

This research project was done for the class Designing Digital Health Systems (CS 5968, 6968, Sp25)

Rotational Focus Strategies For ADHD Management

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John Bovard



Research Question: Does using Rotational Focus Strategies (RFS) result in perceived improvement in daily satisfaction and productivity for those with ADHD?

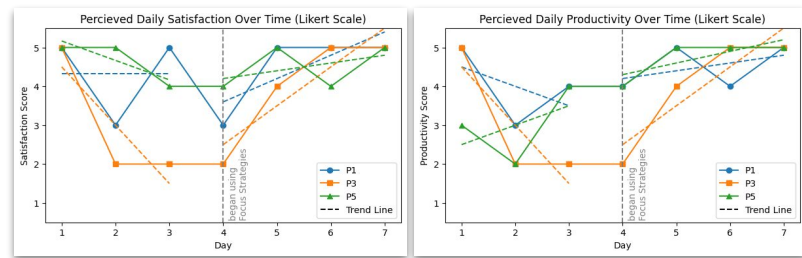
Background: Adults with ADHD have worse productivity, greater unemployment, reduced income, and higher rates of stress-related health issues. While using Focus Strategies (FS) to manage ADHD symptoms is effective, use can be inconsistent. Those with ADHD are drawn to novelty, so using RFS may lead to greater use of FS.

Study: Over the course of a week, I asked participants to use a web app which asks users to select three FS which will be randomly assigned for them to use on a daily basis. For the first three days, users do not use a FS, simply reporting their daily satisfaction and productivity. Then, users would be assigned a random FS from their selection for them to use, reporting their daily satisfaction and productivity after using the assigned FS.

Pilot: Piloting revealed the necessity of clear, detailed instructions and distinct UI elements for users' ability to effectively use RFS. Users also wanted to see what FS they had used on previous days.

Results:

- There is weak positive correlation between Focus Strategy use and Daily Productivity (Pearson's Correlation Coefficient (r) = 0.38)
- There is no correlation between Focus Strategy use and Daily Satisfaction (Pearson's Correlation Coefficient (r) = 0.079)



Discussion, Future Work: Participants reported liking using RFS and that it helped them to be more productive. Participant responses suggest that even if FS aren't used, even having one and the intention to use it increases their overall self-efficacy and improves feelings about themselves. Some expressed a desire to continue use.

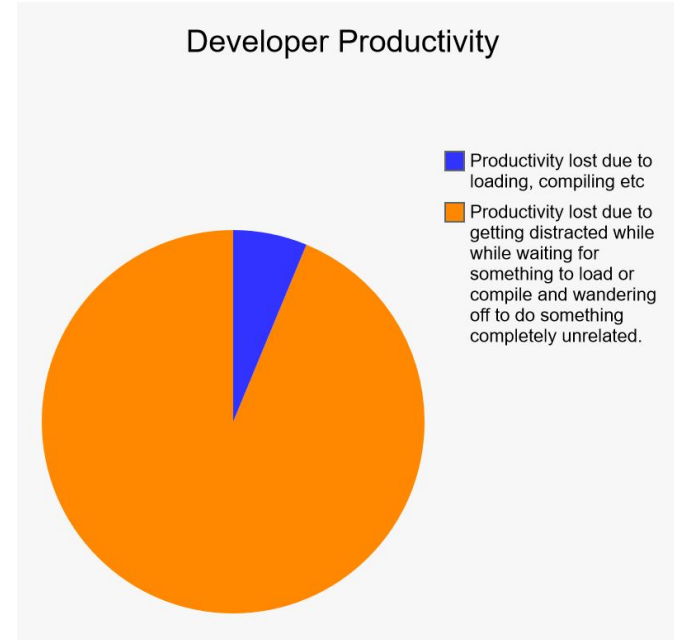
Rotational Focus Strategies For ADHD Management

John Bovard



Research Questions

- Does using Rotational Focus Strategies result in:
 - Perceived improvement of productivity?
 - Greater daily satisfaction?



Who Cares?

Who has ADHD?¹

- Estimated 15.5 million adults in the US
- Estimated 2-5% of adults globally

What impacts does ADHD have?²

- Worse productivity
- Greater unemployment
- Reduced income
- Stress-related health issues

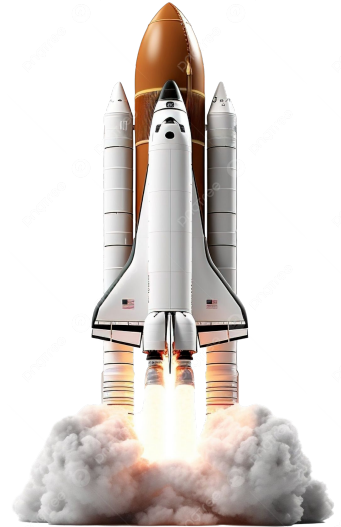


1. Staley, et al. 2024. Attention-deficit/hyperactivity disorder diagnosis, treatment, and telehealth use in adults - National Center for Health Statistics Rapid Surveys System, United States, October-November 2023. <https://doi.org/10.15585/mmwr.mm7340a1>

2. Christiansen, et al. 2021. The impact of childhood diagnosed ADHD versus controls without ADHD diagnoses on later labour market attachment-a systematic review of longitudinal studies. Child and adolescent psychiatry and mental health 15, 1: 34. <https://doi.org/10.1186/s13034-021-00386-2>

Intuition: Self-Satisfaction → Improved Outcomes

- Greater productivity and self-satisfaction
 - Greater self-efficacy
 - Improved quality of life through:
 - Lower stress
 - Fewer health problems
 - Meeting greater challenges
 - Greater employment opportunities
 - Improved income



Improving Productivity and Self-Satisfaction

Challenges

- Difficult to form effective habits
- Coping methods may stop working



Improving Productivity and Self-Satisfaction

Challenges

- Difficult to form effective habits
- Coping methods may stop working
- Distraction (obviously)



Improving Productivity and Self-Satisfaction

Key trait of ADHD

- Novelty Seeking

Rotate coping methods → **Rotational Focus Strategies (RFS)**

1. Donfrancesco, et al. 2015. Might the temperament be a bias in clinical study on attention-deficit hyperactivity disorder (ADHD)?: Novelty Seeking dimension as a core feature of ADHD. *Psychiatry research* 227, 2–3: 333–338. <https://doi.org/10.1016/j.psychres.2015.02.014>
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3. Liebel, et al. 2024. Challenges, strengths, and strategies of software engineers with ADHD: A case study. In *Proceedings of the 46th International Conference on Software Engineering: Software Engineering in Society*, 57–68. <https://doi.org/10.1145/3639475.3640107>

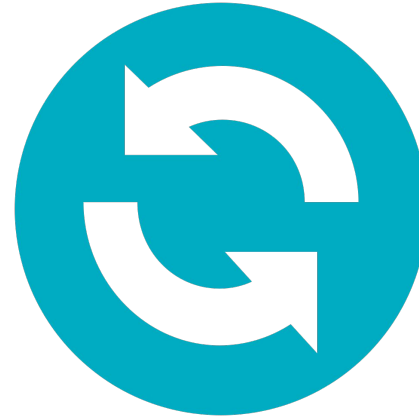
Improving Productivity and Self-Satisfaction

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Rotate coping methods → **Rotational Focus Strategies (RFS)**



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Approach

Needs to be:

- Easy to use
- Platform independent
- Low in user demand
- Allowing of forgetfulness

Solution:

- Web app
- Simple surveys
- Can take surveys late
(though discouraged)

Welcome to Rotational Focus Strategies.

Thank you for participating in my class project!

Sign in →

Sign up →

Approach

Need a baseline

- End of day Survey
 - Simple Likert scale questions:
 - Daily satisfaction
 - Daily productivity
 - Anything else they want to add

End of Day Survey - Baseline

Please complete the survey below.

What day is this for? *

04/14/2025



How satisfied are you with today? *

- ☐ 1 - Very dissatisfied
- ☐ 2 - Somewhat dissatisfied
- ☐ 3 - Neutral
- ☐ 4 - Somewhat satisfied
- ☐ 5 - Very satisfied

How productive did you feel today? *

- ☐ 1 - Very unproductive
- ☒ 2 - Somewhat unproductive
- ☐ 3 - Neutral
- ☐ 4 - Somewhat productive
- ☐ 5 - Very productive

Is there anything else you would like to add?

Write your response here (max 500 characters)...



To ensure your submission is recorded, please do not close this page or navigate away after clicking submit. Your responses will be saved and you will be redirected when submission is complete.

Submit

Approach

Need a measure of RFS effectiveness

- End of day Survey
 - Simple Likert scale questions:
 - Daily satisfaction
 - Daily productivity
 - True/False if they used the Focus Strategy
 - If not, why
 - Anything else they want to add

End of Day Survey - Daily

Please complete the survey below.

What day is this for?*

mm/dd/yyyy

How satisfied are you with today?*

☐ 1 - Very dissatisfied

☐ 2 - Somewhat dissatisfied

☐ 3 - Neutral

☐ 4 - Somewhat satisfied

☐ 5 - Very satisfied

How productive did you feel today?*

☐ 1 - Very unproductive

☐ 2 - Somewhat unproductive

☐ 3 - Neutral

☐ 4 - Somewhat productive

☐ 5 - Very productive

Did you use the assigned focus strategy today?*

☐ Yes

☐ No

If you didn't use the focus strategy, why not?

Write your response here (max 500 characters)...

Is there anything else you would like to add?

Write your response here (max 500 characters)...

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Submit

Approach

Should measure overall reception

- Exit Survey

- Simple Likert scale questions:
 - Overall satisfaction
 - Overall productivity
 - Overall usefulness
- Demographic info
- Anything else they want to add

Exit Survey

Please complete the survey below.

How satisfied have you been with your days while using Rotational Focus Strategies?*

☐ 1 - Very dissatisfied

☐ 2 - Somewhat dissatisfied

☐ 3 - Neutral

☐ 4 - Somewhat satisfied

☐ 5 - Very satisfied

How productive did you feel while using Rotational Focus Strategies?*

☐ 1 - Very unproductive

☐ 2 - Somewhat unproductive

☐ 3 - Neutral

☐ 4 - Somewhat productive

☐ 5 - Very productive

How useful did you feel that rotating focus strategies was?*

☐ 1 - Very useless

☐ 2 - Somewhat useless

☐ 3 - Neutral

☐ 4 - Somewhat useful

☐ 5 - Very useful

What is your gender identity? (Select all that apply)*

☐ Woman

☐ Man

☐ Non-binary

☐ Transgender

☐ Prefer not to say

☐ Other

If other, please specify:

What is your ethnicity? *

☐ Hispanic or Latino

☐ Not Hispanic or Latino

☐ Prefer not to say

What is your racial identity? (Select all that apply)*

☐ American Indian or Alaska Native

☐ Asian

☐ Black or African American

☐ Native Hawaiian or Other Pacific Islander

☐ White

☐ Prefer not to say

☐ Other

If other, please specify:

Is there anything else you would like to add?

Write your response here (max 500 characters)...

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Submit

Approach

Anticipate difficulty in recruitment

- Open it up to those who may have ADHD (self-reported)



Approach—Video

Piloting Rotational Focus Strategies (RFS)

- I built a web app
 - Users select 3 Focus Strategies (FS) to use (8 options)
 - Report baseline productivity/satisfaction
 - Random daily assignment of a FS
 - Report FS productivity/satisfaction



Piloting Rotational Focus Strategies (RFS)

- I built a web app
- Recruited 3 friends
 - 1 diagnosed with ADHD
 - 2 suspect ADHD
- Kept it short
 - 1 day baseline
 - 2 days using Focus Strategies (FS)
- Texted reminders (unreliable method)
- Multi-day on a web app

Piloting Rotational Focus Strategies (RFS)

- I built a web app
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 - 1 diagnosed with ADHD
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- Kept it short
 - 1 day baseline
 - 2 days using Focus Strategies (FS)
- Texted reminders (unreliable method)
- Multi-day on a web app
 - *Rapid iterative prototyping!*



Piloting Rotational Focus Strategies (RFS)

Problems encountered → Problems fixed

- Technical issues with db submissions → **Disable Submit after click**
- Checking the app → **Notifications (in progress)**
- User understanding → **Clarify instructions and UI**
- Not completing Exit survey → **Clarify instructions, distinguish appearance**
- History of FS assignments → **Added to dashboard**
- 1 User wanted to select FS every day → ***Ignored***



404

Page not found

Piloting Rotational Focus Strategies (RFS)

Problems encountered → Problems fixed

- Technical issues with db submissions → Disable Submit after click
- Checking the app → Notifications (in progress)
- User understanding → Clarify instructions and UI
- Not completing Exit survey → Clarify instructions, distinguish appearance
- History of FS assignments → Added to dashboard
- 1 User wanted to select FS every day → ~~Ignored~~
 - Talked more in depth, not strong feelings (I know them very well), may reduce novelty factor
 - Kept random assignment

RFS: Final Design

→ www.focusapp.dev

Onboarding

- Select 3 focus strategies
- Accordions reveal detailed descriptions

Select 3 focus strategies
Choose the strategies that you would like to use.

☒ Background Sound

☐ Check List

☐ Chunking

Environmental Shift

An environmental shift is a technique that involves changing your environment to help you focus. This can be as simple as moving to a different room or changing the lighting in your workspace. You can also try to find a quiet place to work, such as a library or a coffee shop.

You can also try to find a place that is free from distractions, such as your phone or television. This will help you to stay focused and avoid getting distracted by things that are going on around you.

☐ Pomodoro Technique

☐ Small Rewards

☒ Task Switching

☐ Work Partners

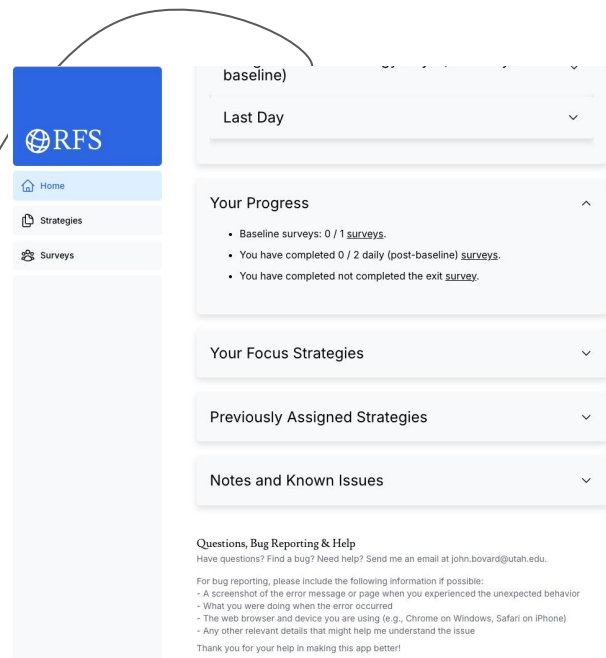
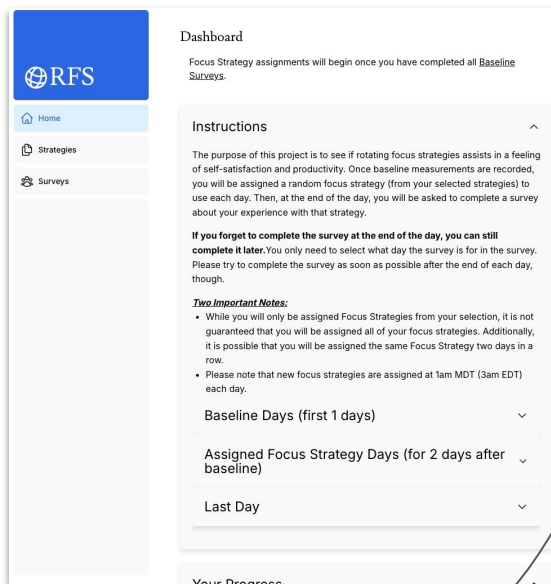
Submit



RFS: Final Design

Dashboard

- All needed info
- Emphasize the most important bits
- Accordions to avoid overwhelm



RFS: Final Design

Dashboard

- Detailed instructions divided by phase


Instructions


The purpose of this project is to see if rotating focus strategies assists in a feeling of self-satisfaction and productivity. Once baseline measurements are recorded, you will be assigned a random focus strategy (from your selected strategies) to use each day. Then, at the end of the day, you will be asked to complete a survey about your experience with that strategy.

If you forget to complete the survey at the end of the day, you can still complete it later. You only need to select what day the survey is for in the survey. Please try to complete the survey as soon as possible after the end of each day, though.

Two Important Notes:

- While you will only be assigned Focus Strategies from your selection, it is not guaranteed that you will be assigned all of your focus strategies. Additionally, it is possible that you will be assigned the same Focus Strategy two days in a row.
- Please note that new focus strategies are assigned at 1am MDT (3am EDT) each day.

Baseline Days (first 1 days) 

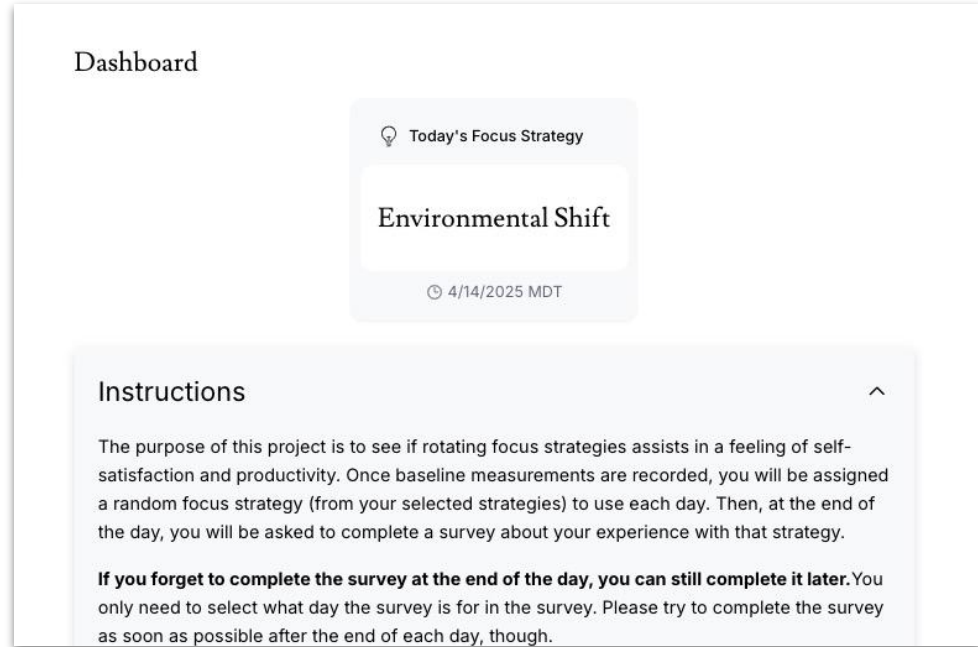
Assigned Focus Strategy Days (for 2 days after baseline) 

Last Day 

RFS: Final Design

Dashboard

- Daily FS assignment at the top
- Links to the strategy's description page



RFS: Final Design

Dashboard

- Progress tracking
- Previous assignments

Your Progress



- Baseline surveys: 3 / 3 [surveys](#).
- You have completed 4 / 4 daily (post-baseline) [surveys](#).
- You have completed not completed the exit [survey](#).

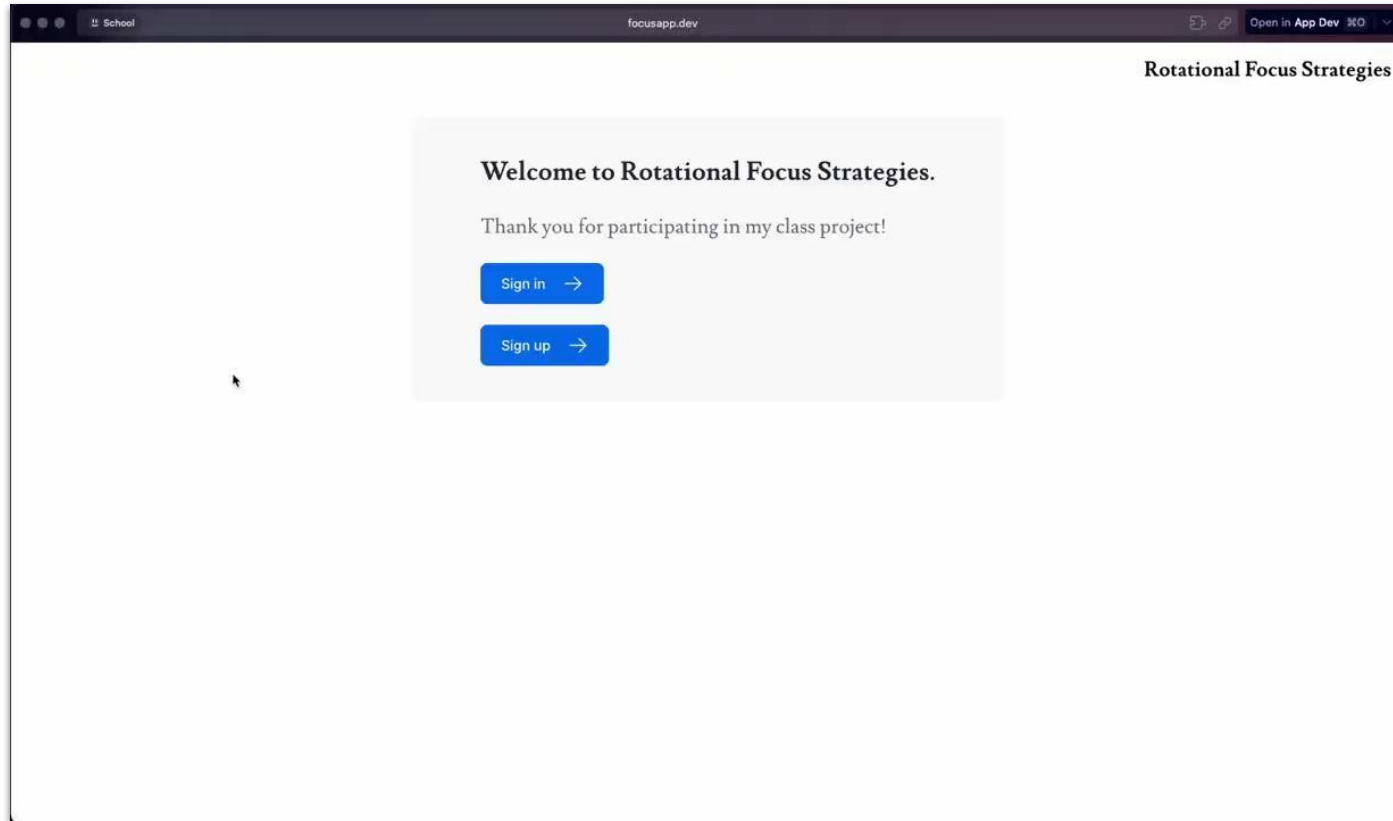
Previously Assigned Strategies



Background Sound

4/13/2025

RFS: Final Design–Full Use Video (shortened timespan*)



www.focusapp.dev

*Please note, this was a multiday study. During the study, a Focus Strategy (FS) from the user's selection was randomly assigned each day. However, this example only shows one day, so only that day's FS is assigned and additional FS's were not assigned.

Study Design

Multi-day RFS app use

- 7 days total
 - 3 days baseline
 - 4 days use
 - Exit survey on last day

Analysis

- Correlation analysis of Likert scale questions
- Thematic analysis of open response questions (pending results)



Recruitment

Convenience and Snowball sampling

- Friends
- Friends of friends
- Friends of friends of friends
 - (We tend to come in flocks)

Online recruiting problems:

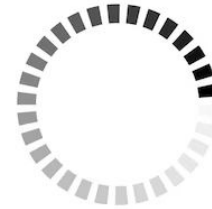
- ADHD forums want IRB approval



Results: Pilot

Pilot:

- The 1 person diagnosed with ADHD didn't complete the pilot
 - They later completed all but the exit survey
- Other 2 participants liked it and found it helpful
 - Pilot2: "Rotational strategies helped because using a single strategy creates a sort of mundane routine that makes work less enjoyable"



L O A D I N G . . .

Final Results: Participant Demographics

Apart from ADHD status and age, demographics questions were asked at the end of the study. Therefore, demographics data is limited. Categories marked with an asterisk* have data limited to participants who completed the Exit Survey.

- Recruitment phase
 - 7 recruits total

Across All Participants

ADHD Status	#Participants	Age Range	#Participants
Diagnosed	2	18-25	2
Suspected	5	26-35	5
		>35	0

Note that more age ranges, gender identities, and racial identities were listed, but none of those were reported by participants.

Across Participants with 100% Completion

ADHD Status	#Participants	Racial Identity*	#Participants
Diagnosed	1	White	2
Suspected	1	Other	0

Age Range	#Participants	Gender Identity*	#Participants
18-25	1	Man	1
26-35	1	Woman	1
>35	0	Other	0

Final Results: Participant Demographics

Individual Participant Demographics *(Empty cells were unreported)*

Participant	ADHD Status	Age	Gender Identity	Racial Identity	>80% Completed
P1	Suspected	26-35	Man	White	True
P2	Suspected	26-35			False
P3	Diagnosed	18-25	Woman	White	True
P4	Suspected	18-25			False
P5	Suspected	26-35			True
P6	Diagnosed	26-35			False
P7	Suspected	26-35			False

Final Results

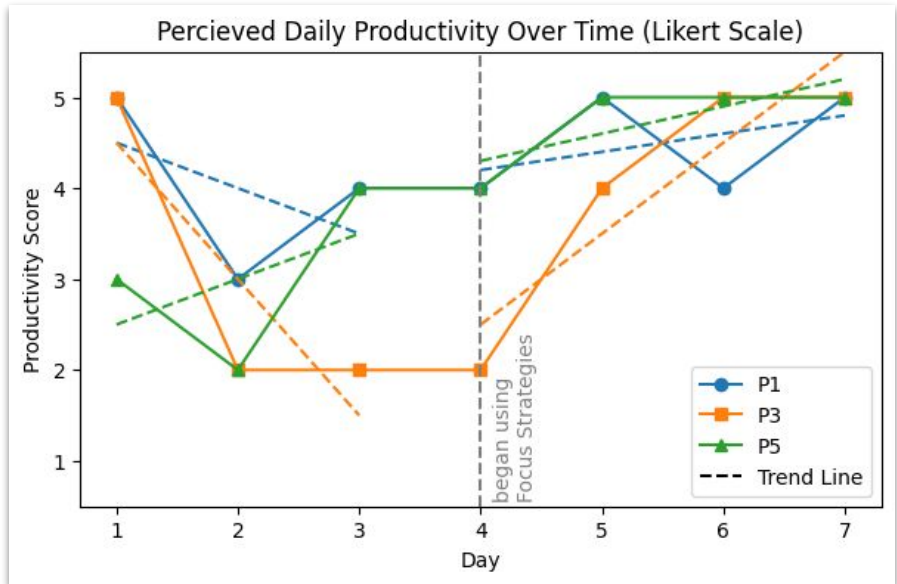
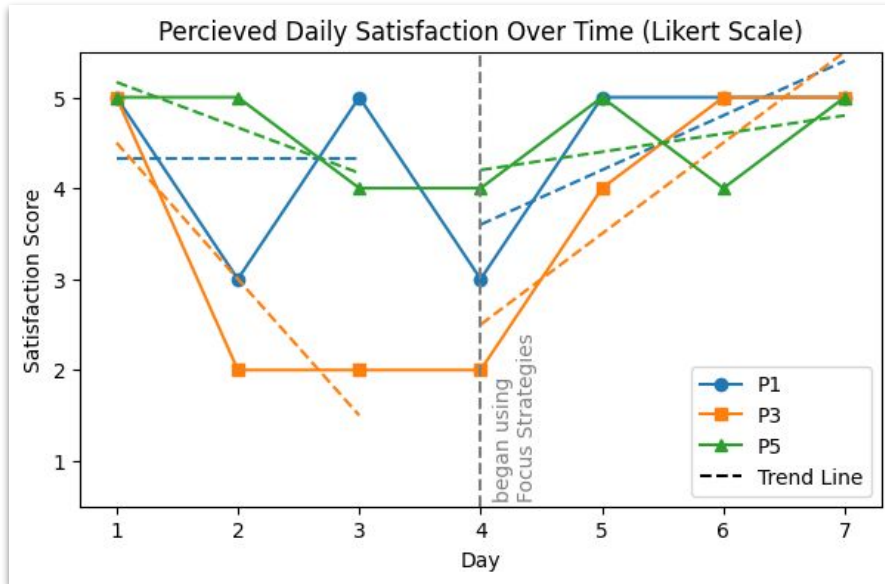
- All Participants who began the study completed all Baseline Surveys
- Participants with >80% Completion

	Mean Satisfaction Score	Mean Productivity Score
Baseline Surveys	4.0	3.33
Daily Surveys (all)	4.33	4.25
Daily Surveys (FS used)	4.27	4.18

- Note: Only one participant (P6) with <80% completion rate completed any Daily Surveys. This participant only completed one Daily Survey.

Final Results: Analysis

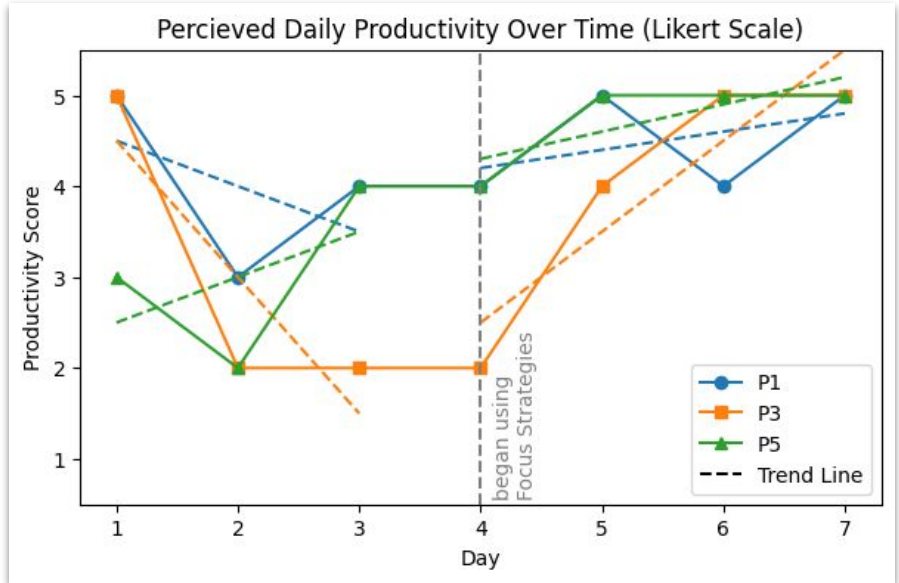
- Participants show a clear increase productivity after they began using Focus Strategies
- The study was too brief to draw clear correlative conclusions



Final Results: Analysis

Daily Productivity

- There is **weak positive correlation**¹ between Focus Strategy use and Daily Satisfaction
 - **Pearson's Correlation Coefficient (r) = 0.38**
- All but one participant reported reducing Daily Productivity during the baseline
- All participants reported increasing Daily Productivity when using Focus Strategies

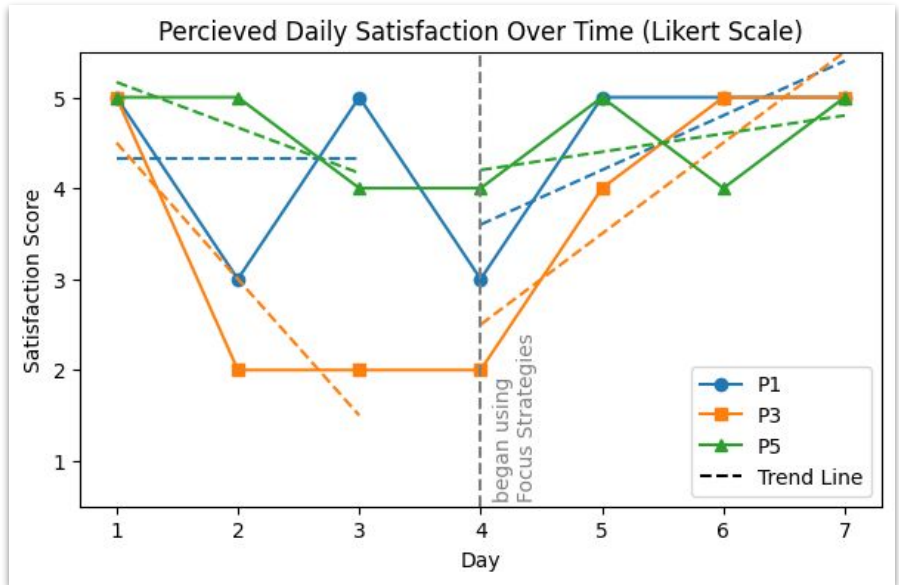


1. Patrick Schober, Christa Boer, and Lothar A. Schwarte. 2018. Correlation coefficients: Appropriate use and interpretation. *Anesthesia and analgesia* 126, 5: 1763–1768. <https://doi.org/10.1213/ANE.0000000000002864>

Final Results: Analysis

Daily Satisfaction

- There is **no correlation**¹ between Focus Strategy use and Daily Satisfaction
 - **Pearson's Correlation Coefficient (r) = 0.079**
- All but one participant reported reducing Daily Satisfaction during the baseline
- All participants reported improving Daily Satisfaction when using Focus Strategies



1. Patrick Schober, Christa Boer, and Lothar A. Schwarte. 2018. Correlation coefficients: Appropriate use and interpretation. *Anesthesia and analgesia* 126, 5: 1763–1768. <https://doi.org/10.1213/ANE.0000000000002864>

Final Results: Analysis

Thematic Analysis of Daily Survey Responses from Participants with >80% Completion

- Analysis of 12 open responses yielded six themes (two with only one note)
- Themes
 - Breaking up my tasks or my day helped me to get things done. (n=4)
 - Collaboration really helped. (n=2)
 - Doing the activity of the Focus Strategy felt good. (n=2)
 - I felt good that I got so much done today. (n=2)
 - I experimented with different Focus Strategies and feel very good about my day. (n=1)
 - I am disappointed with not using the Focus Strategy more. (n=1)

Final Results: Analysis

Thematic Analysis of Daily Survey Responses from Participants with >80% Completion

Breaking up my tasks or my day helped me to get things done

Collaboration really helped

Doing the activity of the Focus Strategy felt good

I feel good that I got so much done today

I experimented with different Focus Strategies and feel very good about my day

I am disappointed with not using the FS more

I used short walks as a small rewards between tasks, which helped me feel good and switch to the next thing.

I switched between tasks to help me stay productive when I found it difficult to get more done.

Busy day of ups and downs. Working with partners kept productivity going and stabilized mood when things went awry.

Busy, busy day of scheduled and surprise tasks. Working with others allowed teamwork, live troubleshooting, and shared motivation.

I did a pretty good job using the checklist to keep track of my progress. That makes me feel happy because I feel like I'm moving past finals week, which I don't like very much.

I was so productive today. I took an exam, I gathered data for a final project, and I studied for another final exam. I'm feeling really good about my productivity.

I spent my work day entirely in my office by necessity, but I experimented with lighting, got up to stretch my legs and step outside a few times, etc. Then we had some lovely folks over for dinner and spent hour exploring in the woods with them talking about foraging and permaculture. A medium-high productive work day and a 10/10 day overall.

I probably could have done better with the focus strategy.

Chunking helped me break up studying for my licensure exam.

I used chunking to break up my studying for my licensure exam I have next week. I just did 1/3 of a practice exam (i.e., 50 questions).

I checked stuff of my checklist and it made me feel good like I got things done. Even though my checklist today was just 'take CS exam.' But I did that so I accomplished things.

One of my most productive days in a while. Clearly the pressure of having many time-sensitive tasks is an effective motivator for me to stay focused.

Discussion

- Participants reported liking using RFS—some wanted to continue use.
- RFS use showed weak positive correlation to daily productivity. Given the short duration of the study, this is a very good result. Furthermore, there was a positive trend in productivity during RFS use.
- While Satisfaction showed no correlation, there was an upward trend during RFS use. The lack of correlation may be a result of the short duration of the study.
- The two participants who filled out the Exit Survey both had positive things to say about using RFS:
 - P1: “Even if I was not employing the strategy at the particular time, reminding myself that I HAD a focus strategy for the day was helpful. I appreciate effort going into alternative and no-cost ways to address focus and productivity.”
 - P3: “This has been really helpful, completing short journal entries and reflecting on my day. I think I might want to download an app so I can keep monitoring my emotions and productivity.”
- Participant responses suggest that even if specific Focus Strategies aren’t necessarily used, even having one and the intention around it increases their overall self-efficacy and improves feelings about themselves.
- Additionally, both P1 and P3 rated the overall usefulness of the RFS app high, both of them giving it a score of 4/5 (Likert scale).

Limitations

- This study had too few participants to draw firm conclusions.
 - Despite the short duration of this study, RFS shows promise as an ADHD management tool. While productivity scores only moderately improved, based on initial results and user feedback, I suspect that a longer study may reveal greater correlation.
- This study was too short to draw firm conclusions.
 - Due to the limited time during which this study was able to take place (three days of baseline data, four days of RFS use), it is difficult to draw firm conclusions about the results of RFS use. Yet, results revealed an upward trend in daily satisfaction and productivity.
- It is reasonable to suspect that using RFS would take time to get used to.
 - This study was limited to only one week, which is not a very long time to get used to a new tool or develop the habit of using it. Longer use may yield better results.
- The study had a high participant dropout rate and difficulty finding recruits.
 - Likely due to the population being targeted—those with or suspecting ADHD.

Future Work

- The use of RFS shows promise for helping those with ADHD or experiences similar to those with ADHD manage their daily productivity.
 - A longitudinal study over the course of at least a month examining the use of RFS would yield richer results with greater insight into the potential of RFS as a ADHD management tool.
- A follow up study exploring the causes for the high dropout rates and how to mitigate them may yield important information for retaining users with ADHD.

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Questions?

