



nurtue
grow together.

Interactive High-Fidelity Prototype

CS 147 - Winter 2022

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OUR TEAM



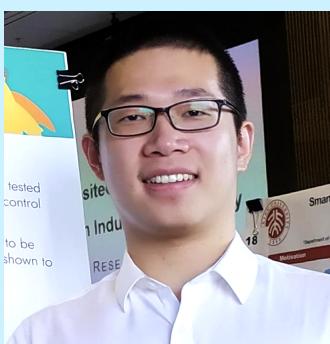
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INTRODUCTION

Problem/Solution Overview

We found that parents often struggle to effectively communicate with their children- especially during intense moments like conflict. In addition, parents need communal support to share their struggles and receive expert advice, but most lack access to consistent guidance.

Therefore, we created *Nurtue* ("Nurture" + "Virtue"). *Nurtue* exists to improve the relationship between parents and their children. *Nurtue* connects parents to a supportive community of experts and fellow parents, promotes effective communication via interactive modules, and guides parents through healthy conflict resolution. With *Nurtue*, parents will raise empathetic and effective communicators, while simultaneously becoming one themselves.

Value Proposition – Grow Together.

Our value proposition evolved from "Be a better parent" to "Grow together" based on the feedback we received from classmates and users. The new value proposition represents our idea that parenting is a growth journey that each parent shares with their children.

Mission Statement

Nurtue exists to improve the relationship between parents and their children through healthy communication habits, guided conflict resolution, and communal support.



NEEDFINDING INTERVIEWS

Interviewees

The first step in designing Nurtue is to understand our targeted users and their needs. We talked to seven parents of young children with different backgrounds. By meeting over Zoom, we asked them questions about their daily lives as parents to identify their needs. Some of these questions were...

1. What do you think are the most challenging aspects of bringing up a child?
2. Tell me about a time you had a conflict with your child/children.
3. How do you think the way you were raised as a child has influenced you as a parent?



Figure 1: Interview with Allison via Zoom

What We Learned

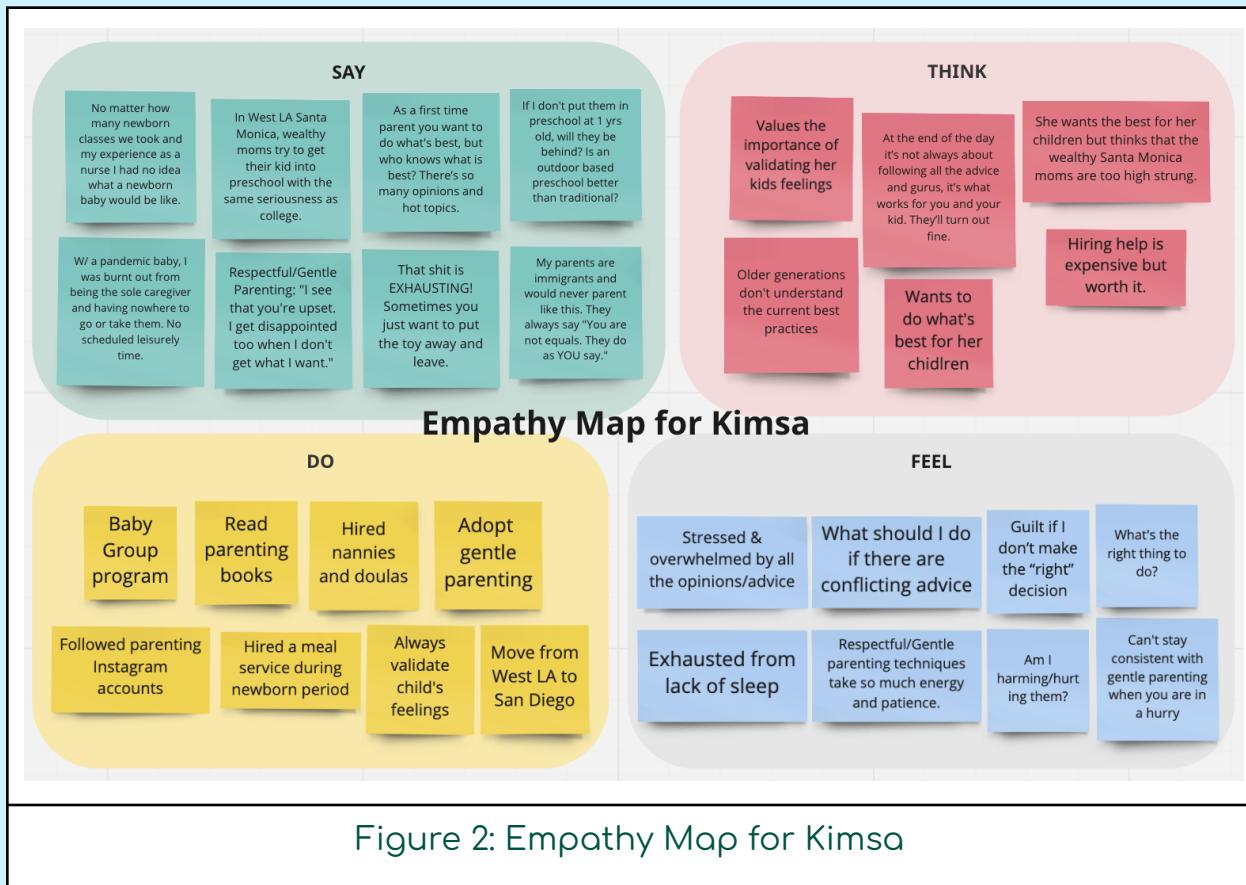
Most parents want to do what's best for their children, while they are not always able to find a "source of truth" for parenting best practices. They often find conflicting advice online which further contributes to their confusion.

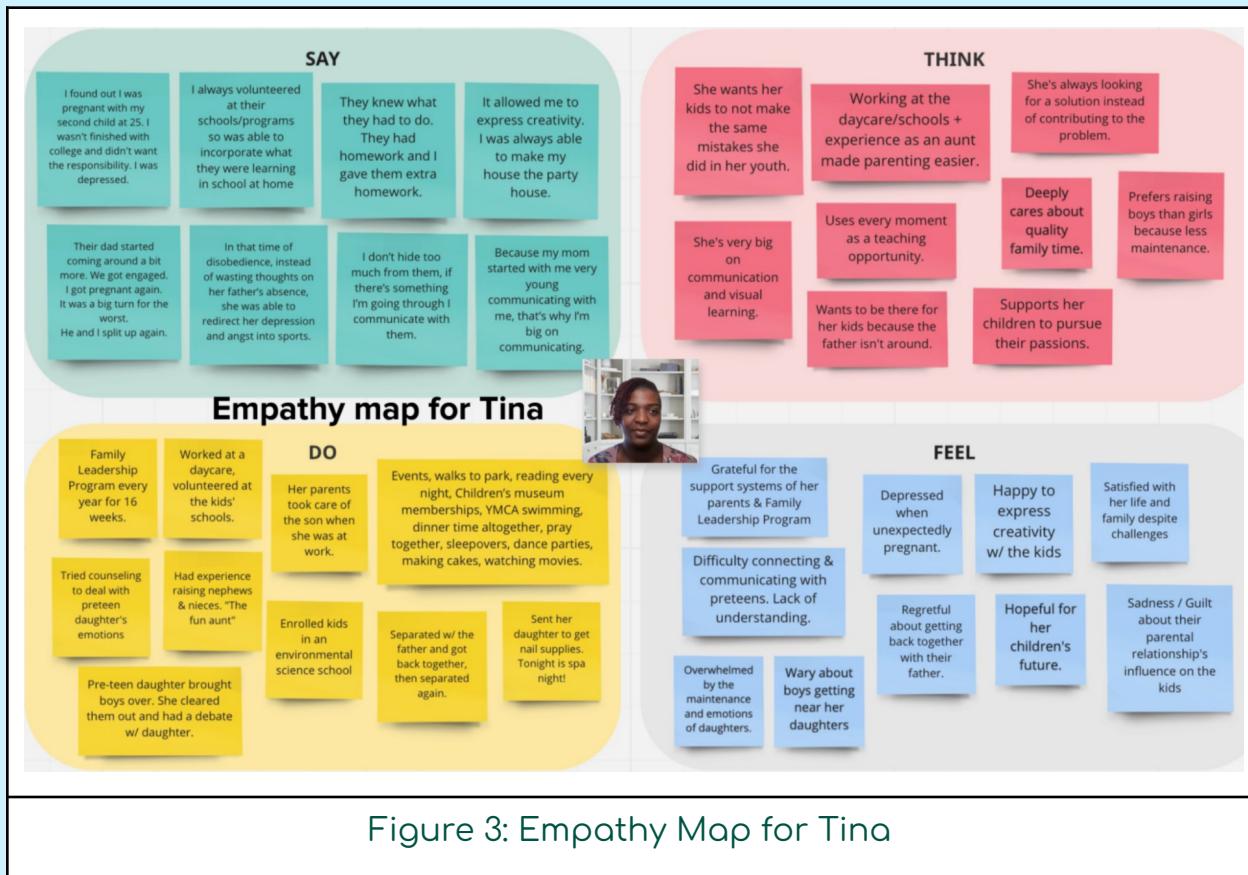
Specifically, new parents tend to experience difficulties in maintaining the interpersonal relationship between parental figures (father, mother,

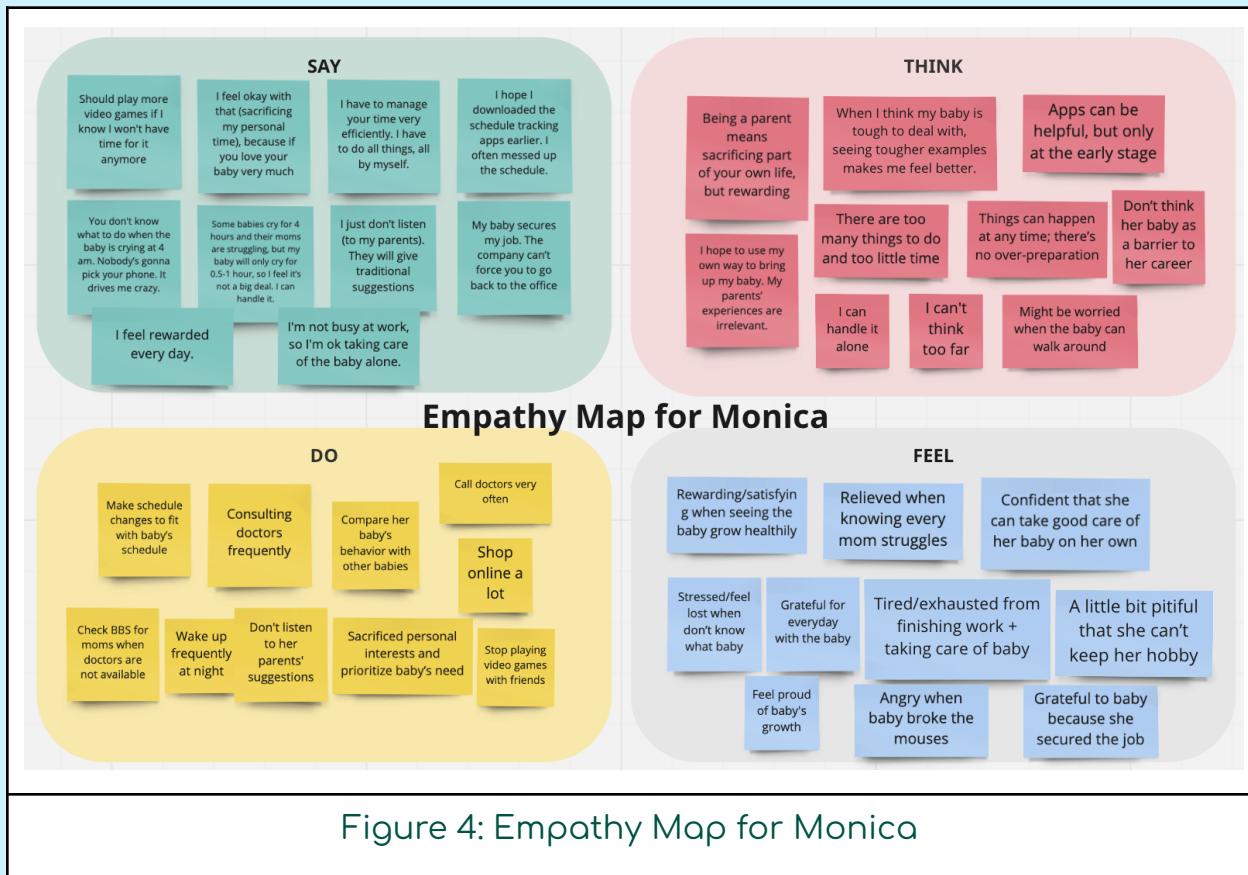


grandparents, etc.) after the child is born. They also highlighted the importance of tracking time usage for both their children and themselves. Some parents found that when they are struggling, sharing their struggle with fellow parents helps because they can know that they are not alone with their parenting challenges.

In sum, we found that parents often struggle with making the “best” parental decisions, managing relationships, managing their time, and seeking social support.









POVs & EXPERIENCE PROTOTYPES

POVs

Based on their stories, we generated Point-Of-Views (POVs) to help us reframe the problem that is grounded in user needs & insights in a concise way. Based on these POVs, we generated a long list how-might-we questions to help us brainstorm the solutions.

POVs	How might we...
<p>We met Kimsa, a married school nurse with a 15-month-old girl and a 3.5-year-old girl who lives in San Diego.</p> <p>We were surprised to notice that even after researching parenting thoroughly, the conflicting advice from multiple sources has made her feel stressed rather than calm.</p> <p>We wonder if this means Kimsa feels inadequate with her parenting efforts, and that she is missing crucial information.</p> <p>It would be game-changing to find a way to help parents collect and analyze parenting advice based on their own situation.</p>	<ul style="list-style-type: none">• make parents feel less inadequate in their parenting efforts?• make parents feel less overwhelmed by all the different parenting advice that exists?• help parents be confident at making parenting decisions?• make parents feel happy to read parenting advice instead of feeling stressed?
<p>We met Tina, a financial professional who has a 16-year-old girl, a 14-year-old boy, and a 6-year-old girl.</p> <p>We were surprised to learn that Tina punishes her children by hitting them, but much less frequently than how her own parents would her.</p> <p>We wonder if this means Tina knows physical punishment is bad for child development (based on her own experience) but resorts to it only when she lacks another effective way to handle conflict.</p> <p>It would be game-changing to help parents handle conflict at the moment it is necessary.</p>	<ul style="list-style-type: none">• make conflicts a good thing for parents and kids, and foster productive conflict?• calm parents down to avoid irrational actions during a conflict?• educate parents to prevent conflict from happening in the first place?• include children in the handling of parenting conflicts?
<p>We met Monica, a single mom working as a tech recruiter, with her baby born during COVID-19.</p> <p>We were amazed to find that she felt relieved and grateful for her baby after she found out that all moms are struggling.</p> <p>We wonder if this means parents need an outlet for their negative emotions while they might be uncomfortable or unable to share with close family and friends.</p> <p>It would be game-changing to find a way to</p>	<ul style="list-style-type: none">• make emotion sharing less terrifying and more satisfying?• help kids understand their parents' emotions and actions?• listen to distressed parents or children, alleviate negativity, and promote solutions?



encourage parents to share their emotions with fellow parents.

- help parents realize that how they feel also matters?

Top Solutions

Based on our needfinding insights, we wanted to ensure that parents could improve their parenting skills while understanding that not every piece of advice fits every family. The solutions we generated emphasized the importance of guiding parents in an empowering manner.

1. A quiz to provide parents with personalized parenting advice depending on the specific needs and circumstances of the parent and child.
2. A reward system for parents and children to encourage them to solve a problem together.
3. Daily affirmations and empowering quotes for parents.

Experience Prototypes

Having these top solutions in mind, we designed 3 experience prototypes to try ideas quickly, test assumptions, and learn more about the problem and the solution space.

Experience Prototype	Assumptions	What worked	What didn't work
Participants took a parenting style test. We simulate the recommendation system and give parents targeted parenting suggestions based on their testing results.	Parents are receptive to personalized, external feedback and willing to adjust their parenting style accordingly.	Parents are open to personalized suggestions and willing to take action. A "Quiz" is a good first step for self-awareness and opens parents' minds about the different ways to handle conflict.	The 10-min quiz is too long; it's important to make the quiz customizable for children's age range or marital status to increase relevance.
We designed a conflict resolution worksheet for a parent and child	Parents and kids care enough about	Restating what the other person said in an objective manner.	Children should be rewarded not for resolving the conflict,



<p>to complete together that integrates a reward system. Participants went through the worksheet based on a simulated parent/child conflict.</p>	<p>the rewards to participate.</p>	<p>Reward to motivate the child.</p>	<p>but for following through on the agreement.</p> <p>The Point system is out because children struggle with delayed gratification.</p>
<p>We texted 3 affirmations to a parent throughout one day, simulating an app notification. At the end of the day, we interviewed the parents about their experience and engagement.</p>	<p>Parents are willing to receive, read, and internalize the affirmations/ quotes.</p>	<p>When parents read parenting quotes/affirmations, they immediately apply them to their own life and how they interact with their children.</p> <p>Parents enjoy affirmations because it sets a positive tone for the day.</p>	<p>Because the experience prototype was delivered over iMessage, some of the quotes went unnoticed.</p>



Take a quiz to learn about your parenting style. Get personalized recommendations that work the best for your family!

[Take Quiz Now](#)



You score high for perfect parent syndrome
Generating personalized recommendations.....

Based on your parenting styles, here are some suggestions that similar type of parents think helpful!

- Being an attentive and available parent has many positive effects on growing children. Your children will trust you and be able to depend on you when they need you most, and will grow up with higher self-esteem and confidence.

Do you find this suggestion helpful? 👍 👎

Will you take actions based on this suggestion? ✓ ✗

Step 1: take a survey (parenting style test)

Step 2: "generate" recommendations

Step 3: show recommendations

Figure 5: Experience Prototype 1



<p>Conflict Resolution Worksheet</p> <p>AGREEMENT: I, _____, the parent, and I, _____ the child, agree to the following rewards to be distributed once a conflict is resolved.</p> <p>SIGNED: _____ Name of Parent _____ Date _____ _____ Name of Child _____ Date _____</p> <p>STEP 1: Determine rewards. Parent and child must agree on one (1) small reward and one (1) large reward, based on the size of the conflict. The parent and the child must agree on the relative size of the conflict. If the two cannot agree, a third-party adult must serve as the tiebreaker. Rewards remain constant over time. Small reward: _____ Large reward: _____</p> <p>STEP 2: Parent, explain your point of view using objective language. Succinctly justify your reasoning. _____</p> <p>Child, explain your point of view using objective language. Succinctly justify your reasoning. _____</p> <p>Parent, restate your child's point of view using objective language. Succinctly justify their reasoning. _____</p>		<p>_____</p> <p>Child, restate your parent's point of view using objective language. Succinctly justify their reasoning. _____</p> <p>_____</p> <p>STEP 3: Talk it out. Do your best to reach an agreement, and compromise if necessary.</p> <p>STEP 4: Describe the agreement. What are we doing to resolve this conflict? Does this resolution warrant a small or large reward? _____</p> <p>STEP 5: Go get yourself a reward! :)</p>	<p>INTERVIEWEE</p>  <p>Dan Lawyer, Stanford alum 10 y/o girl, 13 y/o boy</p> <p>To test our assumption, we put together a worksheet for a parent and child to complete together that integrates our reward system. With Dan, we simulated a parent/child conflict and went through the worksheet together.</p>
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Figure 6: Experience Prototype 2

We texted 3 affirmations to a parent throughout one day, simulating an app notification.

At the end of the day, we interviewed the parent about their experience and engagement.

Alvaro
Costco Employee
4-month old girl.



Today 11:30 AM

"Children are not things to be molded but people to be unfolded."

Today 2:30 PM

"It shouldn't matter how slowly a child learns as long as we are encouraging them not to stop."

Today 7:03 PM

"When a child can't calm down, they need connection and comfort, not criticism and control."

Read 7:48 PM

Figure 7: Experience Prototype 3



DESIGN EVOLUTION

Selecting Our Solution

We worked through several design iterations before deciding on our final solution. Originally, we intended to create a mixture of our experience prototypes: an onboarding questionnaire to provide a personalized stream of articles, a conflict resolution exercise with a complex reward system, and daily affirmations. These would all exist within a mobile application, which would allow the most functionality and ease of use. While ideating with our team and using the results from our experience prototype testing, we decided to make 3 key changes when designing the user interface.

First, we chose to scrap the personalized feed of articles entirely. This did not seem to be much different than a Google search, so it would not make our app very unique. Our previous needfinding emphasized the value of communal support, so to maintain the personalized aspect of our app, we instead created a community for parents to post their questions and receive advice from experts and other parents.

Second, we pursued the quiz idea in a new way by implementing educational modules for parents to improve the way they communicate with their children.

Third, we decided to remove the rigid reward system because it largely depended on the severity of each conflict. Users would instead be prompted to consider including rewards or punishments when they recorded their agreement.

Task Selection

After making the three major changes to our solution, we devised three main tasks for users to perform, then drew out each of the tasks flows on paper.

Task 1 - Simple: Share your parenting struggles to get advice from fellow parents or/and experts in the field.



Task 1

Figure 8: Simple Task

Task 2 - Moderate: Practice more effective language to communicate with your child through interactive modules.

Task 2

Figure 9: Moderate Task

Task 3 - Complex: Resolve a particular conflict with a child in a peaceful manner, and come to an agreement that the parent can reference.

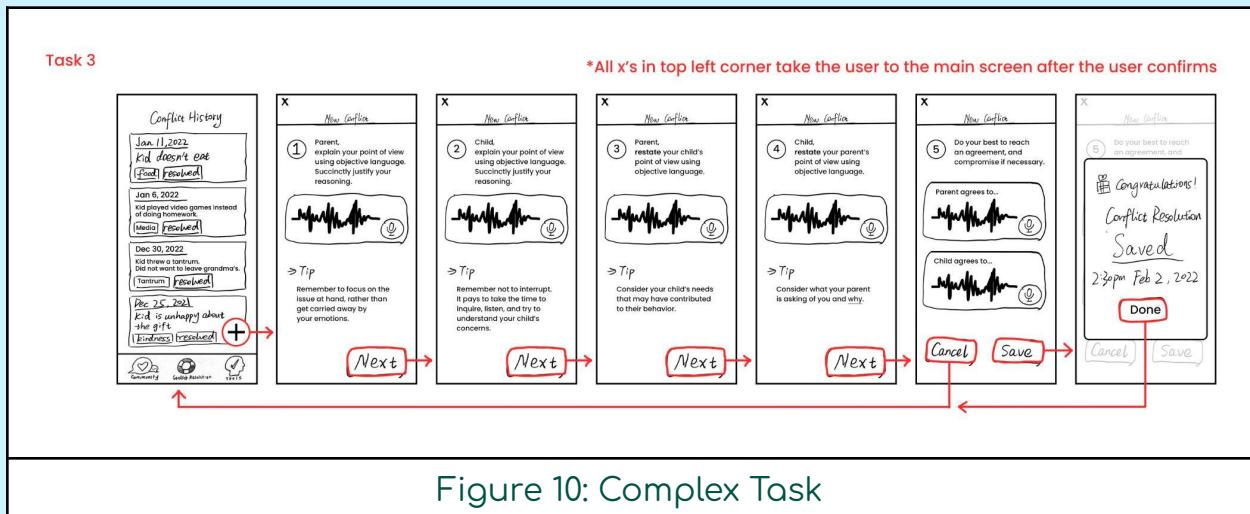


Figure 10: Complex Task

To retain the low fidelity nature of our sketches while still providing our participants with an interactive prototype, we uploaded our sketches to Marvel and wired them up with hotspot insertion.

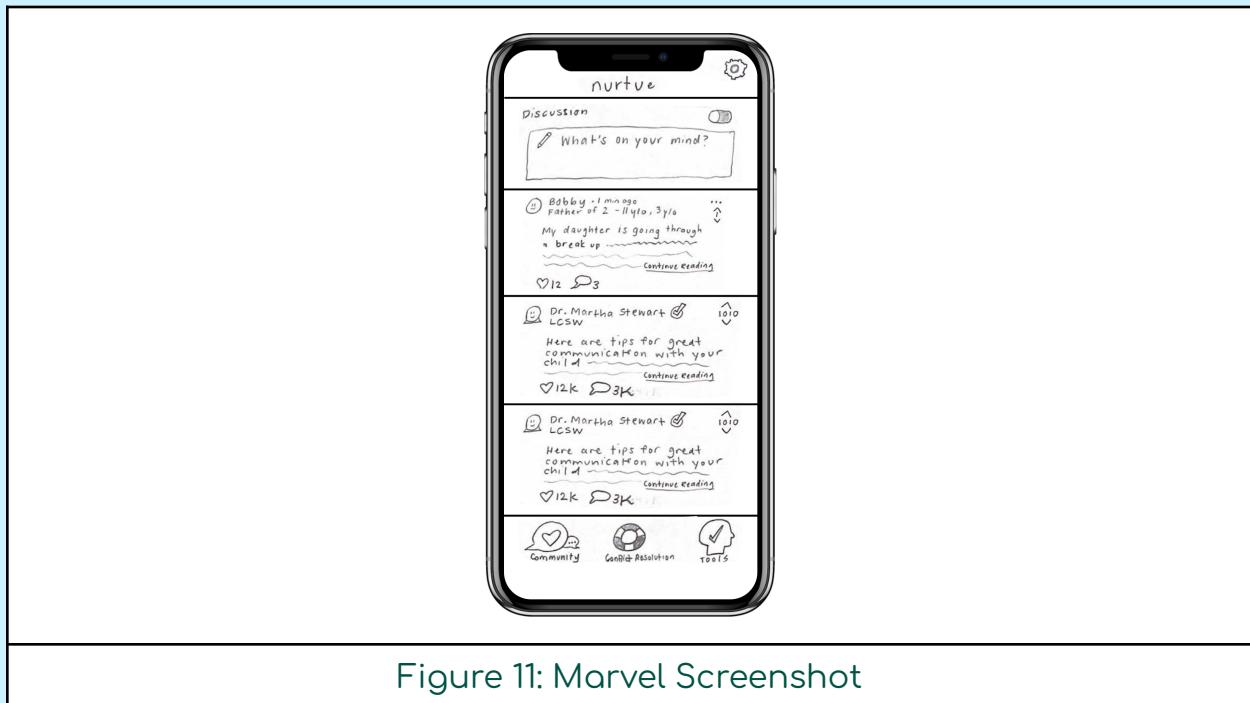


Figure 11: Marvel Screenshot

Our full low-fidelity prototype followed the following task flow. When users tapped on specific buttons, they were taken to the screens indicated by the red arrows.

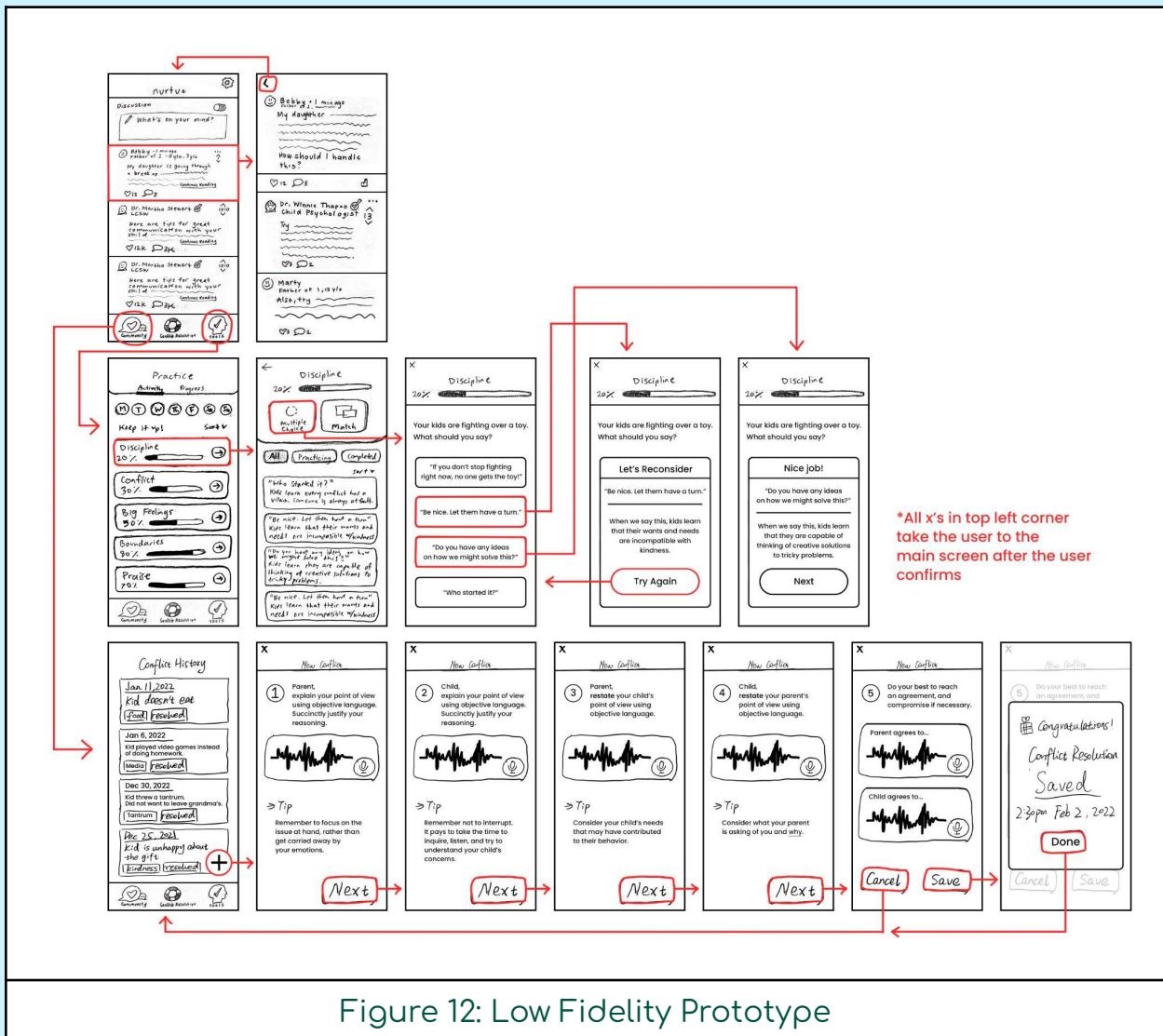


Figure 12: Low Fidelity Prototype

Low-Fidelity User Testing Methodology

We recruited our participants from parenting email lists, and targeted parents with children aged 8+ to represent the maturity required to solve conflicts with parents. (The age 8 was determined from experience prototype interviews.) Our first participant was a 40-year-old female Hispanic real estate agent in San Diego with a 9-year-old boy. Our second participant was a 43-year-old self-employed Asian father in Fremont who has an 11-year-old boy. Our third participant was a 38-year-old female Asian high school math teacher living in Boston. She is the mother of a 10-year-old girl and a 7-year-old boy.



At this stage, our usability goals were overall success and accuracy. Success was measured by the user's ability to complete the desired task without help and find the interface functions as expected. Errors were defined by users becoming stuck, taking an incorrect path on their way to completion, or seeking help to complete the task. These factors helped us identify what features/designs were (and were not) intuitive. We also collected qualitative feedback from users to understand what they like and dislike about the prototype.

All testing was conducted remotely through Zoom. We sent the low-fi prototype link to participants and asked participants to share their phone screens with us. Our facilitator introduced the project and emphasized the think-aloud protocol, and other members took notes. If the participant stopped talking, our facilitator would prompt them to vocalize their thoughts. After participants completed our tasks, we asked questions about their overall experience and collected additional feedback. One participant had difficulty expressing ideas in English, so we communicated in Chinese and translated his responses after the session.

Low-Fidelity User Testing Results

The participants we interviewed found the community tab comforting and useful. Most wished for a way to filter the posts to just see posts that pertain to their specific situation, their children's age groups, or their children's gender. We also noticed that for non-native English speakers, the large amount of text was hard to read and understand.

Participants had more trouble navigating to the practice exercises, as our UI design had labeled them as "Tools". Once they selected the category they wanted to practice (in this case, "Discipline"), they were confused by the next screen. Their eyes landed on the educational content itself rather than the buttons above to start practicing. Additionally, some participants questioned the credibility of the game in determining what is considered the "right" thing to say to a child.

Our participants enjoyed the conflict resolution feature and emphasized the importance of following through on an agreement. The audio recording of their discussion had the potential to bring discomfort to some parents, as it could easily become an "I told you so" situation. Some participants preferred the recording feature to avoid the hassle of typing out an agreement, while others did not want to record their voices at all.



Not all participants agreed with the reward system: they believed some agreements should not be rewarded, but rather expected of children to follow. One participant even suggested a punishment system instead.

Response to Low-Fi Results: Design Changes

The user testing was incredibly useful in indicating what areas of our user interface design were unintuitive. For the most part, participants achieved our key measurements of finding the tasks without help and in a timely manner, although users had the most trouble navigating the practice exercises (some important UI elements went unnoticed). Our key measurements were least successful with our second participant, who was a non-native English speaker and struggled to understand that the interface on Marvel was a prototype rather than the actual app. This provided us with important insight to make our app more accessible for different types of users.

To reduce the amount of text on the “Community” screen, we decided that every post would be titled, and only the user information and the title of the post would appear on the front page. We would add both a search and filter icon at the top of the posts so users could specify the type of content they are looking for. The top of the screen would have a welcome greeting and affirmation, the text input box would be removed, and a plus button in the bottom right corner would be added to avoid the clutter of UI elements.

We would rename “Tools” to “Practice” so the navigation is more intuitive. The screen that all participants had difficulty with would be extremely simplified. It would briefly explain the game and have one button to start. We would also include sources/citations within the game itself so users feel that they can trust the information.

We realized that listing “Conflict History” focuses on the negative rather than the positive, so we changed it to “History” while showcasing the agreements instead. Each stage of the conflict resolution exercise would no longer be recorded; only the agreement screen would allow the option to voice record or input text. We planned to add a timer within each stage of the exercise to keep users on task. It would be set to a default time that users can change in the settings.



Medium-Fidelity Prototype

Each of the design changes from our low-fidelity prototype testing was implemented in our medium-fidelity prototype, created in Figma. Figma allowed us to collaborate on the interface design and focus on more technical visual design elements such as color, layout, font sizing, and font weights.

Aesthetics, along with functionality, were of chief importance during the design process. We wanted to ensure that the user interface was not only intuitive to use, but also matched the feelings we aimed to convey. We used a split complementary color scheme focusing on calming blues, a hint of green, and an accent of blood orange, which produced a cheerful and bright feel. Our text sizing and font weights followed a hierarchical order to differentiate headings from paragraph text. Additionally, we followed Gestalt principles of proximity and similarly to group elements together, and Fitts's Law to make important buttons larger and more prominent.

The figure displays three mobile phone screens side-by-side, illustrating the Nurture app's medium-fidelity prototype. Each screen is set against a light blue background and shows a different aspect of the app's interface:

- Left Screen (Feed):** Shows a "Good Morning, Emily!" message at the top. Below it is a red callout box with the text "Be the parent you needed when you were younger.". The main content area lists posts from users: "Robert" (10 min ago) about his son playing video games instead of homework, and "Dr. Martha Greene" (32 min ago) about tips for teenagers through their first breakup. At the bottom are navigation tabs for "Community", "Conflict Resolution", and "Practice".
- Middle Screen (Resolution History):** Titled "Resolution History" with a search bar. It lists several family rules: "No video games on school nights" (Mom & Braedon - Yesterday), "Eat more veggies" (Dad & Braedon - Wednesday), and "Parents will knock before entering" (Mom & Braedon - Monday). Below this is a "Last Month" section with "Dad will do dishes on Sunday" (Braedon & Mom - 5/29/2022) and "Braedon will only get Oreos once a week" (Dad & Braedon - 5/15/2022).
- Right Screen (Practice):** Titled "Practice" with a sub-section "Complete today's daily practice!". It shows a weekly calendar with days S, M, T, W, T, F, S. Under each day is a progress circle and a goal: "Discipline" (20%), "Big Feelings" (30%), "Boundaries" (50%), "Praise" (75%), "Encouragement" (90%), and "Sex Education" (100%). At the bottom are navigation tabs for "Community", "Conflict Resolution", and "Practice".

Figure 13: Medium Fidelity Prototype (Before Heuristic Evaluation)



Heuristic Evaluation

Once we created our medium-fidelity prototype, a group of four classmates evaluated our design and provided a report of heuristic violations that would inform our next design iteration. 49 violations were marked with a severity level of 1-2, which resulted in 23 changes. 19 violations were marked with a severity level of 3-4, which resulted in 13 changes. The most common heuristic violations fell into the categories of H4: Consistency & Standards (22), H7: Efficiency of Use (10), and H2: Match System & World (7). Below you will find a list of violations marked severity 3-4 and their respective design changes, grouped by app feature.

Heuristic Evaluation: Community Posts

H1. Visibility of System Status / Severity 3

Problem: When responding to a community post thread, a “Reply Sent!” confirmation pops up, but the user cannot actually see their response in the thread.

Solution: When a user hits the reply button, they can see their reply at the bottom of the thread.

H12. Fairness and Inclusion / Severity 4

Problem: Users need a way to report or delete posts and comments.

Solution: Hi-Fi prototype now supports deleting & reporting a post.

H8. Aesthetic and Minimalist Design / Severity 4

Problem: With so many responses in a thread, when adding a response of my own, it is unclear to whom I am responding to.

Solution: We decided not to fix this heuristic because we did include a gradient blue border around the main post that differentiates it from the comments without this border.

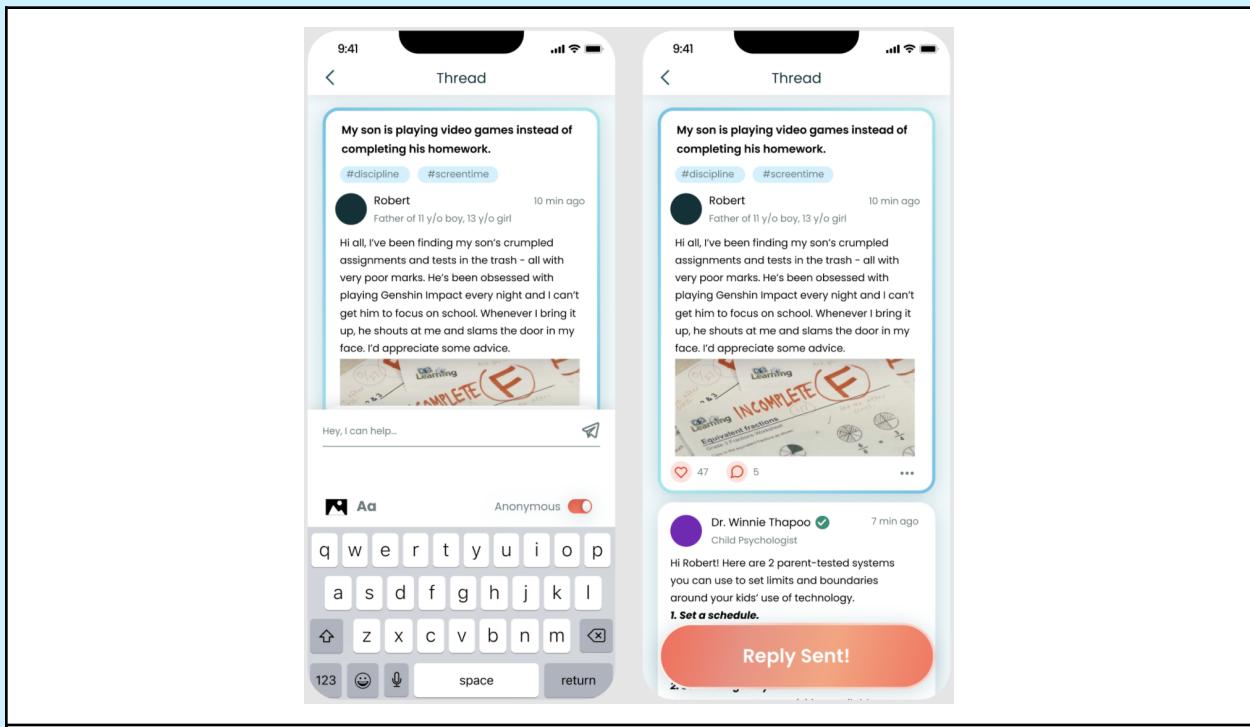


Figure 14: Reply Feature (Before Changes)

FIXES:

Swap out the paper airplane icon for a post button that is easy to see and consistent with the design system.

Hi-Fi prototype now supports deleting & reporting a post.

When a user hits the reply button, they can see their reply at the bottom of the thread.

Figure 15: Reply Feature (After Changes)



H13. Value Alignment / Severity 3

Problem: On the community search page, there does not seem to be a way for users to adjust the topics recommended to them.

Solution: We did not fix this heuristic because it did not seem necessary.

Recommendations are updated by user behavior on the app, not by a manual setting.

H4. Consistency and Standards / Severity 4

Problem: One of the posts on the Community page displays an image, but when making a post there is no option to add a picture.

Solution: Add an option to upload an image when making a new post.

H5. Error Prevention / Severity 3

Problem: If the user clicks the "x" there is no confirmation message, so if they accidentally clicked it, all their work would be lost.

Solution: When users tap the "x", a confirmation pops up before exiting.

H4. Consistency and Standards / Severity 3

Problem: On the new post page, the post button is small and in the top right corner, while the main action buttons for other pages are large, highlighted, and near the bottom of the page. Users might find this placement unintuitive and inconvenient.

Solution: We decided not to follow the evaluator's suggestion because when the other design changes were made to the new post page, there was no more space on the bottom to include a post button. We didn't want users to have to scroll to click post, so we kept the post button in the top right. Additionally, most social media apps like Instagram and Twitter have the post button in the top right corner.

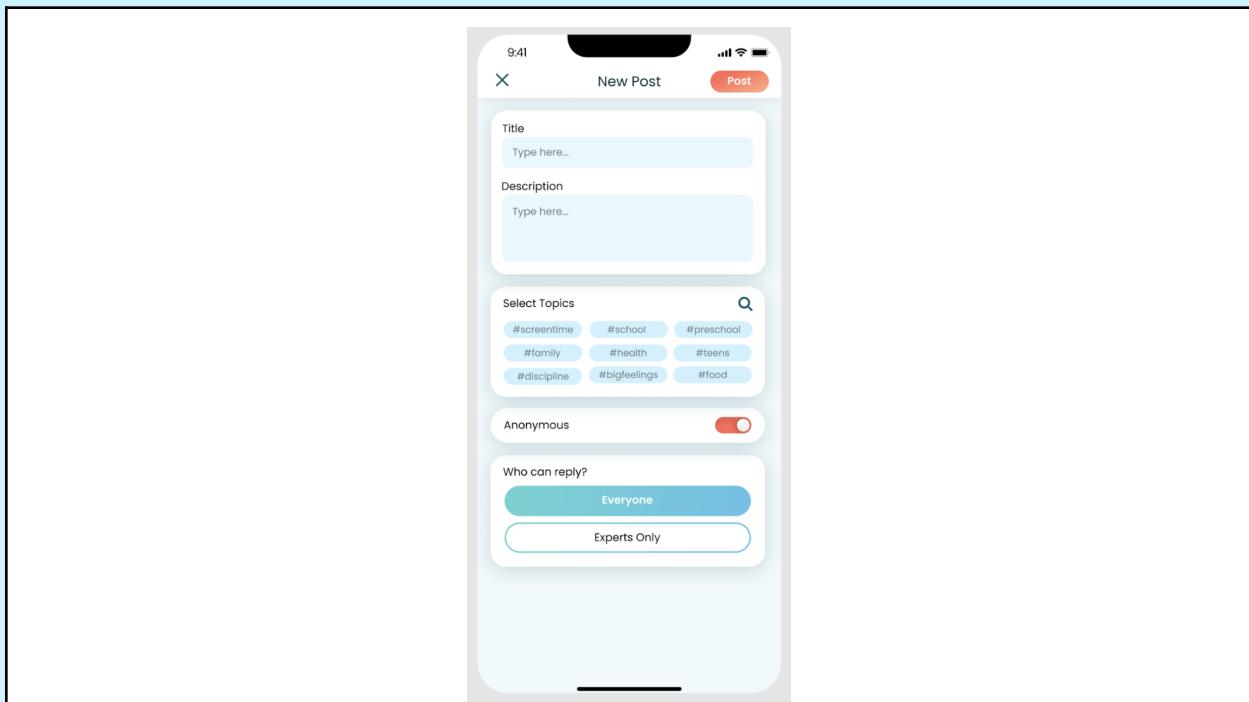


Figure 16: New Post Feature (Before Changes)

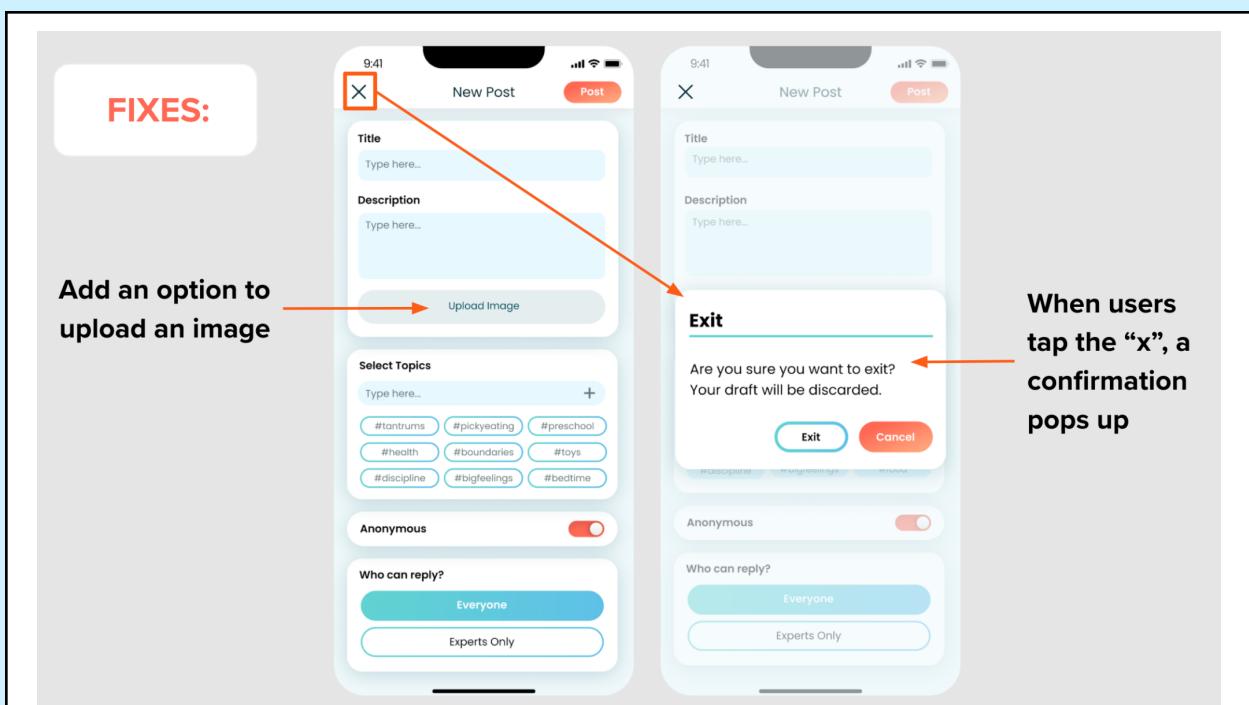


Figure 17: New Post Feature (After Changes)



H11. Accessible / Severity 3

Problem: In the filters page, the differentiation between a selected and unselected button is difficult to see.

Solution: Change the unselected button style to white with a blue border.

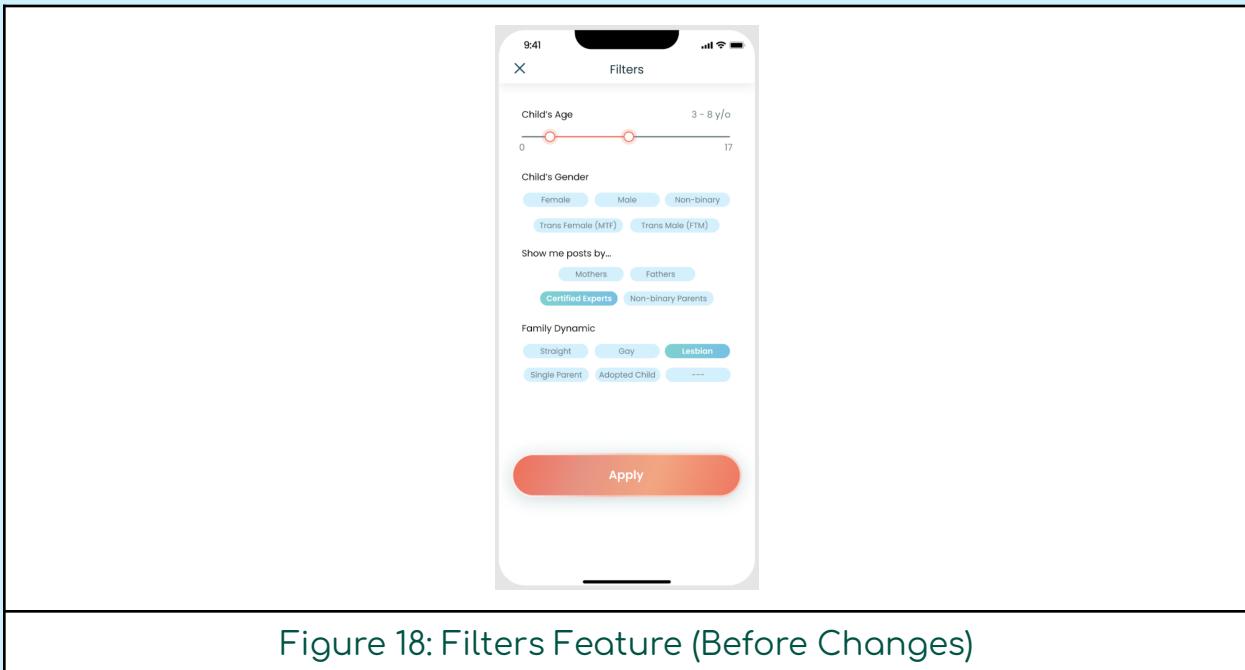


Figure 18: Filters Feature (Before Changes)

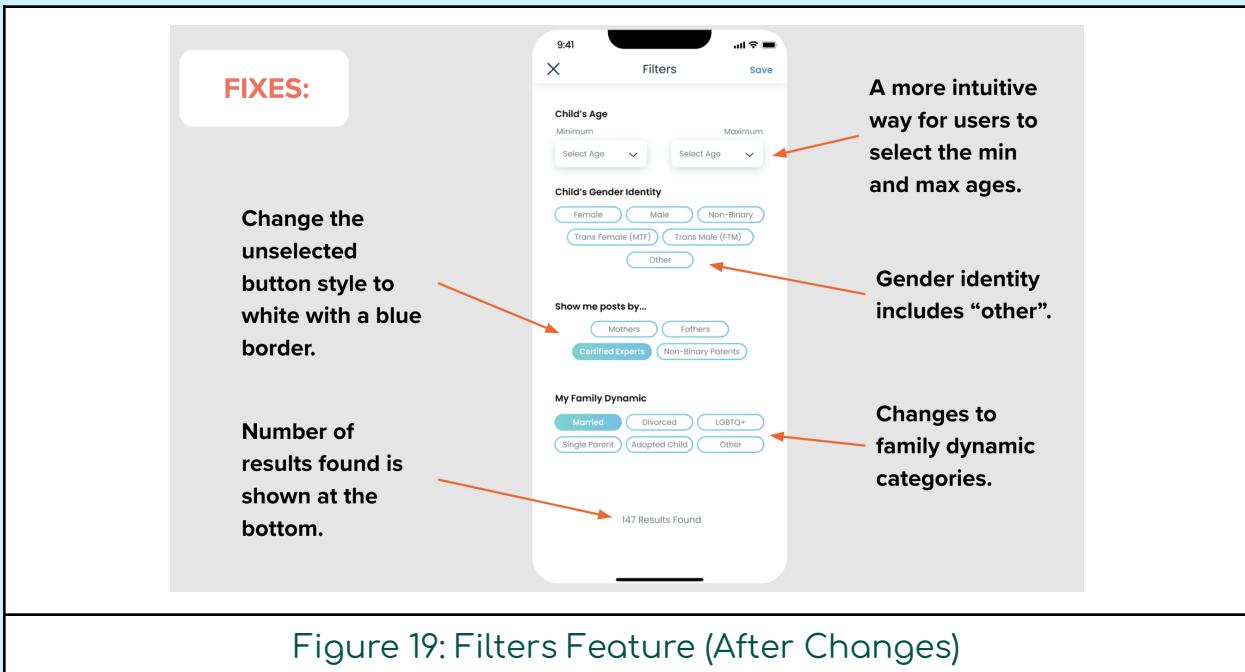


Figure 19: Filters Feature (After Changes)



Heuristic Evaluation: Profile

H4. Consistency and Standards / Severity 4

Problem: The filters page allows users to filter through posts by child's age, gender, and family dynamic, but there is no explicit field to input this information.

Solution: Design a profile page that allows users to specify their identity, family, and other information.

H7. Flexibility and Efficiency of Use / Severity 3

Problem: If the app is on one parent's phone, it is difficult for another parent to view their shared agreements.

Solution: Design a profile page that allows users to add family members to share agreements between.

FIXES:

Design a profile page that allows users to specify their identity, family, and other information.

Figure 20: Profile Feature (After Changes)



Heuristic Evaluation: Practice Modules

H7. Flexibility and Efficiency of Use / Severity 3

Problem: No way for users to search through the modules by name.

Solution: Add a search bar for users to find specific modules.

Figure 21: Practice Feature (Before Changes)

FIXES:

- Remove the daily log and instead add a “Question of the Day”.
- Add a search bar for users to find specific modules.

Figure 22: Practice Feature (After Changes)



While the following heuristic was marked severity 2, we believe it is an important additional feature that we would like to showcase in the report.

H3. User Control and Freedom / Severity 2

Problem: Users may want to review previously answered questions in the Practice module.

Solution: Include a page with all of the questions and answers in the module.

9:41 Discipline

Discipline 90%

Discipline, rather than punishment, allows us to validate our kids' feelings, set clear expectations, and teach them how to make healthy decisions on their own.
Source: Verywell Family

15 multiple choice questions
30 min estimate

Resume Practice

View All Questions

9:41 Discipline

What should you say if...? Completed Incomplete

Your kids are fighting over a toy.
"If you don't stop fighting right now, no one gets the toy!"
"Be nice. Let them have a turn."
"Do you have any ideas on how we might solve this?"
"Who started it?"

Your kids are running in the halls.
"Don't run!"
"If you want to run, let's head outside."
"Stop it. You have too much energy."
"You're going to trip and fall if you keep doing that."

Your kid pushes their friend.
"Don't be rude."
"Look what you did. Your friend is mad because of you."
"I didn't raise you to act this way."
"If you need more space, say 'back up.'"

Your kid yells "Give me the iPad!"
"Please ask me in a nicer way."
"Not with that tone."
"If you keep asking you'll never get it!"
"Be quiet."

Your kid tracked mud into the house.
"Let's write a note so we remember to take boots off."

Include a page with all of the questions and answers in the module.

Figure 23: Practice Feature (After Changes)

Heuristic Evaluation: Conflict Resolution

H7. Flexibility and Efficiency of Use / Severity 3

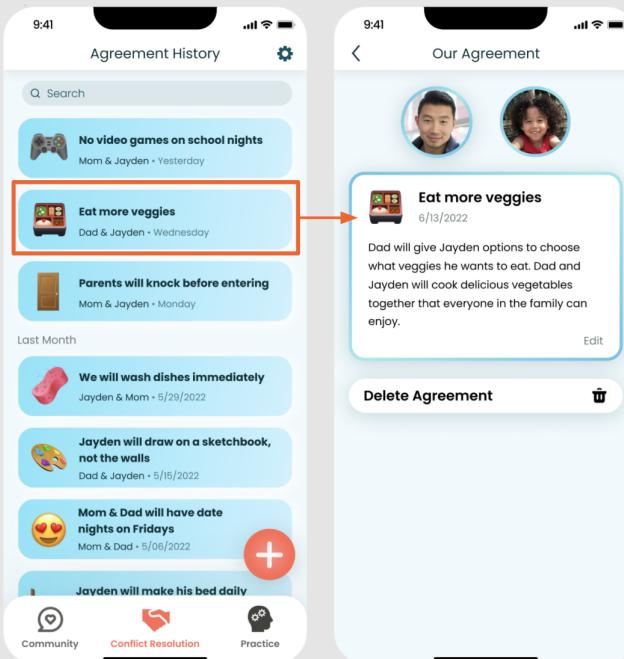
Problem: There is no way to edit or delete an agreement that has been made in the past and may no longer apply to the family anymore.

Solution: From the "Agreement History" page, users can view a specific agreement by clicking on it. Here, they can read the full description, edit, or delete the agreement.



FIXES:

From the “Agreement History” page, users can view a specific agreement by clicking on it.



Here, they can read the full description, edit, or delete the agreement.

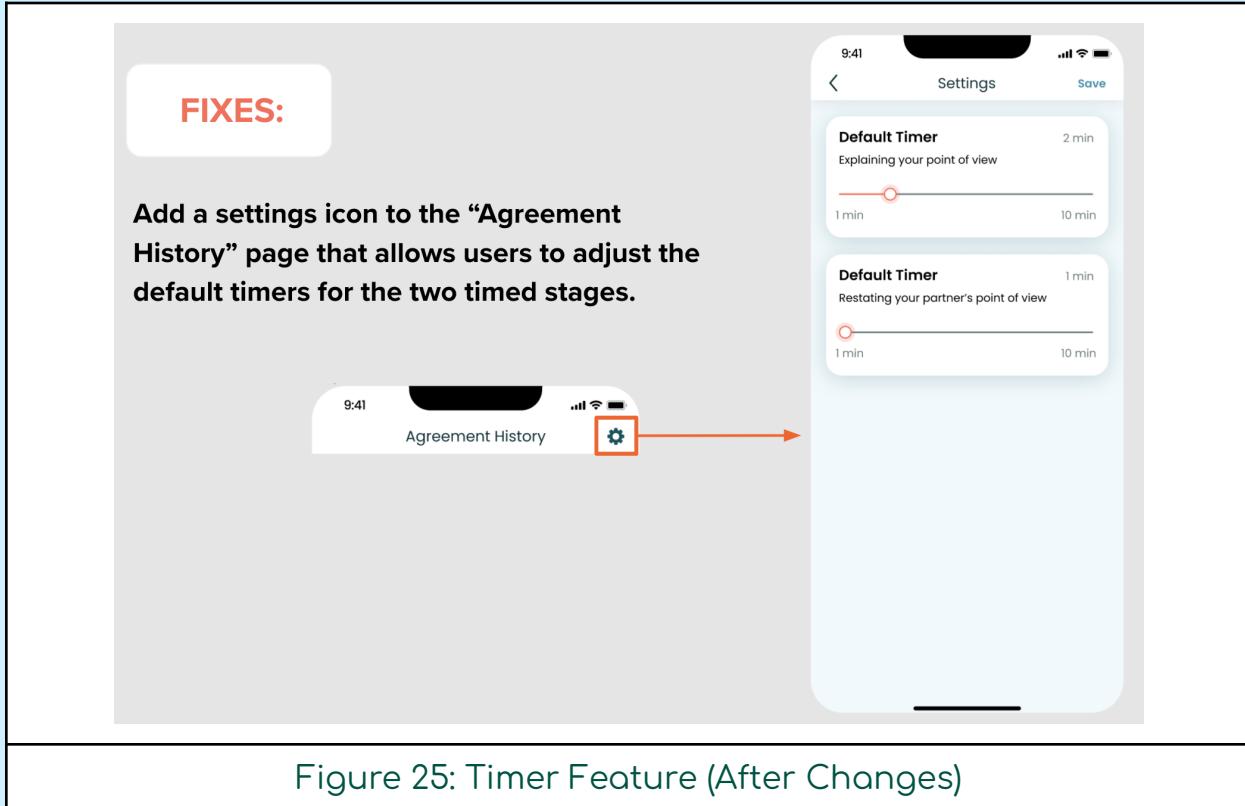
Figure 24: Manage Agreement Feature (After Changes)



H7. Flexibility and Efficiency of Use / Severity 4

Problem: The set timer may not be enough time for the user to complete the instructions.

Solution: Add a settings icon to the “Agreement History” page that allows users to adjust the default timers for the two timed stages.



H2. Match Between System and the Real World / Severity 3

Problem: In the conflict resolution exercise, the language used in the instructions is too complex for kids to understand.

Solution: Simplify the language used in the instructions.

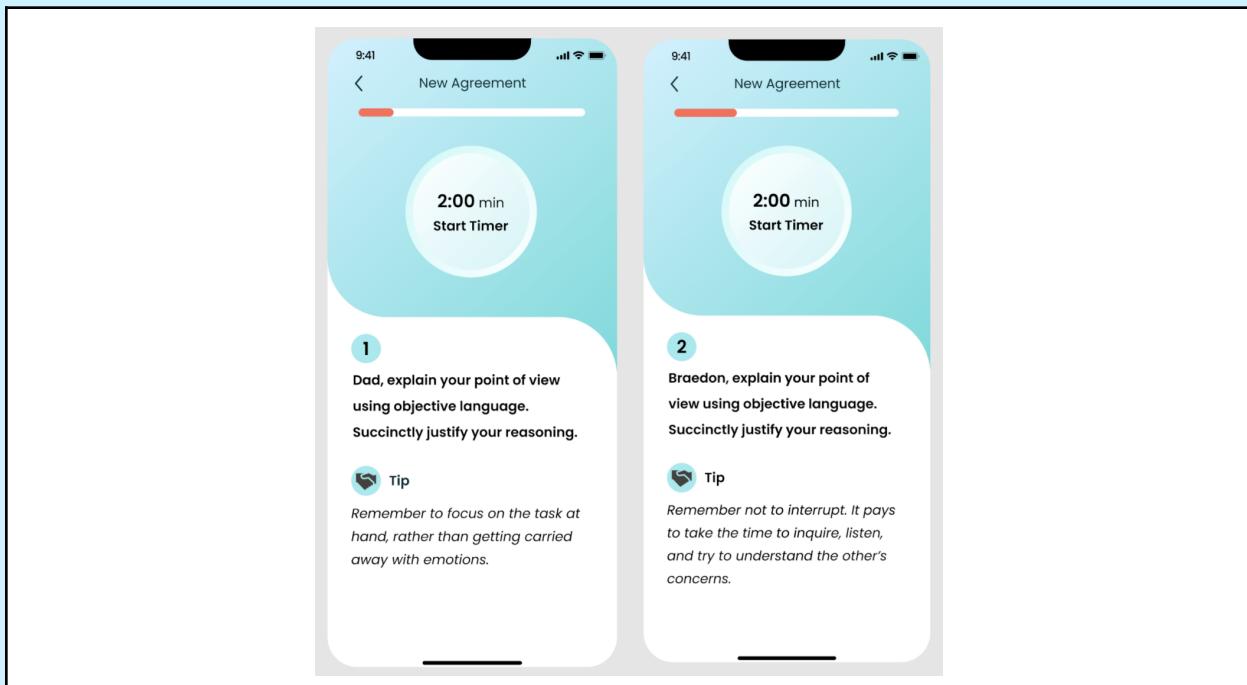


Figure 26: Conflict Resolution Feature (Before Changes)

FIXES:

Simplify the language used in the instructions. →

Specify who the tips are directed toward. ←

1
Dad, explain your point of view.
Why do you feel this way?

Tips
Dad, remember to focus on the task at hand, rather than get carried away by emotions.
Jayden, remember not to interrupt.
Inquire, listen, and try to understand Dad's concerns.

2
Jayden, explain your point of view.
Why do you feel this way?

Tips
Jayden, remember to focus on the task at hand, rather than get carried away by emotions.
Dad, remember not to interrupt.
Inquire, listen, and try to understand Jayden's concerns.

Figure 27: Conflict Resolution Feature (After Changes)



H3. User Control and Freedom / Severity 3

Problem: As users go through the Conflict Resolution process, they can go backward, but they cannot exit out of the entire process.

Solution: Allow users to exit at any time during the process.

H4. Consistency and Standards / Severity 3

Problem: Once the agreement is saved, users are still able to go backward in the process. This may leave users wondering if they can alter an already saved event.

Solution: Take out the back button on the agreement confirmation page. Once the agreement is saved, users cannot go backward.

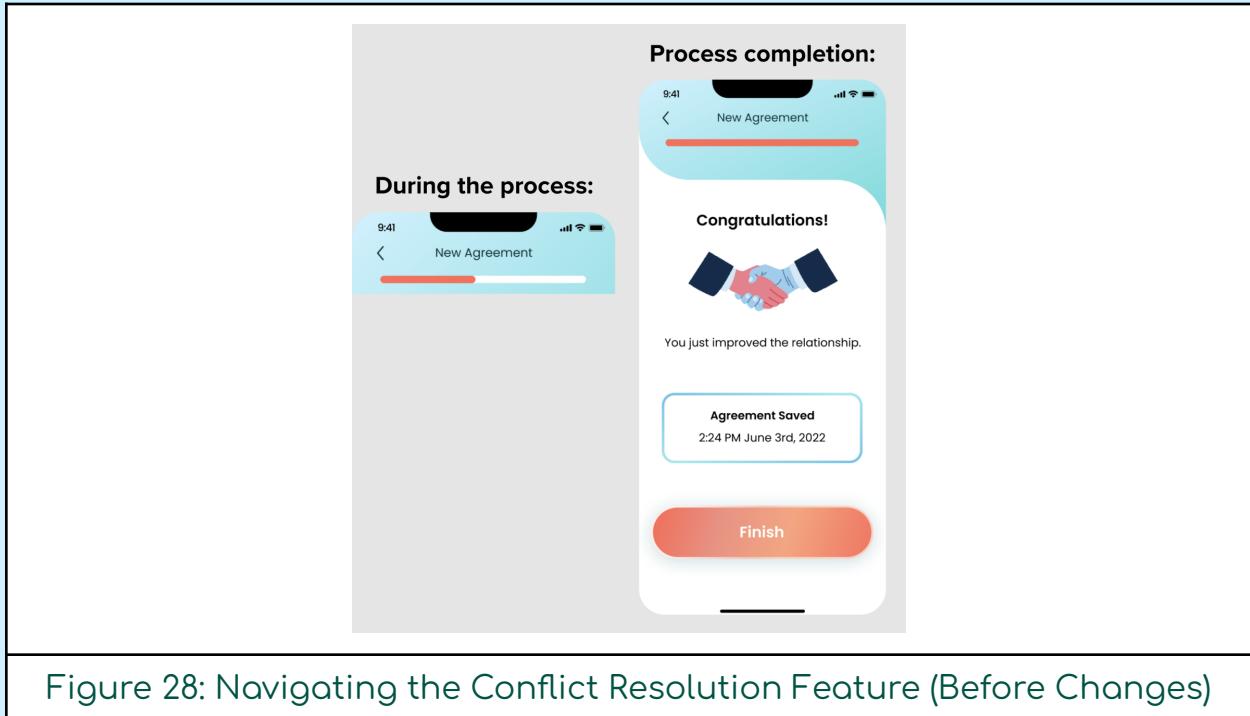


Figure 28: Navigating the Conflict Resolution Feature (Before Changes)

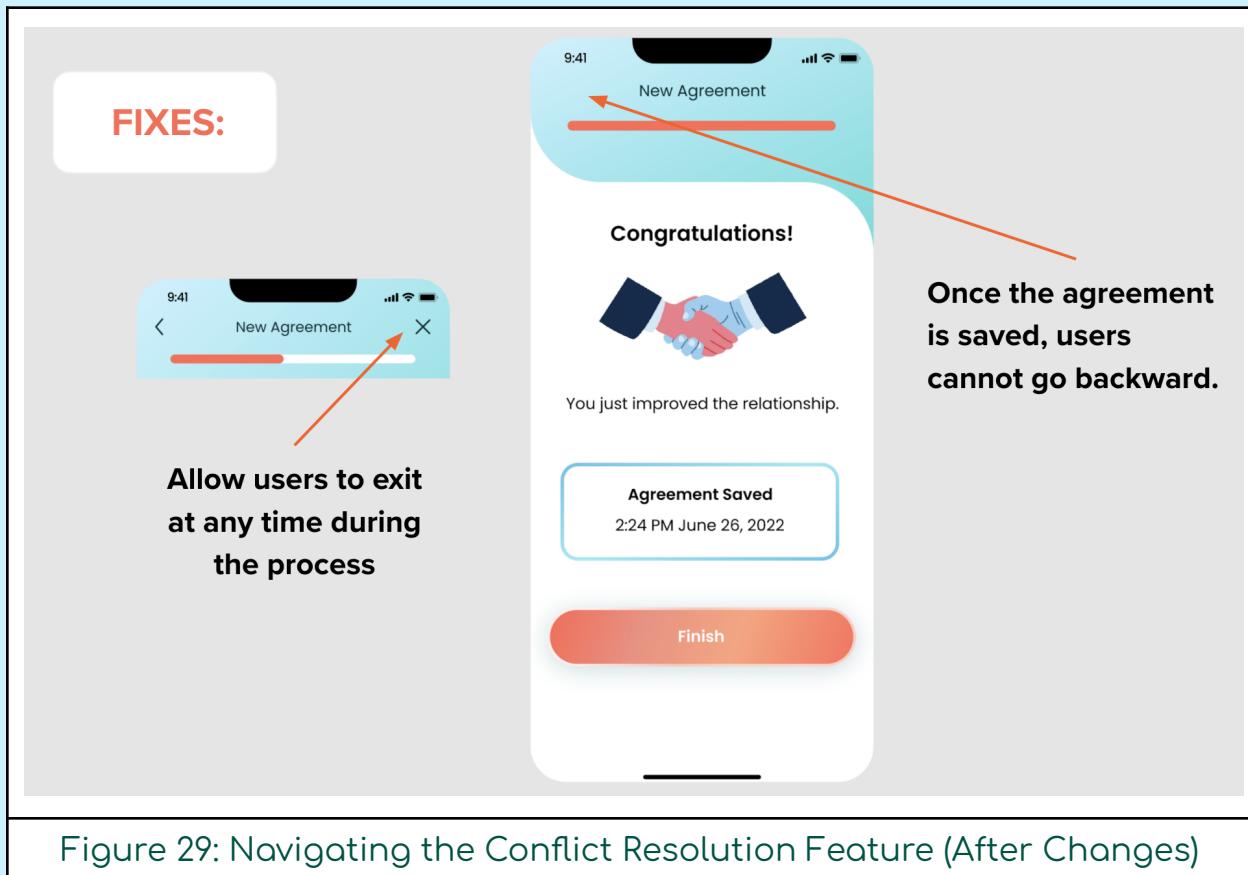


Figure 29: Navigating the Conflict Resolution Feature (After Changes)

H5. Error Prevention / Severity 3

Problem: Users are asked to record or type their agreement, but it seems that the user can do both and suffer no consequences.

Solution: Remove the voice recording option entirely.

H7. Flexibility and Efficiency of Use / Severity 4

Problem: Solidifying the new agreement is confusing because there is an option for recording and texting. Though it is meant to be one or the other, it feels counterintuitive to have them both on the screen as the user may initially feel like both are needed rather than just one of them.

Solution: Remove the voice recording option entirely.

H8. Aesthetic and Minimalist Design / Severity 3

Problem: On the page to log the agreement, having users think about the emojis while asking to input an agreement can be counterproductive since these two tasks are competing for the user's attention. Recommended fix: Split documenting an agreement and choosing an emoji into two different pages.



Solution: We decided not to fix this heuristic because we disagreed that typing an agreement and selecting an emoji for it would be too much for one page. Splitting this into two pages would be redundant and require more work for the user.

Figure 30: Logging an Agreement Feature (Before Changes)

FIXES:

- Remove the voice recording option entirely.
- Move the instructions to the top so users can read and perform actions in sequential order.
- Add a max character limit.
- Center all UI elements.
- Wider array of emojis to choose from, including the ones that are featured on the “Agreement History” page.

Figure 31: Logging an Agreement Feature (After Changes)



Values in Design

We are fully aware that design choices convey our values. Here are the summaries about how we solve conflicting values in our design.

CONFLICTING VALUES	FIX
Is there a “right” way to raise a child?	<p>We provide a nexus of all opinions in the Community tab, so parents can explore all points of view on the “right” way to parent without filtration by default. All we can do as developers are to ensure that licensed experts in the community are verified and their responses will be prioritized.</p> <p>In the future, we will implement parents to personalize Nurtue during the onboarding process to account for different cultural perspectives on child-rearing.</p>
How do we protect parents’ privacy? Some parents might feel uncomfortable sharing personal information.	<p>We allow parents to post anonymously and also ensure data security. We make sure user data stored is anonymized. We also give parents total control of what information they share with the app.</p>
Will it lead to longer screen time? It’s likely that some parents might spend too much time on the app instead of with their children.	<p>In the future, we will encourage real-life interactions between parents and children and potentially offer a screen time checker.</p>



FINAL PROTOTYPE IMPLEMENTATION

Tools

A variety of tools were used for our high-fidelity prototype implementation. We used Figma for visual design guidance, VSCode as our integrated development environment (IDE), React Native (with Expo) as our application framework, and Xcode simulators for testing.

The most challenging part was to realize UI elements that were done by designers with a design tool (e.g. Figma) with actual code. Some simple effects can be achieved with the help of existing libraries (such as *expo-linear-gradient*), but some would take too much effort to build. Therefore, we tried to find some open source solutions to these problems. For example, we used *react-native-circular-progress* for the animated circular timer. We also tried to take advantage of the design resources available. By using *react-native-svg*, we transformed some of the Figma SVG files into native graphs, achieving the desired gradient background effect.

After the UI elements were good to go, we prepared a data store that had been populated with some hard-coded data. Redux, a state management tool, came in handy. Since we had decided to incorporate three tabs to host three main tasks, the Redux state was divided into three separate states: posts (community posts along with its filter settings), agreements (along with its timer settings), and practices (along with a standalone question of the day module). We found out [@reduxjs/toolkit](#), which made setting up Redux reducers and actions simpler. With the help of Redux's React Hooks (*useDispatch* for data mutation and *useSelector* for data fetching), we managed to hook the App's UI with the state. Finally, we used *react-native-async-storage* together with *redux-persist* to persist data during app startup and termination to provide a better user experience.

React Native was a great tool for our implementation. However, it did have some shortcomings. For example, React Native has different implementations for the same UI element on Android and iOS, making it difficult for us to authentically follow the design. Lots of tweaks and hacks were needed to support both platforms. Despite many efforts, we were not able to achieve the same high-quality design on Android as it was on iOS.



High-Fi Task Walkthrough

Task 1 - Simple: Share your parenting struggles to get advice from fellow parents or/and experts in the field.

Task 1 Share your parenting struggles to get advice from fellow parents or/and experts in the field.

The diagram illustrates the workflow for Task 1:

- Initial State:** A user is on the "nurture" app's main feed, viewing posts from other users like Monica, Daniel, and Ted.
- Post Creation:** The user taps the "+" icon to start a new post. They enter the title "My son plays video games instead of..." and the description "My son has been obsessed with playing video games every night and I can't get him to focus on his homework whenever I bring it up. He slams the door in my face and ignores me. I don't know what to do." They select topics related to parenting and choose "Everyone" for who can reply.
- Post Submission:** The user submits the post. It appears on the feed with a timestamp of 3:50.
- Viewing Replies:** The user scrolls down to view the first reply from Steven, which reads: "My son plays video games instead of doing his homework. It's been a few seconds ago. My son has been obsessed with playing video games every night and I can't get him to focus on his homework whenever I bring it up. He slams the door in my face and ignores me. I don't know what to do." Steven also includes a link to a "Parenting Advice" thread.
- Replying:** The user inputs a reply: "Thanks for the advice!" and taps the send button.
- Final State:** The user views the full thread, which now includes their own reply. The timestamp is 3:53.

View replies & post your own.

Figure 32: Simple Task



Task 2 - Moderate: Practice more effective language to communicate with your child through interactive modules.

Task 2 Practice more effective language to communicate with your child through interactive modules.

The task flow consists of the following screens:

- Screen 1:** Question of the Day (3 responses shown)
- Screen 2:** Question of the Day (3 responses shown)
- Screen 3:** Question of the Day (3 responses shown)
- Screen 4:** Practice screen showing Discipline (0%), Big Feelings (99%), and other categories.
- Screen 5:** Discipline quiz screen (Question 1: Your child is crying after getting a shot at the doctor's office. What should you say? Options: "This is nothing. When I was a kid, I had surgery!", "Don't cry, give me a big kid smile!", "C'mon, shake it off buddy!").
- Screen 6:** Discipline quiz screen (Question 2: Let's Reconsider. "C'mon, shake it off buddy!" When we say this, kids learn to push away their pain. Options: Try Again, Finish).
- Screen 7:** Discipline quiz screen (Question 3: Nice Job! "I know it hurts. I'm here with you. You are safe." When we say this, kids learn they don't have to hide their true feelings. Options: Finish).
- Screen 8:** Discipline quiz screen (Question 4: Discipline (0%), Big Feelings (99%), and other categories).
- Screen 9:** Discipline quiz screen (Question 5: Your kids are fighting over a toy. What should you say? Options: Completed, Incomplete). Note: This screen shows the first question of a 5-question quiz.
- Screen 10:** Discipline quiz screen (Question 2: Your kids are fighting over a toy. What should you say? Options: Do you have any ideas on how we might solve this?, Continue, Finish).
- Screen 11:** Discipline quiz screen (Question 3: Nice Job! "Do you have any ideas on how we might solve this?" When we say this, kids learn that they are capable of thinking of creative solutions to tricky problems. Options: Continue, Finish).
- Screen 12:** Discipline quiz screen (Question 4: Congratulations! You've completed all 5 questions! Options: Finish).
- Screen 13:** Practice screen showing Discipline (100%), Big Feelings (99%), and other categories.

*The actual quiz in "Discipline" has a total of 5 questions, this task flow demonstrates 1. Once all 5 questions have been correctly answered, users will see the "Congratulations" page.

Figure 33: Moderate Task



Task 3 - Complex: Resolve a particular conflict with a child in a peaceful manner, and come to an agreement that the parent can reference.

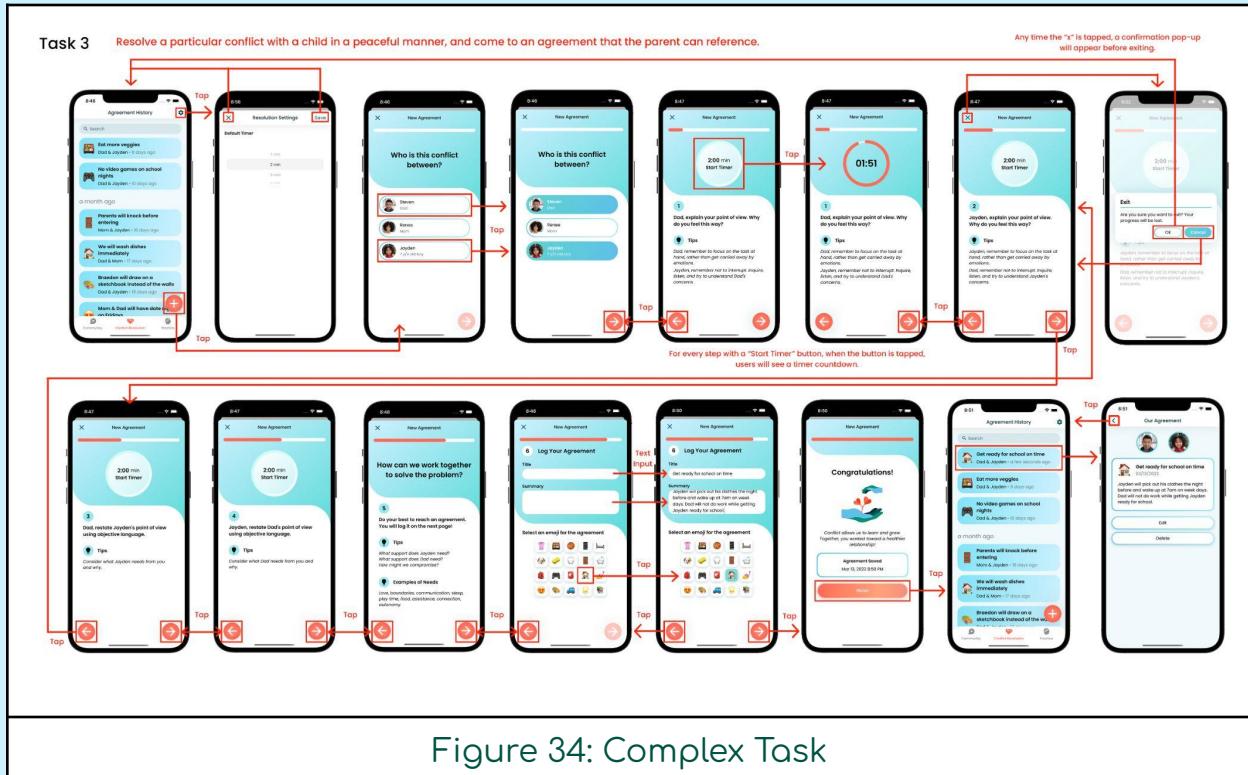


Figure 34: Complex Task

Wizard of Oz & Hard-Coded Data

Due to the complexity of building a recommendation system, we decided to use the Wizard of Oz technique to make this project more manageable given the tight timeline for implementation. All recommendation and personalization features were implemented by Wizard of Oz, including “Recommended Topics” and “Trending Now” in the Search screen and selectable topics in the new post screen.

We also included hard-coded data in the following aspects to make the prototype look more realistic to users:

1. **User profiles:** we created some pre-existing user profiles (names & photos) for the current user, fellow parents, and experts;
2. **Community posts:** we curated pre-existing posts and replies as well as the “heart” count based on questions frequently asked by parents



- online and accredited resources;
3. **Practice questions:** Question of the Day and one set of practice were also curated based on best practices shared by parenting experts online;
 4. **Agreement entries:** We filled pre-existing agreements between hard-coded family members.

SUMMARY & NEXT STEPS

Our team had an amazing time creating Nurtue in CS 147. The design thinking process taught us how to come to a solution through a human-centered approach. The needfinding, user testing, and experience prototyping prevented us from designing a solution we *thought* the target audience would need, and assured us that we were creating something we *knew* the target audience needed.

Our studio theme "Caring From Within" taught us that mental health is not limited to illnesses or disorders, but includes effective communication as this affects self-esteem and overall well-being. We learned that we must be very careful about what we promise users. We cannot guarantee happier lives or make empty promises, but we *can* provide expert-endorsed material. In the future, we plan on adding a notifications center, and personalization to account for different cultural perspectives on child-rearing.