A2 Presentation

Additional Needfinding, POVs, HMWs, Brainstorming & Experience Prototypes

Thursday, October 9th, 2025
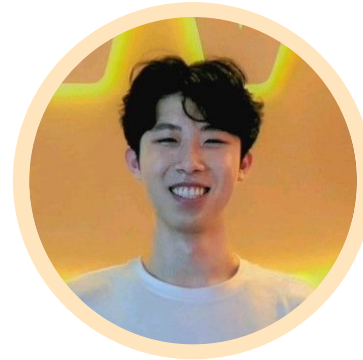
Meet the team!

Ananya N.

Ayana G.

Anthony C.

Felix Z

initial

Our domain

Learners with ADHD

refined

Our domain

Learners with ADHD *who need structured support during study sessions*

Agenda

1. Additional needfinding
2. POVs and HMWs
3. Solutions
4. Experience prototypes
5. Next steps

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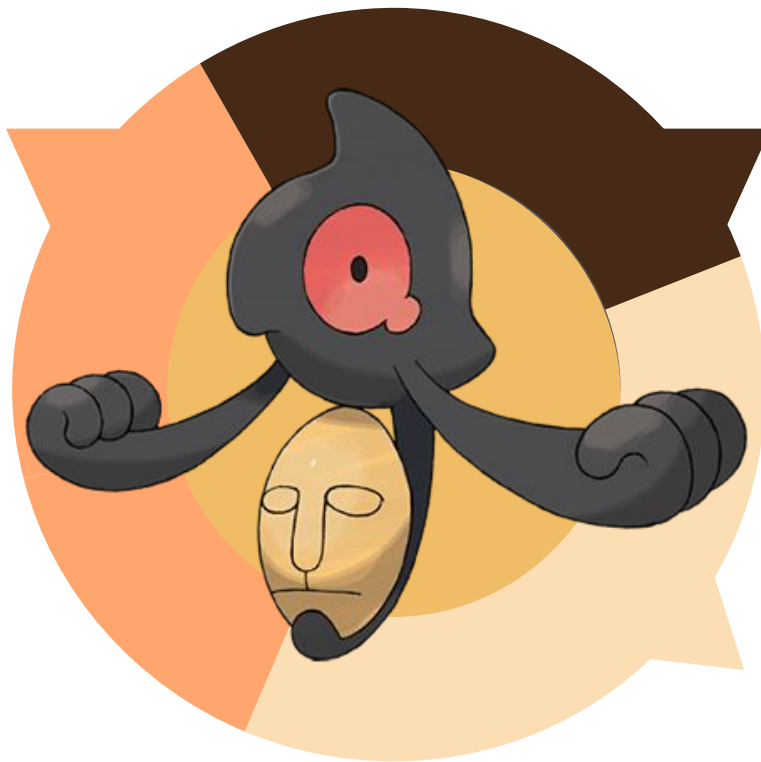4. Experience prototypes
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Yamask

A 24-year-old PhD student in Biology
Interviewed by Ayana, Notes by Ayana + HeyMarvin

01
Validating thought process is important

When his advisor acknowledges *how* work is done, he feels more grounded and confident in his progress

02
Relies on repetition

Doing the same task in different notebooks (physical and digital) helps with his retention

Three notebooks he carries around with him: one for lab, one for "messy" work, and one for "refined" work

💡 *He spends a lot of time on his thought process and approach*

Yamask

A 24-year-old PhD student in Biology
Interviewed by Ayana, Notes by Ayana + HeyMarvin

01

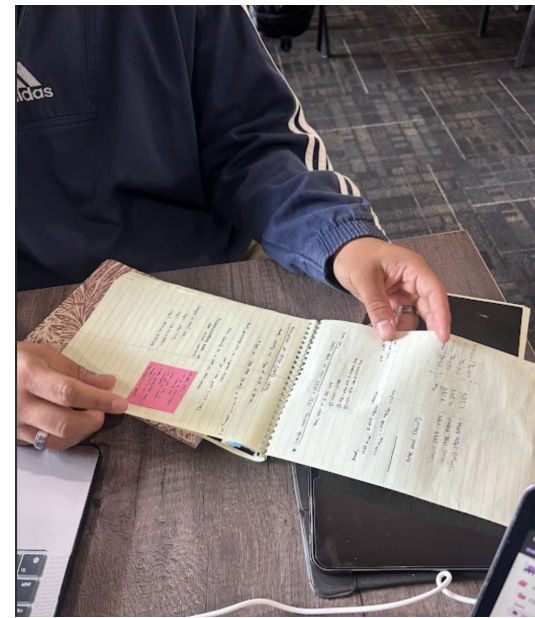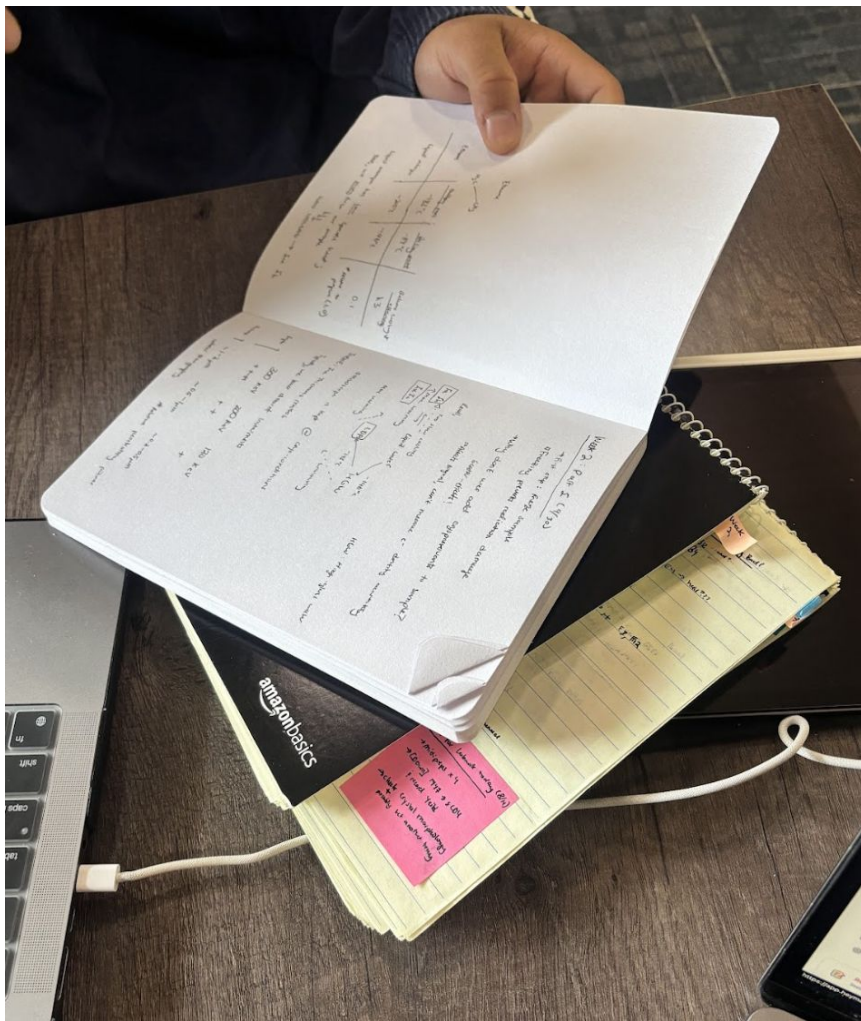## Validating thought process is important

When his advisor acknowledges *how* work is done, he feels more grounded and confident in his progress

02
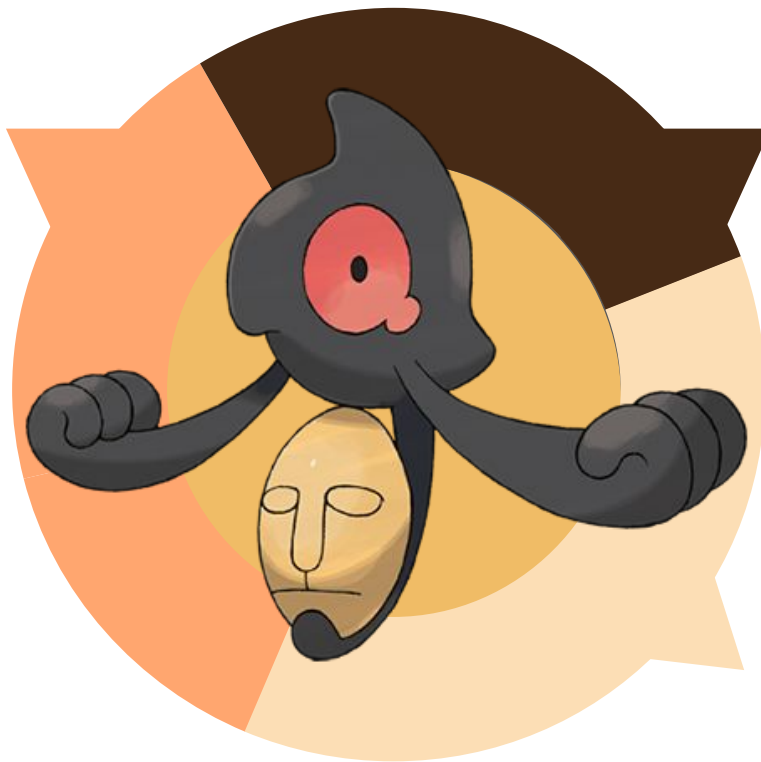
Relies on repetition

Doing the same task in different notebooks (physical and digital) helps with his retention

💡 **He needs feedback that recognizes effort, process, and incremental progress—not only final results—to feel secure in his trajectory**

Cyndaquil

A 20-year-old undergraduate in Statistics
Interviewed by Felix, notes by Felix + HeyMarvin

01
Human presence to combat anxiety

Too much urgency creates anxiety, which in turn can be soothed with human presence.

💡 **She needs accessible forms of social or emotional grounding to counterbalance the anxiety that comes with time pressure.**
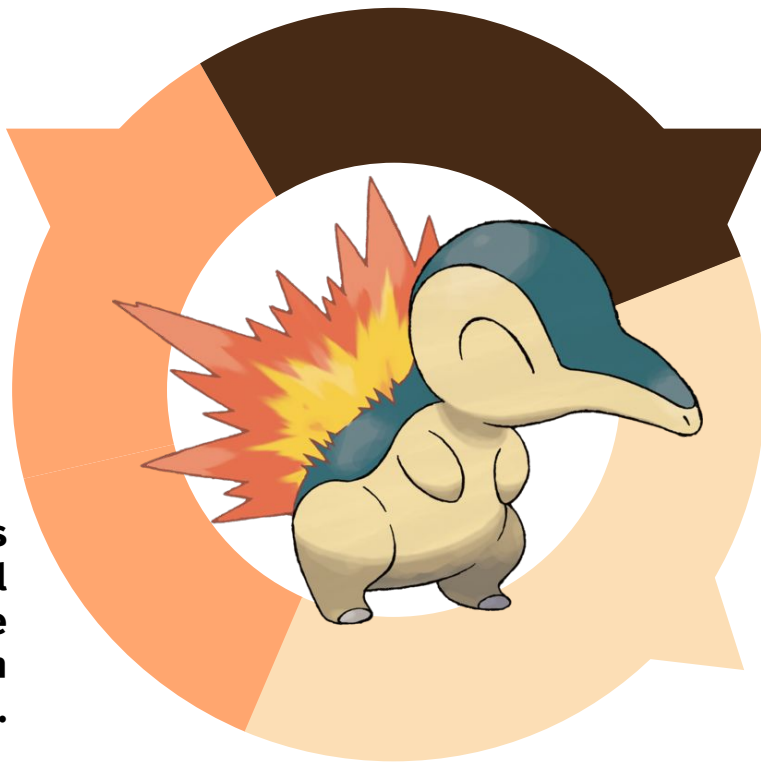
02
Urgency is a must

She will intentionally procrastinate to increase motivation with urgency

03
Relies on reminders

She doesn't use a calendar at all, instead relying on external reminders from friends.

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Initial POV

We met a 56-year-old husband with ADHD who spends most of his workday on his laptop.

We were surprised to learn that even though he recognizes when he's hyperfocused on trivial work tasks, he can't redirect himself without his wife stepping in.

We wonder if this means that what he is working on in a given moment doesn't reflect his true goals or values.

It would be game-changing to help him reflect while in hyperfocus mode.
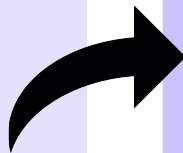
Revised POV #1

We wonder if this means the repeated experience of losing control leaves him feeling frustrated or dependent, undermining his confidence in managing his own attention.

It would be game-changing to help him reclaim control in the moment to recognize when his attention drifts and consciously realign with what matters most.

✓ **Deeper emotional insight** about powerlessness and dependence on external cues

✓ "Game-changing" statement moved from a broad reflection idea to a **clear, action-oriented yet open-ended opportunity**

We met a 5... ...who was diagnosed with ADHD later in life.

We were surprised to learn that even though he recognizes when he's hyperfocused on trivial tasks, he can't redirect himself without someone else stepping in.

We wonder if this means that what he is working on in a given moment doesn't reflect his true goals or values.

It would be game-changing to help him reflect while in hyperfocus mode.

We wonder if this means he feels capable of recognizing his patterns but powerless to act on them without external intervention.

It would be game-changing to help him reclaim control in the moment to recognize when his attention drifts and consciously realign with what matters most.

Initial POV

We met a freelance graphic designer with ADHD.

We were surprised to learn that hyperfocus seems to be as big of a problem as lack of focus.

We wonder if this means she believes losing control of her focus is central.

It would be game-changing to help her better regulate her focus.
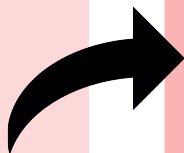
Revised POV #2

We met A freelance graphic designer with ADHD who mainly interacts with her husband and her dog most days.

We were surprised to learn that she uses her service dog's needs to trigger her own self-care (eating, going to the bathroom etc.).

We wonder if this means she struggles to balance her need for external stimuli/structure with her need to feel independent.

It would be game-changing to create supportive rhythms that help her feel anchored and cared for while still giving her agency, even in solitude.

Initial POV

We met a freelance graphic designer with...

We were surprised to learn that... typing... seems to be as big of a problem as lack of focus.

We wonder if this means she believes losing control of her focus is central.

It would be game-changing to help her better regulate her focus.

Revised POV

We met A freelance graphic designer with ADHD who mainly interacts with her husband and her...

We were surprised to learn that she uses her service dogs needs to trigger her own self-care (eating, going to the bathroom etc.)

We wonder if this means external, ambient cues are powerful scaffolds for initiating tasks, transitions and self-maintenance for her.

It would be game-changing to provide low-friction cueing that simulates body-doubling and initiate routine self-care on unavoidable micro-events.

✓ **Deeper insight** and understanding about how she regulates (external cues) versus a general focus issue

✓ "Game-changing" statement shifts from a vague goal ("help her regulate her focus") to a **targeted design direction**

POV #3

We met a CMU student with ADHD and anxiety who studies best and experiences significantly less burnout when other people are around.

We were surprised to learn that she focuses better when there's a small group of people nearby having an unrelated conversation than when she's watching or listening to a TV show. Quiet feels too empty, and TV feels too scripted.

We wonder if this means she craves the subtle comfort of human presence; ambient signs of life that make her feel safe, grounded, and less alone with her thoughts.

It would be game-changing to offer ways for her to tap into that shared energy of "working alongside," wherever she is.

POV #1

56-year-old knows when he's stuck in hyperfocus, but **can't break free without someone else (his wife) to pull him out.**

💡 **HMW remind people of their "why" in the middle of their work?**

POV #2

Freelance graphic designer **relies on her dog's routine to take care of herself**, showing how powerful external cues can be for daily functioning.

💡 **HMW use external cues to spark self-care?**

POV #3

Student thrives when real, unpredictable human chatter fills the background, suggesting **genuine social presence keeps her grounded** and focused.

💡 **HMW bring the grounding energy of social presence into solo work?**

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Solution #1:

Check-in moments for reflection and reminders for breaks

An AI study-buddy that aids in setting the structure of a productive work session: identifying goals and steps to achieve the goal, determining the time spent on the task(s) at hand, including and enforcing periodic breaks for resetting and re-energizing

HMW remind people of their "why" in the middle of their work?
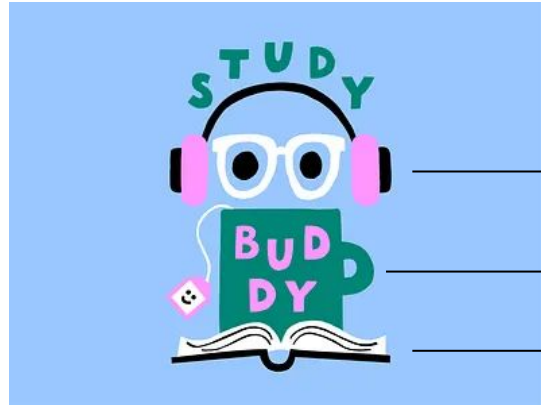
Reflection for retention

Reminders for personal care

Focus encouragement and support

Solution #2:
AI Soundscapes for Focus

Curating sound environments to reduce stress using grounding techniques while working

Tasks should be urgent (INCUP) for ADHD motivation

HMW bring the grounding energy of social presence into solo work?

Work to reduce related anxiety and stress from tasks
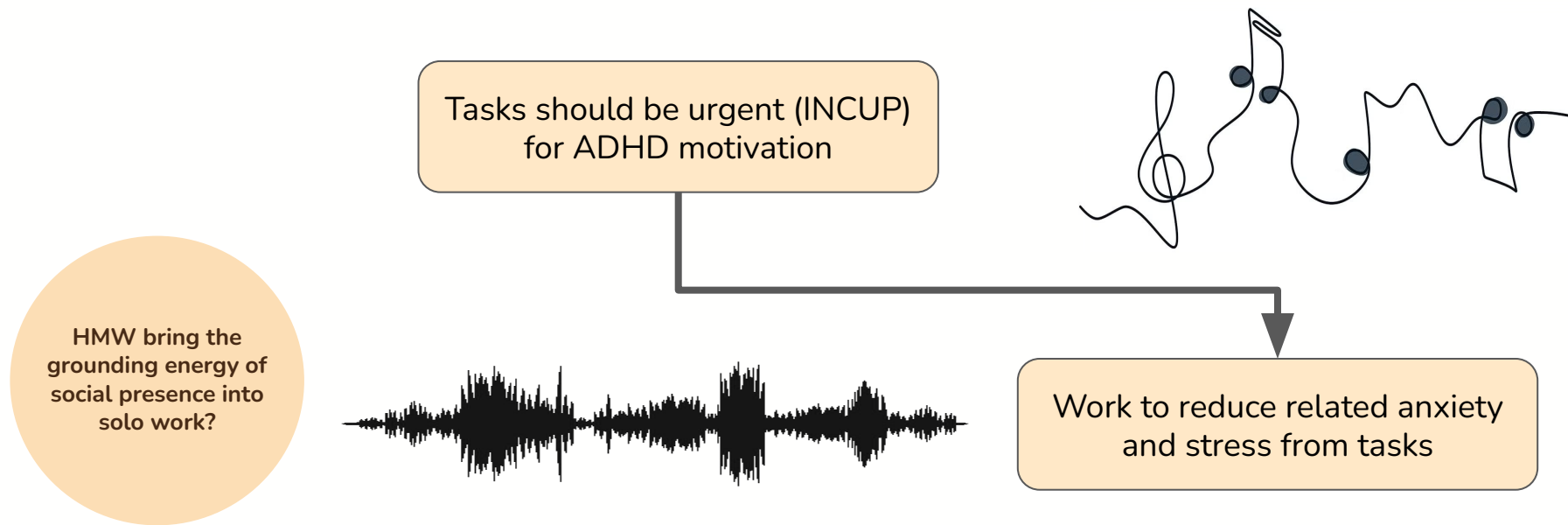
Solution #3:
AI Animal Companion for Body-Doubling

An animal character that uses body-doubling techniques to encourage users to take breaks and take care of biological needs

HMW use external cues to spark self-care?

Reminders to drink water

Eat Regularly

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Experience prototype #1

Critical assumption tested
Users struggle with ensuring that they are satisfied with the quality of a work session. (Hyperfocus, distracted easily, or lack of attention to personal/natural needs)

Participant
CS Coterm student with ADHD recruited for their acknowledgement of struggling with both hyperfocus and attention deficiency

Prototype description

- Participant planned a **one-hour work session**
- I behaved like a **text-based chatbot** that established:
    - **goals** (read 30 pages)
    - time length (1 hour)
    - **intermittent breaks** for hydrating, fueling, etc. & **reflections** of work
- **Final reflection** completed to solidify:
    - retention
    - affirmation
    - next steps/future work sessions & goals
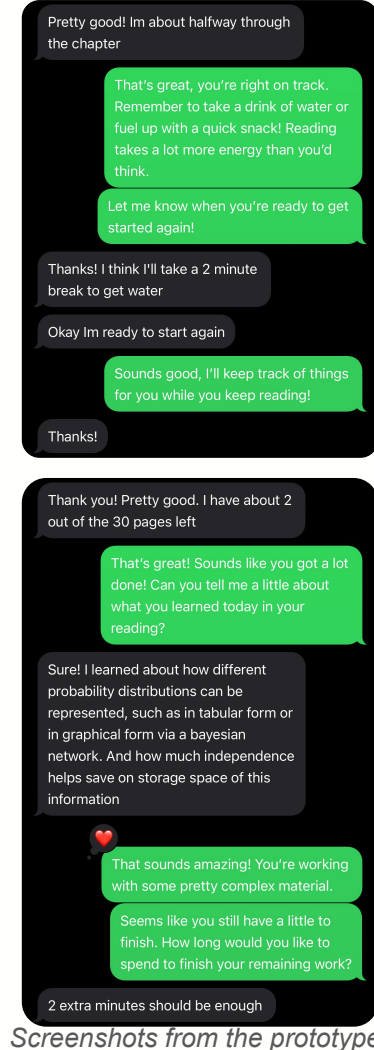
Screenshots from the prototype

Results

✅ **What worked:** Enjoyed the interactivity and motivation to stay focused, was pleasantly surprised by post-work reflection, appreciated reminder to take breaks

👎 **What didn't work:** Would have preferred more interaction with visuals, a stronger personality from the "chatbot"

💡 **New learnings:** Reflections and check-ins keep learners *accountable*

🔍**Was the assumption valid? Yes**, since the prototype catered to both forms of struggle

➡️ **What does it mean for your work going forward?** Find ways to make the interaction more personable, develop stronger motivations and advanced communication or encouragement

Ethics

- **Usability:** Focus is keeping users on track, study buddy should feel personable and provide gentle encouragement & kind feedback
- **Accessibility:** Auditory provisions combat visual barriers, colorful notifications combat auditory barriers
- **Privacy:** May be considerations for ensuring unnecessary sensitive information (identification of learning disabilities) is not leaked or stored
- **Persuasion:** All settings should be customizable and all interaction occurs with AI study buddy
- **Focus:** Could potentially be distracting, but this might be the intention to prevent hyperfocus
- **User involvement:** User may offer feedback to study buddy following each work session to improve future productivity
- **Sustainability & Society:** Fully digital interface, not posing risk to environment or society (assuming privacy is protected)

Experience prototype #2

Critical assumption tested

Users will feel comfortable relinquishing control over their sound environment to something or someone else.

Participant

A masters' student in CS with ADHD, we met through a previous participant

Prototype description

- Short Google Form about typical **listening preferences**
- I selected a video for him to listen to
- **Zoom 30-minute work session**, during which he used the curated sound while I observed
- **Debriefed** the experience
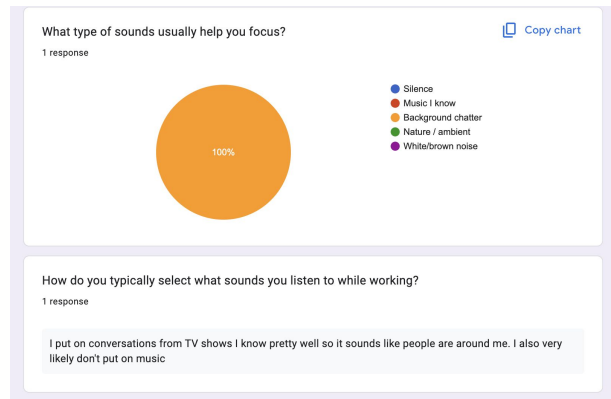
The audio selected for the participant

Results

✅ **What worked:** Initially focused and engaged, liked chaotic, conversational energy, preferred dynamic noise over silence

👇 **What didn't work:** Got distracted by references, tuned into dialogue instead of task, repeated phrases and mimicked sounds

💡 **New learnings:** Unfamiliar audio increases curiosity → distraction, "neutral" chatter sustains focus better than content-heavy shows

🔍**Was the assumption valid?** Felt excited about getting a novel audio (so, **yes!**)

➡️ **What does it mean for your work going forward?** Prototype ambient "non-plot" chatter

Ethics

- **Usability:** Audio customizes itself based on user preferences, does not require much learning to be able to use
- **Accessibility:** Inaccessible to learners with auditory impairments
- **Privacy:** Does not require any personal information to function
- **Persuasion:** All settings can be adjusted based on user's liking
- **Focus:** Intended to help create white noise to stay focused, but could result in distraction based on presence of audio or audio content being heard/played
- **User involvement:** User can adjust all aspects of their audio
- **Sustainability & Society:** Fully digital, no environmental detriment

Experience prototype #3

Critical assumption tested

Individuals with ADHD prefer to take cues from others to remind themselves to complete simple but necessary tasks (snacking, hydrating, going to the bathroom) when in a zone of hyperfocus.

Participant

Junior with ADHD double-majoring in German and Comparative Literature

Prototype description
- Tested 3 different study strategies (alone, with other person, AI companion)
- Texted AI-generated images of sloth drinking water and going to bathroom
- Debriefed the experience

Generated by Gemini

Results

✅ **What worked:** Found the AI companion engaging and paid attention to it

👇 **What didn't work:** Got distracted by the AI generated images and lost focus

💡**New learnings:** Digital body-doubling is effective at enforcing routine

🔍**Was the assumption valid?** Kind-of. Even though the AI companion was engaging, didn't feel particularly connected to it

➡️ **What does it mean for your work going forward?** Prototype an interactive companion to boost connection

Ethics

- **Usability:** Creates a memorable companion that users can form an attachment with
- **Accessibility:** Provisions could be made for individuals with auditory barriers, visual stimulation of phone screen activation could startle some users
- **Privacy:** Does not require sensitive information to function
- **Persuasion:** No choices are necessary, user interacts with interface like another person
- **Focus:** Intended to remind user to take breaks during moments of hyperfocus, but could lead to user being distracted purely by phone usage
- **User involvement:** User can alter their digital animal companion to their preferences
- **Sustainability & Society:** Fully digital interface, no environmental detriment

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Next steps

Solution #1: Check-in moments for reflection and reminders for breaks

Ethical Considerations

Usability: Buddy feels motivating, settings are customizable, work–break system supports real focus

Accessibility: Simple, low-stimulation interface, minimal visuals and effects

Privacy: No collection of sensitive or personal data, no references to medical or disability status

Persuasion & Transparency: Clearly explain purpose before first use, remind users not to share personal details, set boundaries for healthy user–AI interaction

Ethical Considerations

Focus: Minimal interaction to reduce screen distractions, buddy helps enforce schedule consistency

User Involvement: Encourage short feedback after each session, use feedback to refine buddy's tone and pacing over time

Sustainability & Society: Fully digital system with minimal resource use, prevents harmful or exploitative use, alerts users if behavior risks harm to others or the environment

Service

Who We Cater To:

- Learners who struggle with hyperfocus or inattention

- Learners who struggle to ask for help

- Learners who thrive with gentle reminders

Who We Might Be Excluding:

- Individuals who strain in more structured environments

- Individuals with limited tech literacy or limited access

Thank you!
Questions?

Appendix

Brainstorming Process

HMW enable individuals to connect what they're doing in the moment to their larger goals?

1. cursor tracking screen moving etc activity analyses to ensure no hyperfocus on small detail
2. **display generic reflection reminders that stop activity on screen (set activities beforehand where this shouldn't happen) until a response is typed (maybe sent through LLM for tracking, then analyses are created so we get granular, in the moment-data and overarching trends for therapists and coaches to examine) +2**
3. have the goal displayed at the top. maybe suggested refining of goals first, also potential timer. should be a desktop app. +1
4. written assignments or whatnot. progress tracker. like todoist but one at a time and never leaves screen
5. App that reminds him every 15 minutes
6. App that tracks your screen to see if what you're doing is on track +1
7. **Sticky note on your laptop that you need to click every 15min or else it freezes your screen (reminds you to look at what you were supposed to do) +2**
8. Pomodoro timer with reflection prompt
9. **Focus companion/buddy that passively asks questions and gives encouragement +2**
10. **personalized playlists as time keeper +2**
11. Like spotify AI DJ except it reminds you of what you were supposed to be doing every n number of songs
12. intention setting at the start of a work session
13. Have a check-in alert at set intervals to remind him to refocus every so often if he finds he is getting off track
14. Have a constant alert/digital post-it with his goal on his desktop/phone screen or on his desk close to his work environment in a bright color that catches his attention
15. **After each work session, have him log his progress in a manually maintained spreadsheet or journal that AI can evaluate and load into a sort of progress bar that indicates how close he is to accomplishing his prior set goal +2**
16. First spend time to create a high-level plan where AI walks it through with him step-by-step and then allows time to return to details
17. Set milestones throughout the work session with reasonable time limits that will alert if not completed by the designated deadline +1

Focus HMW

Preferred solutions

Compilation of brainstormed solutions

Brainstorming Process (cont.)

HMW recreate the benefits of background conversation and/or body doubling?

- Create an AI-generated version of self on phone that sends reminders at intervals or at times of day when other tasks must be completed, meals must be eaten, etc.
- **Create white noise-like application that plays samples of ambiguous background conversation with volumes increasing at intervals to indicate when to break away from work +2**
- Ai generated background conversation
- AI generated podcast based on readings +1
- AI companion that needs to be fed go to the bathroom etc. at regular intervals
- AI generated brainrot of lecture notes and class assignments
- AI partner that audibly narrates its work
- share progress or screenshot with a close friend or accountability buddy after a set interval (every 5 mins) +1
- **adaptive noise creator using whisper api, fully functional in quiet environments and possibly softer in louder environments. potential to force app to remain at one set volume to mimic real voice + 3**
- "zoom"-like corner of screen where it simulates the screen of someone working. ai-generated or ai-personalized recommendations for "study rooms" but it's screens
- have them record their ideal environment, ai api cleaning, then it plays and remixes. maybe a way to train custom voice so it can sound even more realistic. add to whisper api app.

HMW replicate the accountability of an external reminder through self-generated systems?

1. AI that listens to your conversations and automatically creates to do lists
2. AI that automatically adds calendar appointments
3. Smart Calendar that adjusts reminders based on the event
4. Smart calendar that generates time blocked to do based on a to do list you give it
5. assignment tracker - ai + canvas. maybe a "scrape this webpage" and auto-create task lists. force reminders that take over phone screens and laptop screens.
6. **physical breaks reminder. 30sec countdown when break should be taken, with option to extend up to twice for 3-5min. auto-start on laptop turning on + 3**
7. accountability- takes advantage of similar current TikTok app trends, basically you pick a consequence based on a llm-integrated interests input (i.e. donating to a shitty org lol) and it threatens you if you don't meet deadlines to artificially add urgency
8. voice notes from past self reminding them to take breaks, eat, etc
9. reflection journal that turns reflections into next steps +1
10. tracker that learns when you tend to forget breaks +1
11. body double that takes breaks, encouraging user to take one too +1 (+?)
12. a random break timer that pops up and cant be cancelled
13. two virtual friends working and reminding each other to take breaks
14. **an animal character with a health bar that increases after break +3**
15. or growing a plant
16. visual timeline showing balance of work time to break time +1
17. Have a set schedule on phone checking off items throughout the day and emits a sound or alert when something is not completed within a given window of when it is set to be completed
18. Create an audio device that learners wear while working that can contain recorded phrases from their loved ones (spouses, parents, partners, etc.) that play at certain times during the work session to mimic human reminders
19. Set Screen Time-like restrictions on work depending on what platform they are working on (physical work, computer work, phone work, etc.) that require breaks from work every so often

Experience prototype #2 artifacts

1. https://drive.google.com/drive/folders/1DXsuKVPi8z1Ru08eq nQiynB-8garz2R8?usp=sharing (only accessible to members of our team folder + teaching staff)

Yamask
24 year old PhD student in molecular biology, loves science and tactile learning

SAYS

"Where that dopamine hits for me [...] is when I present and I share my research and I go to department events, give lightning talks, poster sessions..."

"The word 'symptoms' carries a negative connotation."

"I think I often feel I can forget things or let things slip easily"

"I like the tactile aspect of pen and pencil."

"Time flies by when you're having fun."

"If you're perceived as smart, people assume you aren't neurodivergent."

"I feel paralyzed by unopened emails in my inbox."

"As much as I think that there are challenges that can be associated with it, I think that there are also a lot of positives, especially as it relates to my science, around creativity, around trying to connect different ideas"

"It's hard feeling done when I'm the one who determines when it's done sometimes."

"I'm always thinking about what I can or should've done versus what I have done."

"I always need to have a pen, pencil and highlighter"

"For me, repetition is big."

THINKS

AI as useful for tedious, joyless work but not for everything.

He thinks external deadlines are necessary to create a sense of completion.

Pen, paper, and tactility improve retention.

Novelty keeps motivation alive; repetitive tasks drain it.

Scientific progress requires never feeling "done."

Taking shoes off will create a barrier to him leaving a work session

His ADHD is a superpower when it comes to being a scientist

Validation of his *process* matters more than validation of the final product.

His mind applies an internal logic to colors even if it's not explicit.

Structured environments help him stay on track.

Advisor accountability helps counteract hyperfixation or neglect.

Stigma around ADHD exists, especially for Black and Brown children.

Some tasks are worth hyperfixating on if they bring joy or learning.

His systems are not perfect; he's still experimenting.

ADHD has hidden benefits like creativity and connecting disparate ideas.

Being seen as "smart" shielded him from earlier diagnosis.

DOES

Takes shoes off to make self comfy while working

Puts a sticky note of reminders on his laptop or middle of his desk

Engages in soccer with peers for accountability and routine.

Takes adderall daily

Sends scheduled emails to himself weeks, months, even years in advance.

Creates polished handwritten versions of assignments after initial written draft.

Has an internal system for color of pens and paper (lined paper versus blank)

Uses a notebook for draft work, then transfers it to a final notebook

Types out physical notes onto digital ones to have everything in more than one place

Places snacks and water nearby to lower barrier to entry

Uses AI for tedious tasks that he does *not* find joy in

Participates in poster sessions and lightning talks

Hyperfixates on details (like hex codes, colors, Dragon Ball orange).

Skips meals if working in lab and doesn't want to leave focus mode.

Doesn't use AI for tedious tasks that he *does* find joy in

FEELS

Inspired when hyperfixated, even if impractical.

Overwhelmed by unread emails and inbox clutter.

Content with his field of study because of how tactile it is and how he can physically see proteins

Proud of being able to show physical results of his experiments

Like progress is made when he has physical proof of it

Resilient and positive about ADHD ("superpower").

Anxious about tasks being "never really done."

Relieved when tasks are backed up redundantly.

Validated by external praise (especially for process, not just outcome).

Grateful for mentorship and guidance.

Prepared after rewriting notes

Energized by novelty and new ideas.

Motivated by soccer's accountability and consistency.

Excited when connecting unrelated ideas.

Isolated at times because his work is stigmatized (homophobia).

Drained by repetitive, unstructured tasks.

Cyndaquil
20yo statistics undergrad @ CMU

SAYS

- Deliberately procrastinates because early starts are less productive
- Needs background conversation that specifically excludes them
- Anticipating silence ruins ability to work in silence
- AI overcomplicates straightforward homework
- Openly relies on friends as external memory system
- Uses AI for verification, not just when stuck
- Prefers actual output over feeling productive
- TV shows are too pausable to maintain momentum
- Struggles with tasks lacking discrete completion units
- Unconsciously depends on social scaffolding

THINKS

- Background conversation must be interesting enough to anchor, not capture
- AI makes simple homework too complex
- Friends will naturally notify about assignments
- Early starts reduce productivity compared to deadline pressure
- Sentence-level AI refinement is undetectable
- Tool effectiveness is subject-dependent, not universal
- Productivity equals completed work, not feeling productive
- Preparing for silence triggers need for music
- TV fails because it's too controllable/ pausable
- Progress requires discrete completion units

DOES

- Leaves work until last minute after learning early starts fail
- Checks AI for answers even after completing independently
- Pauses TV between problems, breaking own flow
- Searches class notes before AI
- Shares classes with friends who serve as reminder system
- Uploads homework to AI first when behind; first resort, not last
- Writes assignment checklists but never updates them
- Always does second part of partner work, never firs
- Searches class notes before AI— teachers expect specific methods Uses AI sentence-by-sentence, not whole paragraphs
- Different AI strategies for STEM vs humanities

FEELS

- Motivated by last-minute pressure
- Frustrated when starting early because work doesn't accumulate
- Trusts external metrics over internal productivity feelings
- No embarrassment about externalized executive function
- Soothed by background conversation that excludes them
- AI is simultaneously helpful and overcomplicated
- Distributed cognition (aka small distrrction) feels natural
- Pragmatic about diagnosis uncertainty
- Calm in accidental silence, agitated in planned silence
- No guilt about abandoned organizational systems