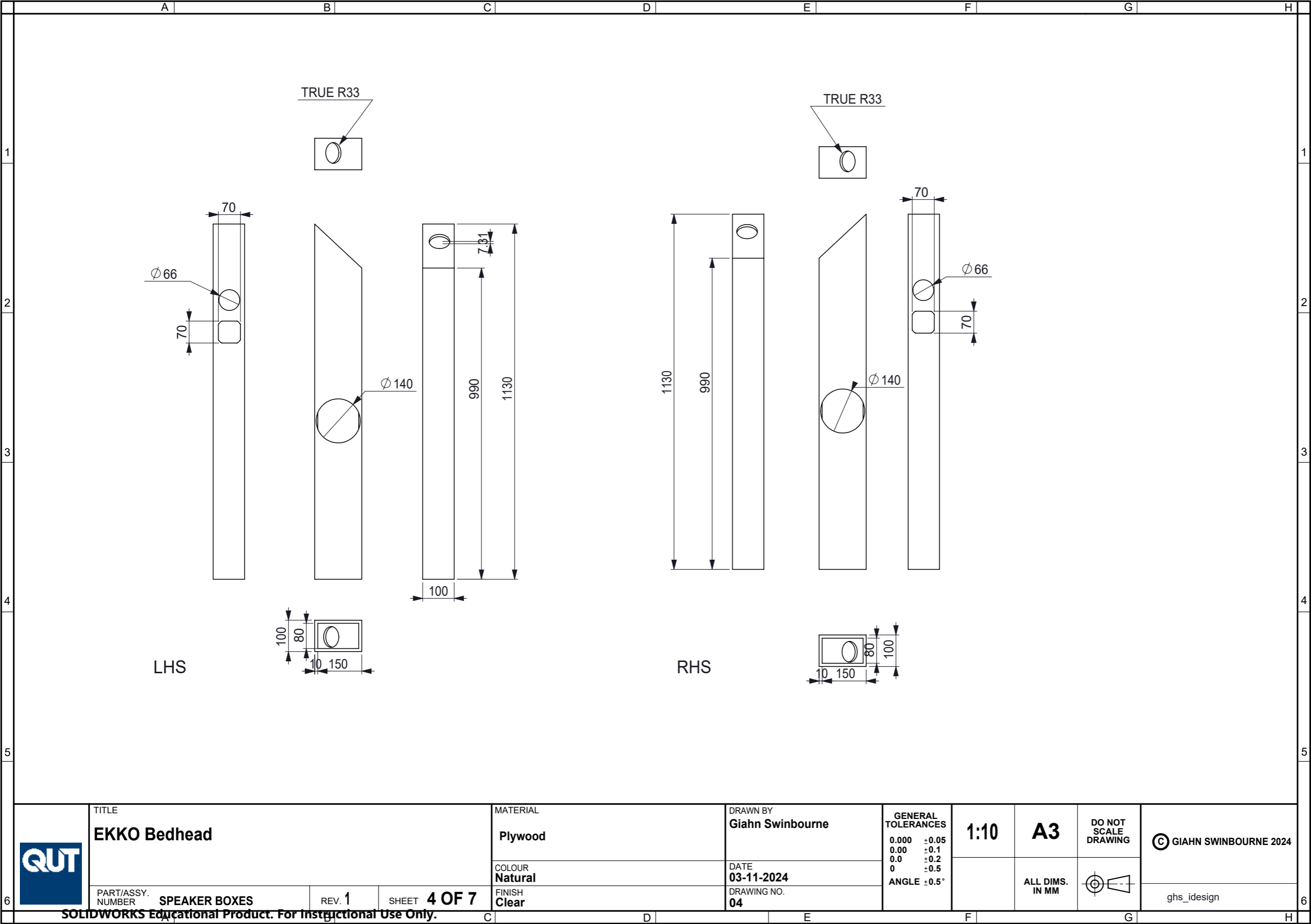


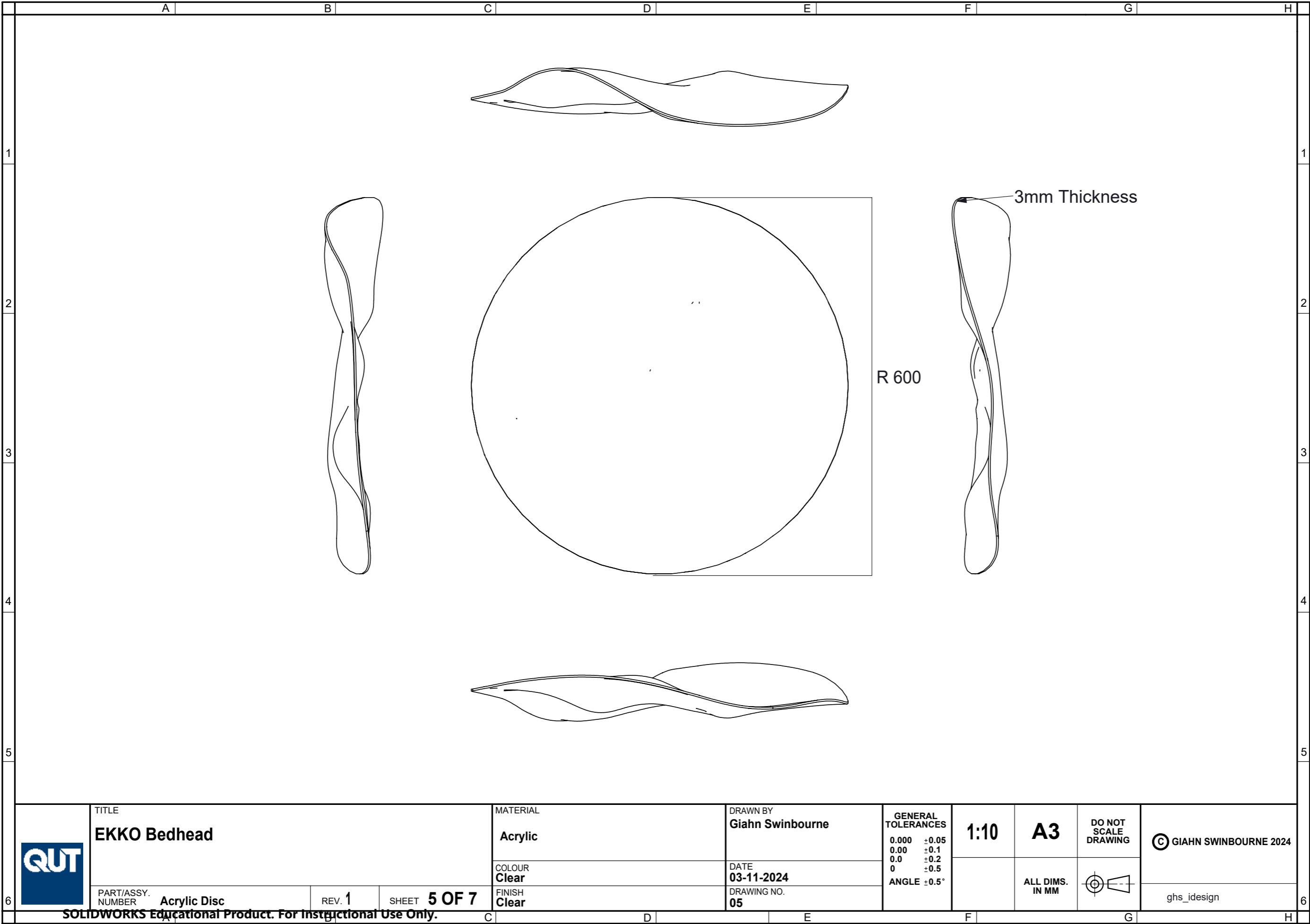
ITEM NO.	PART NAME	DESCRIPTION	QTY.
1	Horizontal Beam	Sawmill, cut	1
2	Speaker Box LHS	CNC Routed	1
3	Speaker Box RHS	CNC Routed	1
4	Vertical Beam	Sawmill, cut	1
5	Woofer	Off the Shelf	2
6	Tweeter	Off the Shelf	4
7	Mid Range Driver	Off the Shelf	2
8	Amber Light	Off the Shelf	1
9	Disc Support	CNC Routed	2
10	Gear Box for Disc Motor	Off the Shelf	1
11	Backboard	CNC Routed	1
12	Front Board	CNC Routed	1
13	Top Frame Section	CNC Routed	2
14	Top Section Cutout	Laminated	1
15	Acrylic Disc	Vacuum Formed	1
16	Base Upholstery	Sewn	1
17	top upholstery	Sewn	1

NB311 - ID7: Capstone
 iahn Swinbourne - n11240491 - n11240491@qut.edu.au - ghs_idesign









TITLE EKKO Bedhead			
PART/ASSY. NUMBER Acrylic Disc	REV. 1	SHEET 5 OF 7	

MATERIAL Acrylic
COLOUR Clear
FINISH Clear

DRAWN BY Giahn Swinbourne
DATE 03-11-2024
DRAWING NO. 05

GENERAL TOLERANCES
0.000 ±0.05
0.00 ±0.1
0.0 ±0.2
0 ±0.5
ANGLE ±0.5°

1:10

A3
ALL DIMS. IN MM

DO NOT SCALE DRAWING

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