

Fostering personal finance engagement with a habit building app

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Introduction

Managing money and having a financial plan is not always fun, but it is a good practice that can lead to opportunity and independence in the future. Millennials and Generation Z (people born between 1980 and 2010) have experienced financial hurdles in the form of a recession, high-interest student loans, inflation, and most recently the pandemic (ConsumerAffairs, 2022; Cowles, 2022). No shortage of think pieces have been written about the financial plight of these generations. In fact, in 2018 I was prompted to begin to better understand my own personal finances after an article with a particularly viral-ready title circulated amongst my friend group: “Millennials born in 1980s may never recover from the Great Recession”. According to this article the net worth of a family headed by someone born in the 1980s is about thirty-four percent below what was expected, largely fueled by debt and lack of home ownership (Luhby, 2018).

As I increased my financial literacy I found that most personal finance management apps and even some financial advisors assume that their customers have an understanding to work from. This left me hopping from Investopedia to NerdWallet.com, to my banks that I had randomly chosen ten years prior, to a financial advisor I was not sure I could trust. I had to overcome feelings of shame and anxiety on my financial education journey, and from conversations with friends I learned that others felt similarly. This led me to believe that there is an opportunity for a personal finance app to better meet disengaged people where they are and help them build financial knowledge and habits.

Approach

For this project I used the Design Thinking five step process developed by the Stanford d.School and have organized this paper in the same way: Empathize, Define, Ideate, Prototype, Test (Interaction Design Foundation). I used Design Thinking because it focuses on understanding users and their needs and emphasizes continually testing design prototypes as a

way to better understand user needs. In the following sections I will detail what specific research and design choices I made during each phase of my project.

Empathize

In the Empathize stage I began by performing secondary research of personal finance apps and websites. I performed a Google search for articles reviewing personal finance apps (Benninger, & Foreman, 2022; Graves, 2022; Irby, 2019) and chose ten to review in-depth in a competitive analysis. I had a perspective in my own head from years of trying out different apps and websites but I wanted to step back and do the due diligence of reviewing currently available apps, including ones I may not have tried yet. I evaluated each app's unique value proposition, advantages, and disadvantages (figure 1.1). I prioritized looking at apps that seemed to offer different services (i.e. budgeting versus long-term financial planning) and did focus on reviewing the apps that were positively reviewed by the sources I found.

	Unique value proposition	Company advantages	Company disadvantages
 Mint	Bill Organizer & Money Saver	Part of Intuit - high awareness and connected to Intuit's core with their own works for Turbo Tax Time - people have a Mint account and stay with it because they have all the historical trading there Free or \$1 month for ad-free	There are tons of features in their product and I'm not sure they're all speaking to the same user. It feels like an overload Advertising revenue model. The result is a core user experience plastered with ads.
 Cash App	The easy way to send, spend, bank, and invest. P2P, Banking, Bitcoin, Stocks.	P2P angle stands out in this space Bitcoin More edgy style geared towards younger group of people.	Reputation as a Venmo-style cash transfer app, potential that folks don't know about investment options
 Personal Capital	Link your accounts and track your entire net worth. Work with an advisor to build a free Personalized Plan that's yours to keep. Get Wealth Management custom-tailored to your unique situation.	Account linkage - just like Mint Offers advisor relationships for wealth management, looking to keep users over a longer period of time	Part of Empower Retirement, so access seems like it could be an issue - does someone need to have an Empower account to use this?
 Playbook	Get a delightful financial plan in minutes. Maximize your tax advantages to increase your net worth.	Laser focused on making out tax advantageous options Creates a personalized plan	Long-term users - when to people graduate?
 Copper	SMART MONEY. If you're 13+ you can bank, invest, and thrive. The better you know money, the better you grow money.	Laser focused on starting teens on financial health early to maximize growth over time Banking debit card and investing in 1 place	Long-term users - when to people graduate?
 M1	The Finance Super App. Invest, borrow, and spend on one intuitive platform. Customize your strategies, automate the big picture, and let The Finance Super App take care of the day-to-day—completely free.	Comprehensive feature set - breaking into the term Super App to describe range of features Banking, credit, investing, and checking in 1 place High user reviews	Lack of user awareness - found this on no lists
 YNAB	Gain Total Control of Your Money. Stop living paycheck-to-paycheck, get out of debt, and save more money.	Follows 4-step method: Give Every Dollar a job, Embrace Your True Expenses, Give Every Dollar a job, Age Your Money - encourages good behaviors with method Rare user reviews and testimonials from real people, more than other apps I'm looking at Works for 1 person, households, couples, families and more situations - targeted a broad persona group	There's a monthly cost of \$10 - pretty high and might deter some potential users Heavy on budgeting, lighter on long-term growth and guidance
 EveryDollar	Tell your money where to go. EveryDollar puts you in control of your finances—and your future.	Zero-Based Budgeting Method - clear behavior drive for financial wellness Affiliated with Ramsey Solutions, which looks like its run by some guy named Dave Ramsey who is a popular financial talking head/guy celebrity endorsement?	Monthly charge of \$13 - competitors offer a similar service for free
 HoneyDue	Outsmart Money, Together Honeydue is the simplest way for couples to manage money, together.	Designed for two people to use the app together and review costs together. Ability to leave notes in the app and talk about specific transactions.	Targeted at couples only - does this remain useful if a family grows? Small user base No future thinking features, only budgeting and bills focused
 PocketGuard	Personal finance simplified. PocketGuard makes it easy to take control of your money, optimize your spending and grow your savings automatically.	Oval tracking + budgeting in 1 place Highly positive user reviews on app stores	Seems to be exactly like Mint but less well known - what makes this different?

Figure 1.1. Competitive analysis.

I then created a matrix sorting the apps by their focus on creating a new user behavior versus supporting an existing one and focusing on short term goals versus longer term goals (figure 1.2). I found two apps that focused on the bigger picture and encouraged new behavior, and both were focused on a user base of younger adults and helping them understand how to

leverage tax-advantaged accounts. Copper is explicitly geared towards teens as young as thirteen and Playbook heavily emphasizes investing in tax-advantaged accounts as soon as possible because it focuses on a compounding strategy. The other apps I reviewed focused on day-to-day budgeting (You Need a Budget, Cash App, Pocket Guard, Honeydue) and keeping track of money by seeing all accounts in one place and offering a mix of budgeting features, credit card offers, and user-driven goal setting (Mint, Personal Capital, M1). As I hypothesized based on my own experience looking for financial resources, no apps I reviewed focused broadly on helping users build financial understanding and literacy.

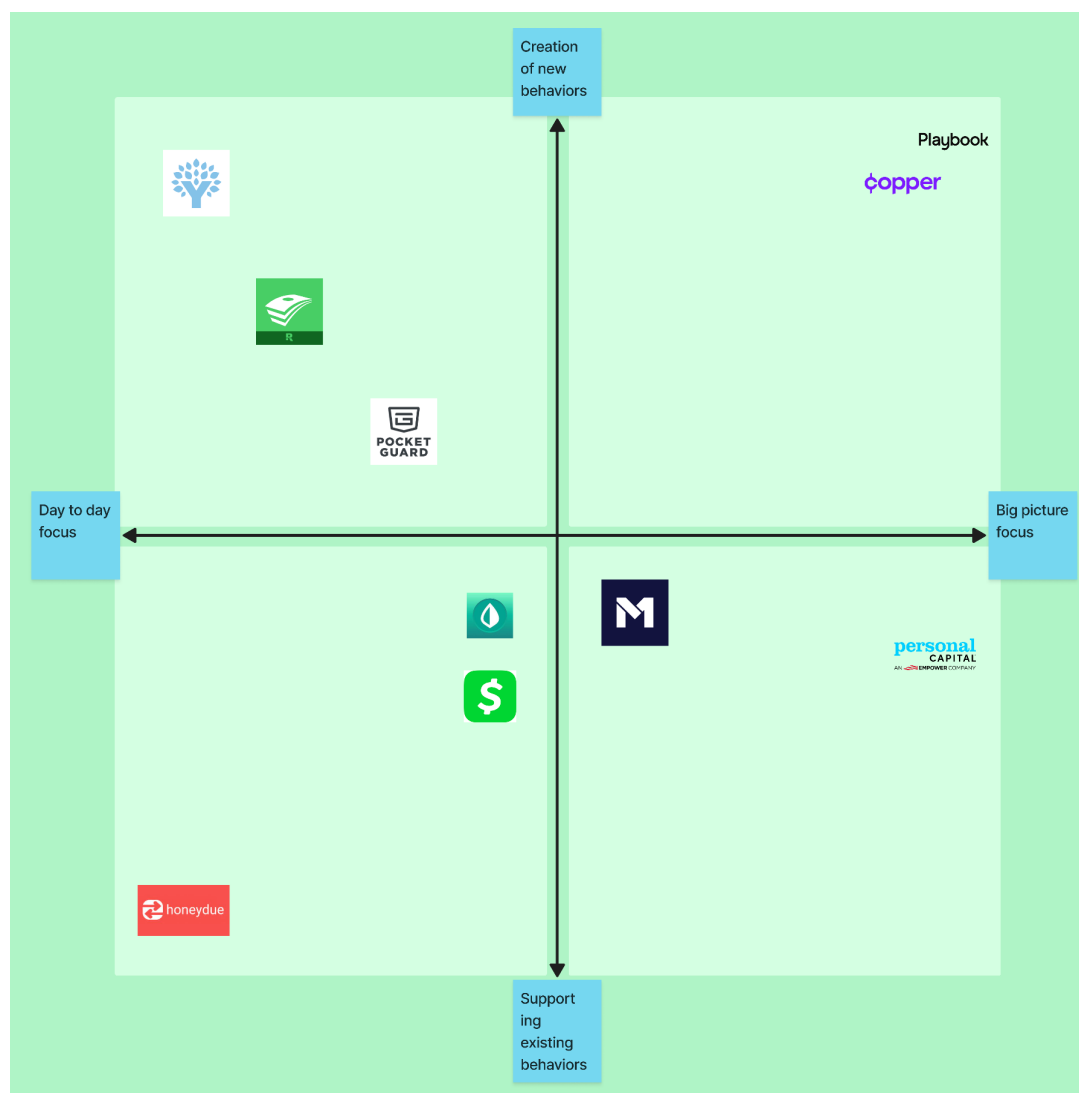
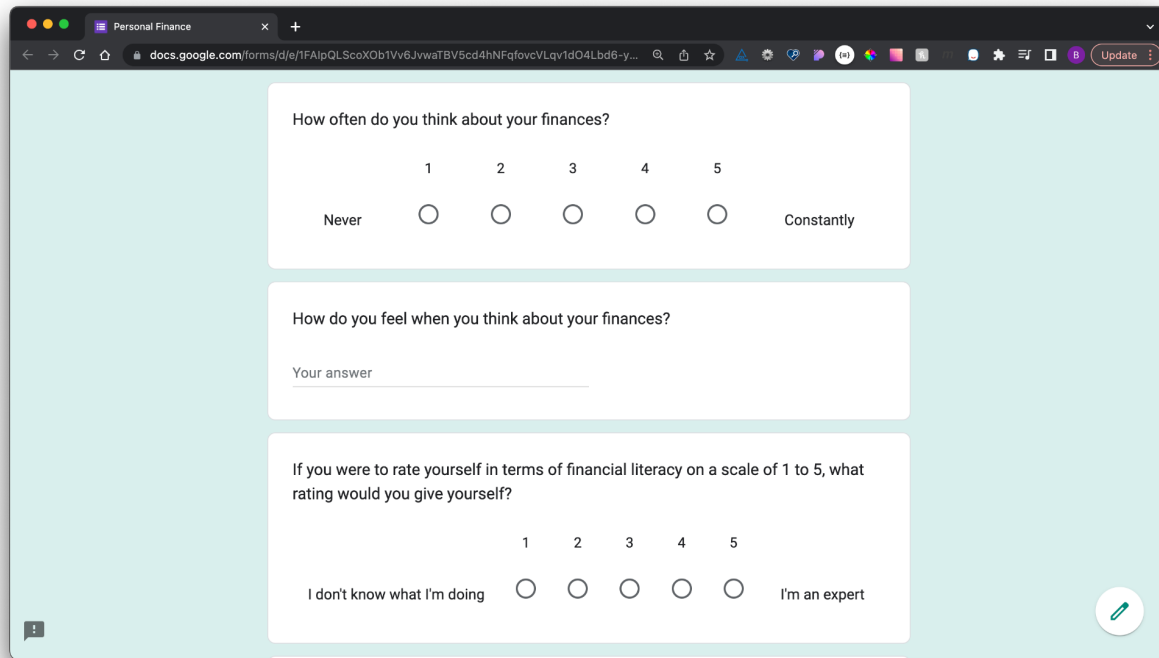


Figure 1.2. Competitive analysis matrix.

I then created a six question survey using Google Forms (figure 1.3), which I shared with several personal finance reddit communities, a survey reddit community, and on my personal Facebook page. My reddit post was eventually removed from the financial health subreddits I posted on due to violating community guidelines (which I did not do intentionally), so my hypothesis is that a majority of responses are from my Facebook friends. The survey collected no personal information such as emails or names and did not ask for identifying information such as age, gender, profession, or income. I stored the responses in the survey form and deleted the survey and responses once I completed synthesis.



The image shows a Google Form titled "Personal Finance" in a web browser. The form contains three questions:

- Question 1:** "How often do you think about your finances?" with a Likert scale from 1 to 5. Below the scale, "Never" is aligned with 1 and "Constantly" is aligned with 5. There are five radio buttons corresponding to the numbers.
- Question 2:** "How do you feel when you think about your finances?" followed by a text input field labeled "Your answer".
- Question 3:** "If you were to rate yourself in terms of financial literacy on a scale of 1 to 5, what rating would you give yourself?" with a Likert scale from 1 to 5. Below the scale, "I don't know what I'm doing" is aligned with 1 and "I'm an expert" is aligned with 5. There are five radio buttons corresponding to the numbers.

The browser's address bar shows the Google Forms URL: `docs.google.com/forms/d/e/1FAIpQLScoXOb1Vv6JvwaTBV5cd4hNFqfovcVLqv1dO4Lbd6-y...`. The browser tab is labeled "Personal Finance".

Figure 1.3. Survey.

The goal of this survey was to understand how people feel about their finances and what they would like to see differently in the apps and websites where they manage their finances today. I made survey design choices to reduce the burden on voluntary online respondents: the overall survey was short (six questions), the questions were short answer or Likert scale and no

questions were required. Thirty-two people completed the survey. The remainder of this section details the survey responses.

RQ1: How often do you think about your finances?

Participants were asked to answer this on a scale of 1 (never) to 5 (constantly) and twenty-three respondents answered (figure 1.4). Thirty-four percent of respondents said they think about their finances constantly whereas eight percent said they never think about them. A combined seventy-six percent answered three or higher, indicating that a majority of people think about their finances somewhat often.

How often do you think about your finances?

23 responses

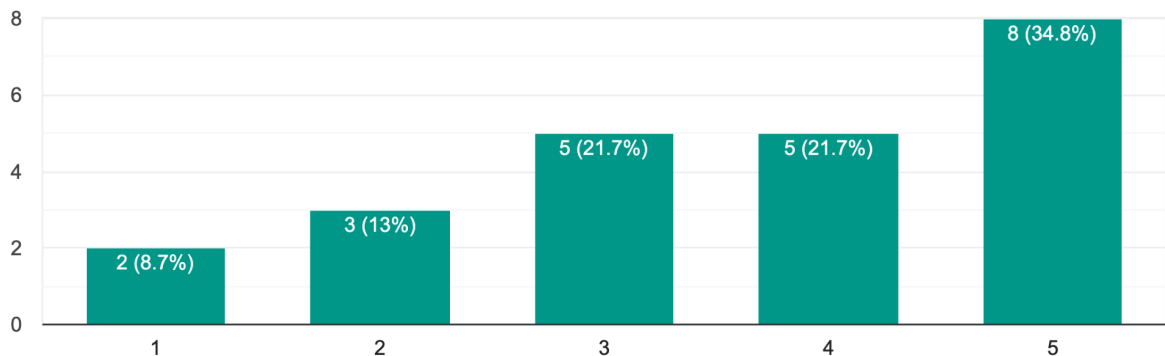


Figure 1.4. Survey responses to RQ1.

RQ2: How do you feel when you think about your finances?

This question was short-answer and twenty-two respondents answered. Nine responses could be classified as entirely negative feelings with feelings cited such as “sick to my stomach” and “Stressed that Im not doing enough. Daunted by the terminology. Intimidated.” Four responses used the word “anxious” and words like overwhelmed and worried were also used. Six responses could be classified as mixed emotions with both positive and negative feelings being

cited, for example “anxious but optimistic”. Four responses could be classified as neutral with answers like “fine” or “ok”, or even simply “neutral”. Three respondents could be classified as positive expressing emotions like confidence and security. Overall, a majority (sixty-eight percent) of respondents expressed negative feelings or a mix of negative and positive emotions.

RQ3: If you were to rate yourself in terms of financial literacy on a scale of 1 to 5, what rating would you give yourself?

Participants were asked to answer this on a scale of 1 (I don’t know what I’m doing) to 5 (I’m an expert) and twenty-three respondents answered (figure 1.5). The most common answer was 3, with thirty-nine percent of respondents. A total of eight-seven percent of respondents answered 2, 3, or 4, indicating that people see themselves as somewhat average in terms of financial literacy.

If you were to rate yourself in terms of financial literacy on a scale of 1 to 5, what rating would you give yourself?

23 responses

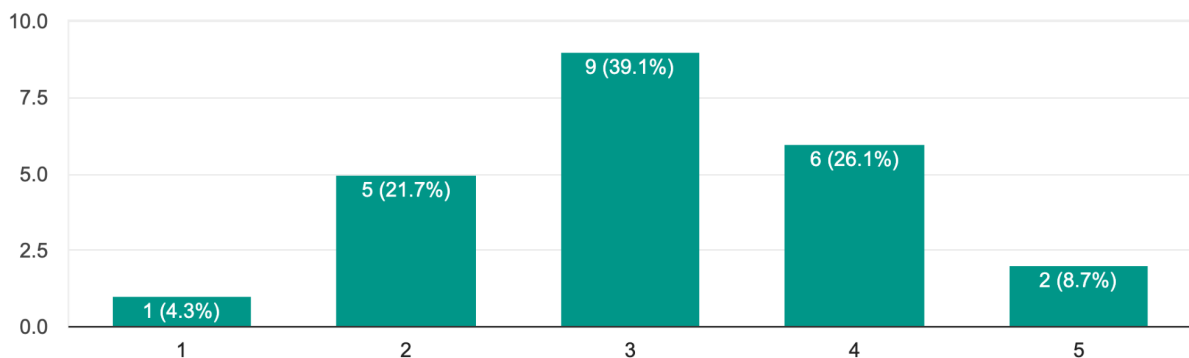


Figure 1.5. Survey responses to RQ3.

RQ4: Why did you give yourself this rating?

This question was short-answer and twenty-two respondents answered. Six respondents said that they felt they had some financial literacy so far, yet they also were aware they had

more to learn. As one person put it: “I know enough to know that I don’t know enough; but I’m not completely helpless.” A few cited their financial track record as a reason for their rating, like “paying my bills in full every month” or saying that they have “never had any problems with money”. Some cited their childhood as having a role in how they see their financial literacy, with one person who rated themselves a 4 out of 5 in RQ3 saying “I actually manage my finances really well due to growing up in a family where you could never buy anything impulsively”.

RQ5: If you use any apps or websites to manage your finances, which ones do you use?

This question was short-answer and nineteen respondents answered. The range of products cited here was vast. Twenty-two apps or websites were named and ranged from banks to budgeting software to membership-based investment clubs to investment and 401(k) providers. Four respondents said they did not use any apps or websites to manage their finances.

RQ6: What would you change about the personal finance apps or websites you use today?

This question was short-answer and fourteen respondents answered. A majority of respondents said they were not sure what they would like to see change. The next most common request was for more educational resources and guidance or discussion of investing and retirement in “layman’s terms”. Other requests included data visualizations of finances over time, calculators and forecasting tools, and budgeting, investing, and financial advice.

Define

I coded responses to all six questions (figure 1.6) to identify themes and group them into categories with supporting evidence (Lindlof & Taylor, 2019). I performed an initial round of coding within each question to identify similar responses to the same question and then sought to identify similarities between codes within each question to create categories. I revisited codes

and categories multiple times until I felt I understood the narrative within the data. The remainder of this section is a short summary of the findings I uncovered during synthesis.

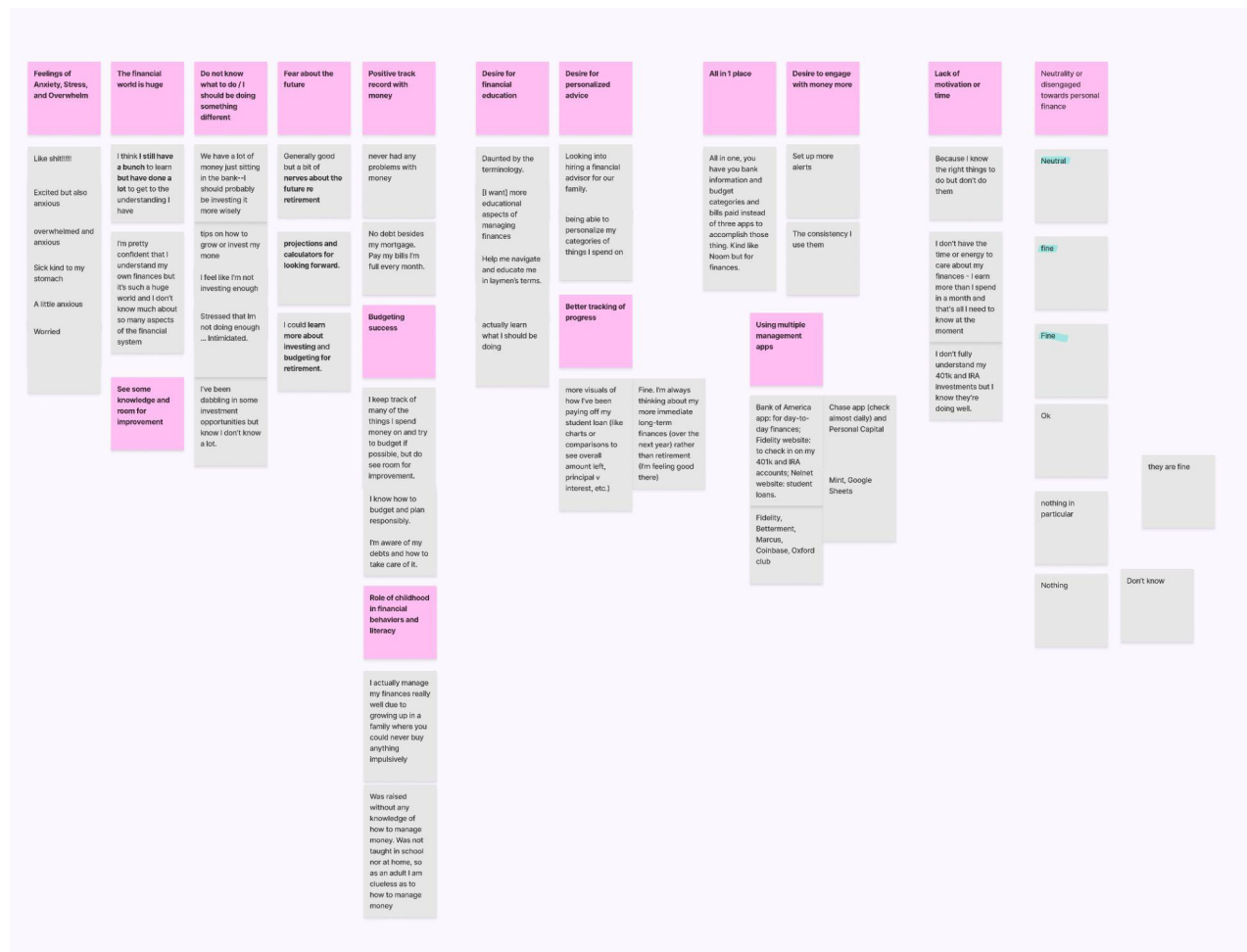


Figure 1.6. Survey coding and categorization.

People may experience feelings of anxiety, stress, and overwhelm about their personal finance. These negative feelings can be extreme and people can feel “daunted”, “sick to my stomach” or “like sh*t”. Feelings are not one-dimensional, and excitement or optimism might accompany the negative feelings, but the negative feelings seem to be pervasive and always or almost always prevailing. Further exacerbating the anxiety is the reality that the financial world is huge. Even those who feel as though they have spent time and effort to understand their finances feel relieved or happy about what they do know while also recognizing that there is so

much they do not know. As one person put it “I think I still have a bunch to learn but have done a lot to get to the understanding I have.” Feeling solely positive about one’s finances is not a fixed endpoint but something people progressively deepen and grow. People see information as important to increasing their personal finance literacy, but also see a gap between having the information they need and acting upon that information. During this journey, people feel as though they are “not doing enough” or are not doing enough of the “right” things. This is particularly true in regards to investing and looking ahead at an ambiguous savings goal like retirement. People desire deeper education about investing and retirement and barriers to feeling confident in these areas include the terminology – with one person saying they wish they could navigate investing in “layman’s terms” – feeling intimidated, and a lack of time or energy.

At the same time that looking ahead is stressful, looking back boosts people’s confidence. People see a track record of paying their bills on time, successful budgeting, paying off a loan, and overall having less money going out than money coming in as evidence that their financial literacy is average or above average. People may also see financial habits of their families in childhood (either good or bad) as a factor in how they approach their personal finance and as a relevant metric to consider when they assess their financial literacy.

Those who use apps and websites to manage their finances today most likely use multiple apps, for example a banking app, an investment app, and another app designed to help give them a holistic picture of their finances like Mint or Personal Capital. People see value in having a central place from which they can manage their finances, as one participant put it “you have one app instead of three apps to accomplish things”. People are also interested in engaging with their finances more often, and being proactively alerted if there is something they need to do.

Using synthesis as a guide I developed a set of Jobs to Be Done (JTBD), a framework used in place of Personas to understand the job’s a user needs to do with a specific product

(Laubheimer, 2017). I developed two core jobs that I hypothesized users would want to “hire” a mobile app to do:

1. Notice emotions related to my personal finance and financial literacy and better understand if and how these emotions are influencing my behavior
2. Improve my financial literacy

Ideate

In early interactions of the design, I designed features focused on making the longer goal of retirement seem “real”, explaining the benefit of investment growth rates, showing someone’s progress towards maximizing tax-advantaged accounts, celebrating people’s successes (like paying off a loan), and offering educational webinars. After some time designing I began designing, I felt a little bit stuck. So for inspiration I performed an audit of habit-building apps outside of the finance industry to look for clues and ideas of things I could bring into personal finance (figure 1.7). I was in part inspired to do this by a survey respondent mentioning Noom, a dieting app, when they talked about what they wanted to see from a personal finance app. I looked at Finch, a self-care app, Flo, a menstruation tracking health app, Calm, a meditation app, and SleepReset, a sleep wellness and training app. I noted features and design patterns that I found inspiring and noted how I thought applying such a feature in the financial space could provide user value based on research done in the empathize stage. This out of category analysis inspired me to begin designing an onboarding flow asking users about their emotions surrounding their personal finance. Once I felt reinvigorated I returned to design.

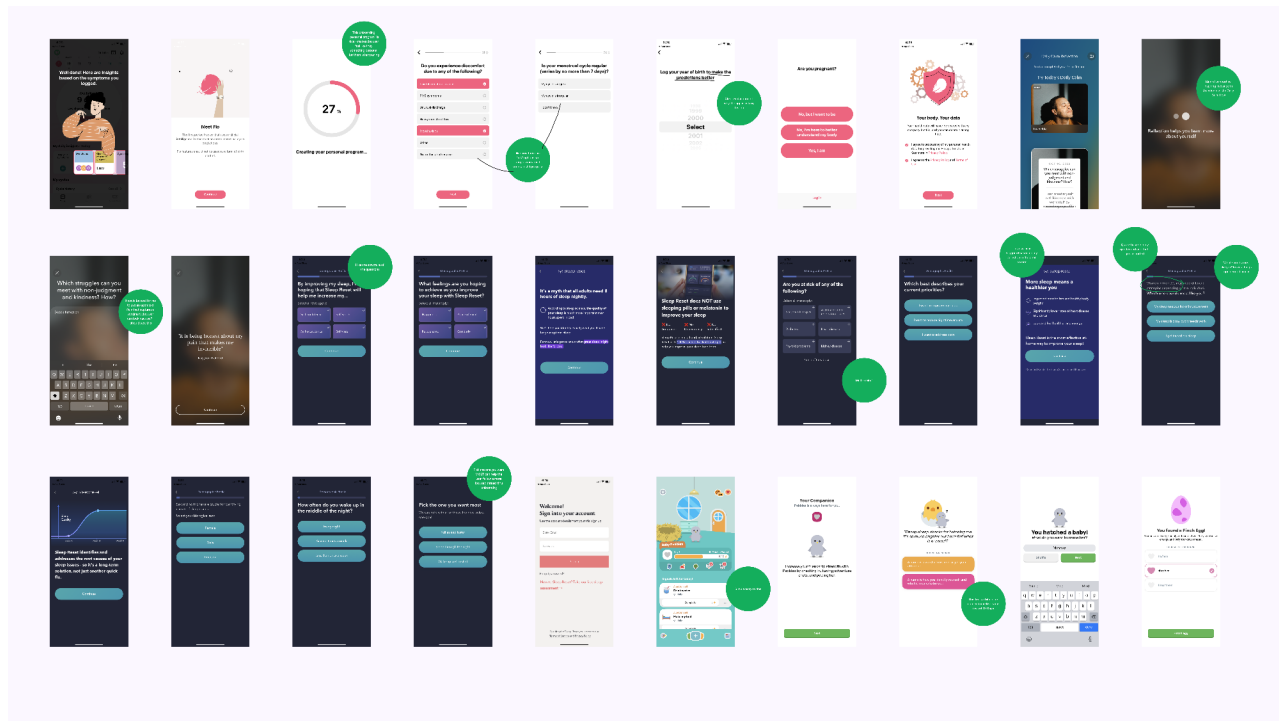


Figure 1.7. Out of category app analysis.

In the onboarding flow design I avoided using industry terms because I did not want to assume any financial knowledge or interest. I also avoided asking people questions like the amount of money they make or what amount of money they spend on certain things today. I felt these questions could further exacerbate the anxiety or stress survey respondents cited. Upon completing this onboarding flow the prototype serves up a personalized home screen based on the user input.

Prototype

I created an interactive mobile prototype using the design software Figma (figure 1.8). I did not design to account for every possible flow the user could take, thus testers were not able to fully control the prototype. I prefaced user testing sessions by explaining this and chose answers in the onboarding flow to push all testers through the same journey purely to save design effort and prioritize quick user testing. I did explain that I wanted participants to tell me what they

would choose at each step and why, regardless of the prototype flow, and I do not feel that my illustrative choices influenced user feedback.

I created a library of common components and I used components from Apple's Human Interface Guidelines to make design revision faster. I went directly into high-fidelity design and prototyping because I did not feel there would be a significant difference in user feedback if I began testing with a low-fidelity prototype, which typically uses placeholder images, some placeholder text, and a grayscale color palette if created digitally or even paper and pen sketches if used for in person testing.

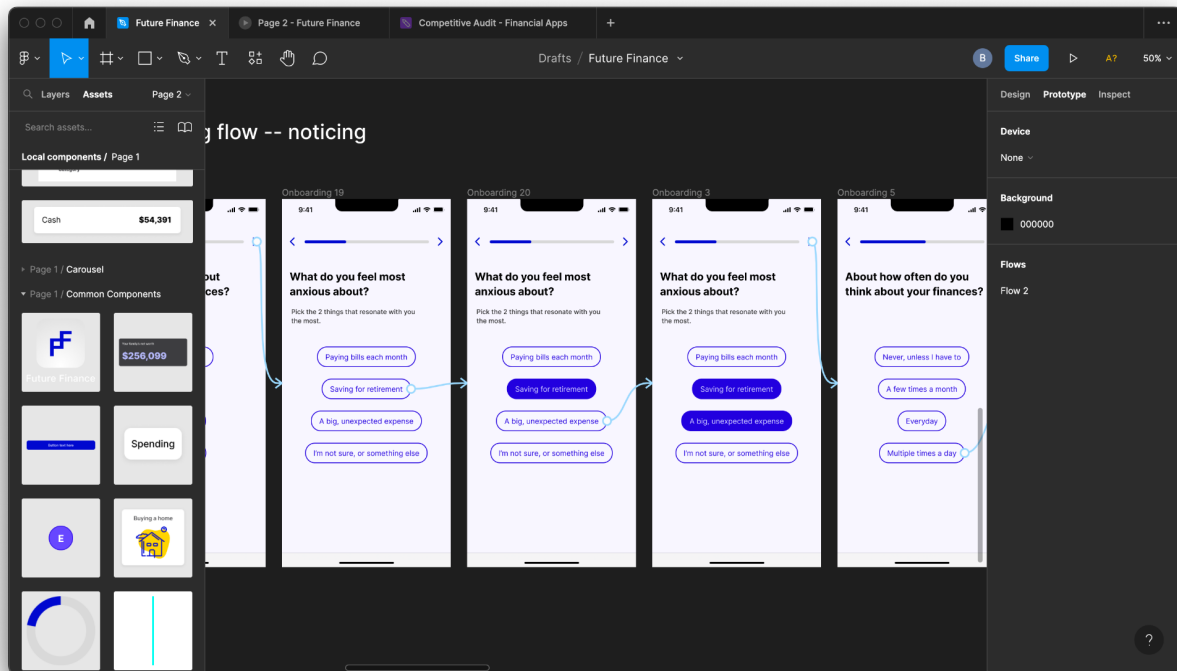


Figure 1.8. Figma prototype.

Test

The user testing I conducted can be classified as an exploratory study and my main objectives were to examine the overall usefulness, relevance, and effectiveness of my design concept (Rubin & Chisnell, 2008). I did not test the usability of specific tasks. Participants were friends of

mine, and I asked people to participate who I felt would be willing to give honest feedback and who I felt were people who shared some traits with survey respondents. Essentially, I did not choose any friends who have their finances one hundred percent figured out and for the record I do not think that I know anybody like that.

I tested both remotely and in person. For remote testing, I used Zoom and sent the link to the Figma prototype to participants using the Zoom chat. I asked them to open the link and share their screen as they navigated the prototype. To test in person I loaded the app onto my iPhone and handed it to the participant. To guide discussion I wrote a discussion guide that focused broadly on the value the user felt the app provided to them (figure 1.9). I also asked participants to practice the talk aloud method, first reading what they saw on the screen and then sharing with me their impressions, feedback, and questions.

Introduction

Hello! Thank you for taking the time to speak with me. I'd like to show you an idea for a personal finance mobile app to see what you think. I am looking to hear your thoughts on the app overall to test the idea and see if it is valuable and relevant to take further. I am not testing *you*, but rather the idea. As you know, I am a Masters student in Technology and Humanities at Illinois Tech, and this project is for my degree. Our conversation today will take about 30 minutes or a little less.

Do you have any questions for me before we get started?

Great!

During our conversation you may hear me taking notes – please know that I am paying attention and just don't want to forget anything.

[Remote] Alright, I am going to share a prototype link with you here in the chat.

- Can you let me know what you have the link pulled up?
- Once you have it pulled up, please share your screen.

[In person] I am going to hand you my iPhone now, where I have the app pulled up.

Last thing before we dive in – this is a prototype, basically a blueprint of what an app could look like. Nothing is precious (all feedback is welcome) and also not everything is clickable.

Onboarding

Alright, please begin this onboarding process. As I mentioned, not everything is clickable, so please just look at the screen and tell me what you think. If you're comfortable, please read aloud what you see on the screen and talk out loud to me about your impressions.

- What do you think about what you see here? [Further optional probes:]
 - What questions do you have?
 - What would you add, if anything?

Figure 1.9 Discussion guide.

I tested the initial prototype with two participants. The prototype consisted of an onboarding flow asking a series of questions, a personalized home screen of advice articles, and a feelings check-in (figure 1.10).

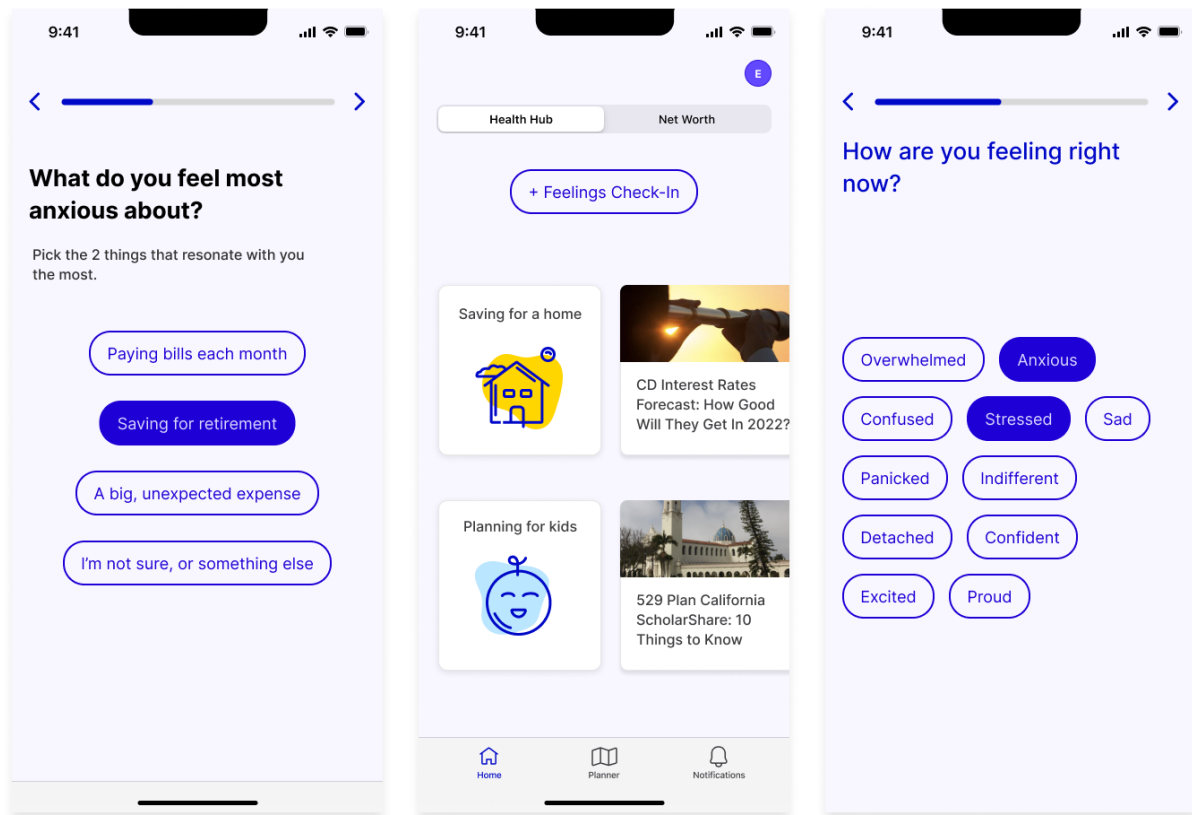


Figure 1.10. Screens from the first prototype.

Overall feedback was positive. Both participants proactively shared that anxiety influenced their financial engagement, which felt validating to the overall goal of the app. As one participant put it “feeling insecure has affected how I approach the 401(k) in the past because I avoid it. Because I think ‘oh gosh, I have to learn about it, where do I go, am I going to understand it?’” Other takeaways include that one participant felt the check-in and onboarding features would help them identify their emotions. Both participants questioned how the onboarding flow related to the home screen and did not feel there was a clear correlation between the two. The content

on the home screen was cited as somewhat helpful, but participants wanted to see more than advice articles.

After this initial test I made three major changes in response to feedback. First, I kept the emotional check-in feature to further test that with more people. Second, I redesigned the onboarding flow to focus more on the user's goals of what they were coming to the app to learn. Third, I added clearer educational content (figure 1.11).

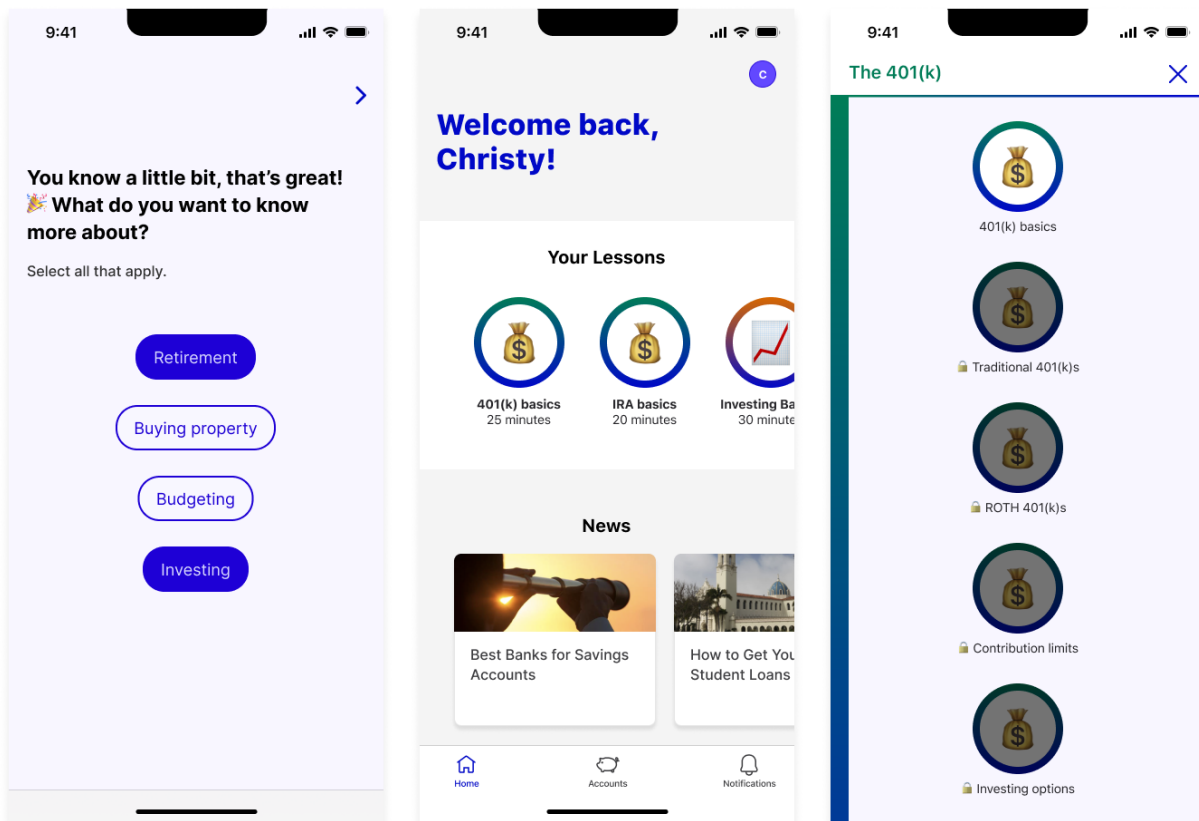


Figure 1.11 Screens from the second prototype.

Again I tested the app with two people. Core features were revised and shortened onboarding flow, a personalized home screen featuring a customized curriculum, news, and a tip of the day and five minute lessons. Reaction to the mood check-in was positive, and both participants said that the check-in might cause them to reassess their behavior. One person was saving up for a car and said “I check in, I’m feeling anxious, I’m anxious about buying a car.

Even if the app didn't do anything more to help me I might revisit my budgeting plan for the car.” Both participants liked the short educational lessons and how short they were, with one saying “I would not do longer than five minutes if you can help it. When it comes to financial stuff I can be insecure, so smaller chunks give my mind more time to wrap itself around the concept being presented.”

Conclusion

In total, I tested the app with four participants and garnered valuable feedback. I believe that user feedback indicates that this concept is worth exploring further. If I were to continue this project, I would continue to test the short-form educational content to understand what content is valuable, how people would like it organized, and what sources people trust. To create the 401(k) Basics lesson two participants reviewed I referenced the personal finance book *The Index Card* (Olen & Pollack, 2016) and wrote the content myself. But I am a designer and not a personal finance advisor so I think it would be important to test content authored by a different source to determine if it is valuable. I think users need a clear reason to trust this app's advice. A partnership with financial advisors could be useful and one survey respondent did express a desire to hire a personal finance advisor.

I would also spend time creating a user journey of what people's paths to building their financial literacy and habits look like and seek to narrow down a core audience for this app in particular. After both rounds of testing I began to put together a matrix of different needs people have (figure 1.12). This is a rough draft that needs further research.

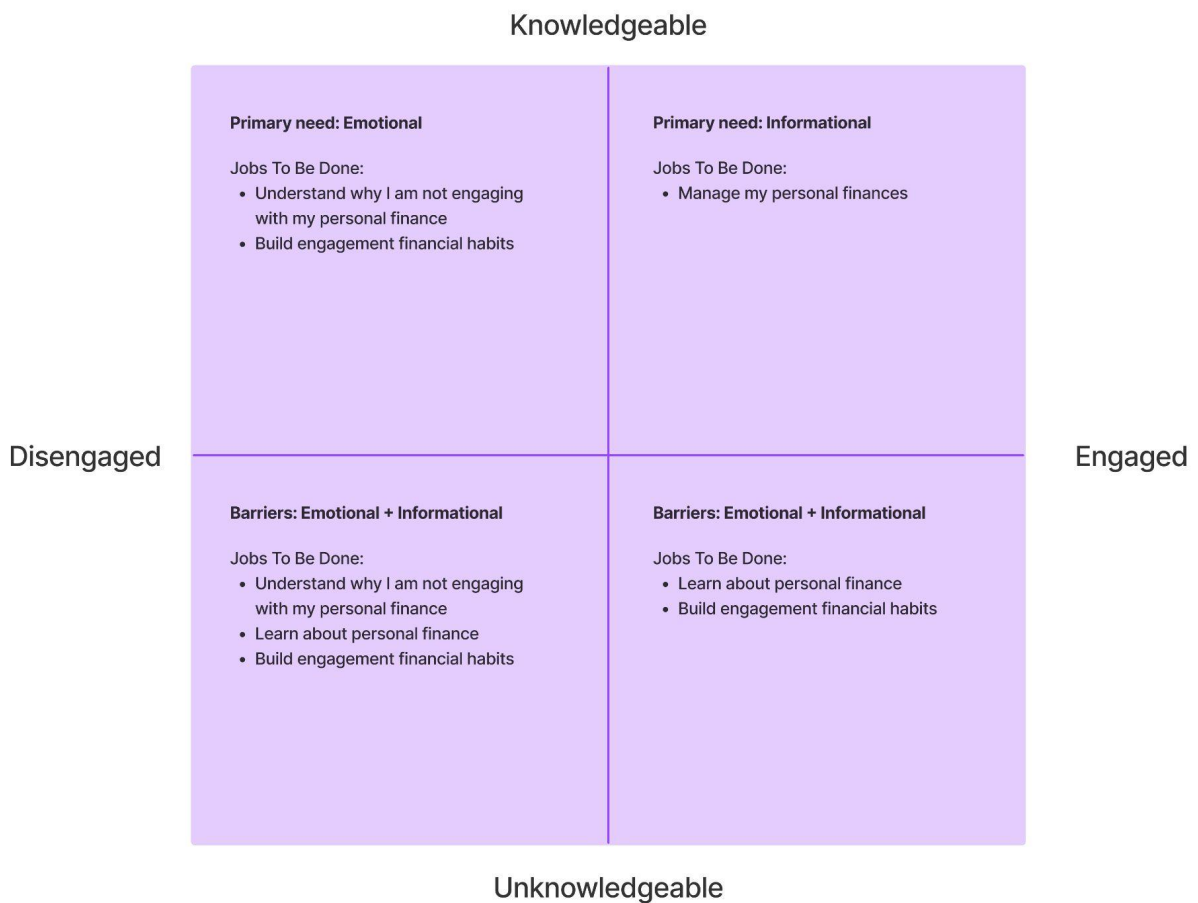


Figure 1.12. Matrix of user needs.

Retrospective

If I were to do this project again I would search for a larger venue to launch a survey. I was disappointed that my survey post got removed by moderators on subreddits like r/personalfinance, which has over sixteen million members. The group's policy is that solicitation is not allowed, and I was disappointed that a student survey fell into that category. I felt a little bit nervous to post this survey on my personal Facebook account because money is such a personal topic. I think the themes I was able to create are interesting and would be even richer and more insightful with more participants.

Overall I am very happy with this project and what I learned. Looking back at my initial assumptions I think that I, like many people who kindly answered my survey, felt like there were things I knew I needed to be doing that I was not doing. I also assumed that other people around me were doing those things and had things more figured out than I did. Doing this project helped me appreciate that building personal finance literacy and habits is hard work and maybe not something that many people have learned. I think there should be personal finance education in high schools and colleges and it would be interesting to do a further project to understand what types of curriculum would be useful. I am glad I did this project and a career goal of mine is to one day work in UX on a personal finance product. I particularly enjoyed performing research and exploratory testing for this project and would like to pursue more UX research work in my career.

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