

MOLO

Memories of Little Ones

A smartwatch device to help foster closer ties between parents and their children.

Team

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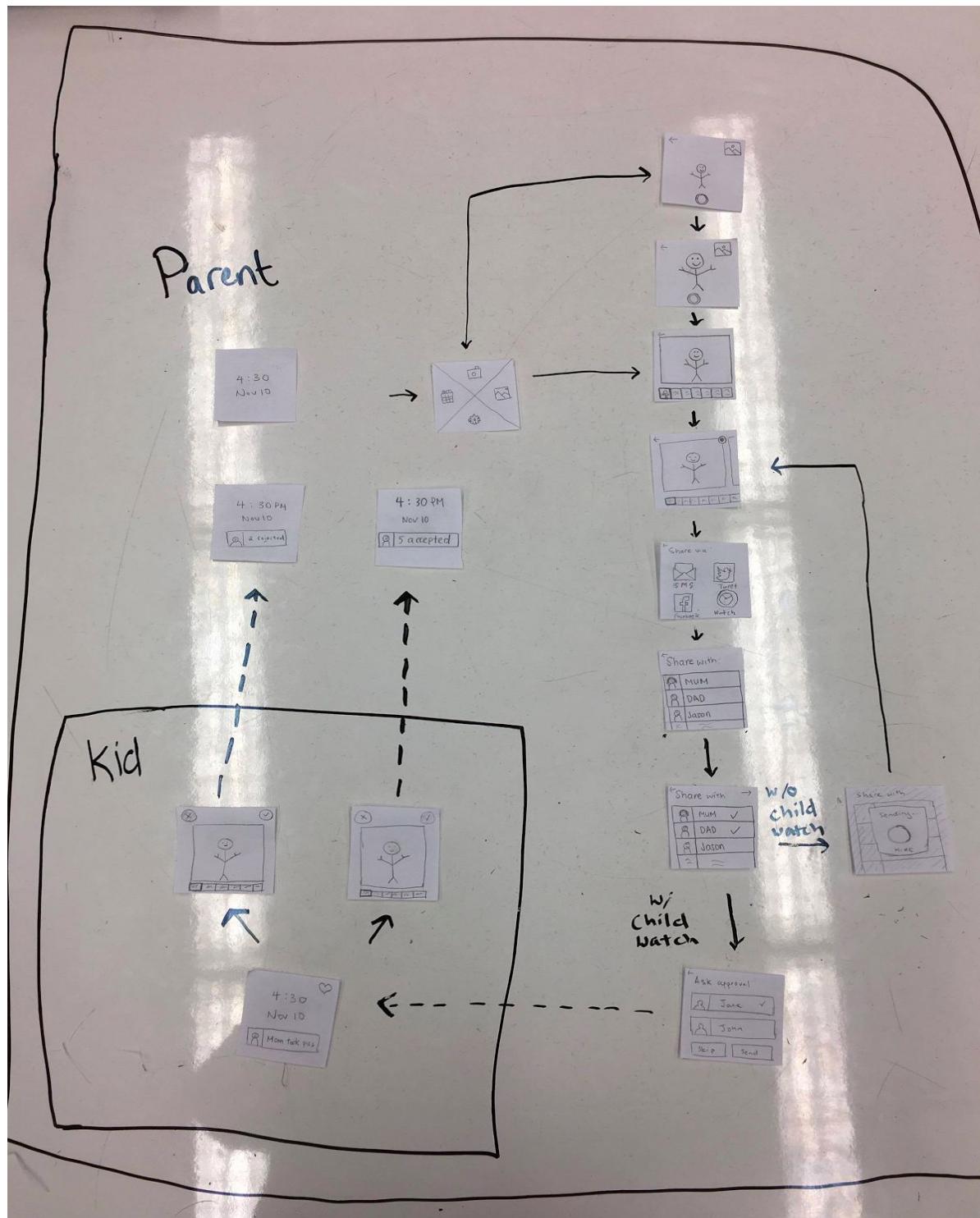
Problem and Solution Overview

In today's social media dominated era, we find that parents face problems during the process of sharing memories of their children online. For instance, many parents are unhappy with the lack of control with privacy when sharing photos online. Also, the consent of children is neglected when parents post memories of them online. These are just some of the main problems that hinder parents from fully enjoying the experience of capturing and sharing memories of their children online. Hence, we are designing a smart watch, MOLO (Memories of Little Ones), to help solve the problems that parents face during this process so as to enhance their overall experience. Our main goal is to help parents capture memories of their young children efficiently and securely, so that they can look back and reminisce on those memories in the future. We chose a smartwatch because it is lightweight, portable, and convenient for parents to use on the go when their hands are full. Also, it allows for easy connectivity between parents and children during the process of sharing memories. Overall, our hope for MOLO is that it would effectively help to foster closer ties between parents and their children through the use of a memory sharing smartwatch application.

Initial Paper Prototype

Paper Prototype Overview

Our paper prototype features two primary tasks, the first being allowing parents to share memories of their children securely and the second being allowing children to participate in the sharing of these memories. Here is an overview of the flow of our smartwatch and how the different screens connect with one another, with the focus being on the two main tasks.



Features

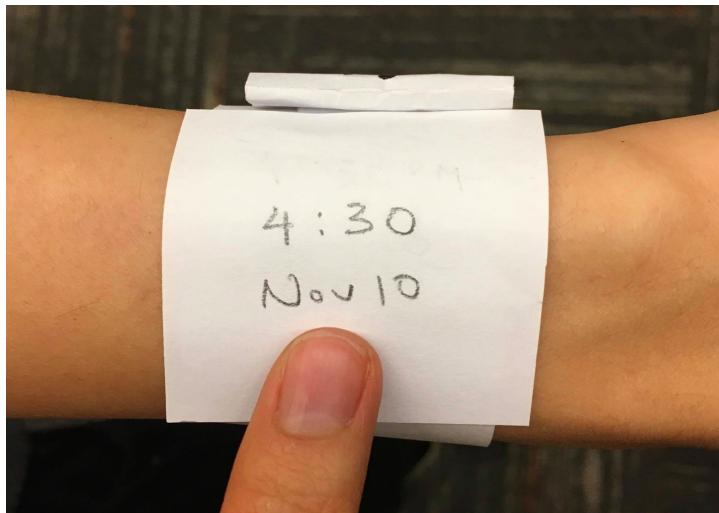
This is the home screen. The features supported by the smartwatch are as follows:

- 1) Ability to take pictures and videos (top)
- 2) Ability to view all captured memories (right)
- 3) Ability to change the settings eg. connecting to child watch (bottom)
- 4) Ability to set reminders for important responsibilities as a parent (left)
- 5) Ability to share memories with selected recipients, but with approval from children who also have a smartwatch
- 6) Ability to select recipients to share memories with



Task 1: Allowing Parents to Share Memories Securely

This is the lock screen that displays the current time and date. The smartwatch supports fingerprint unlocking.



This is the home screen.



Mum quickly clicks on the camera icon to take a picture of her daughter, Jane, who is doing a cute pose.



Mum positions her watch in such a way that she can see Jane on the screen.



Mum moves fingers in an outward motion to zoom in so that she can get a clearer picture.



Mum taps screen to take a picture of Jane.



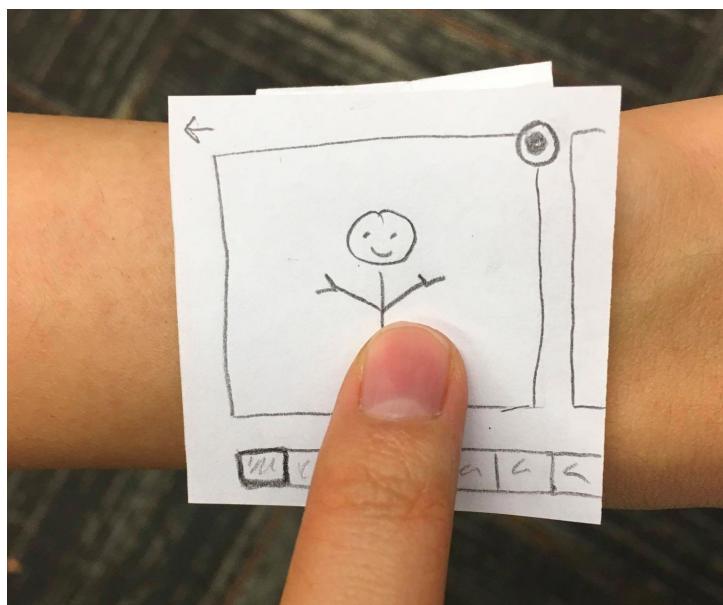
Mum clicks on the album icon at the top right to look through all the memories.



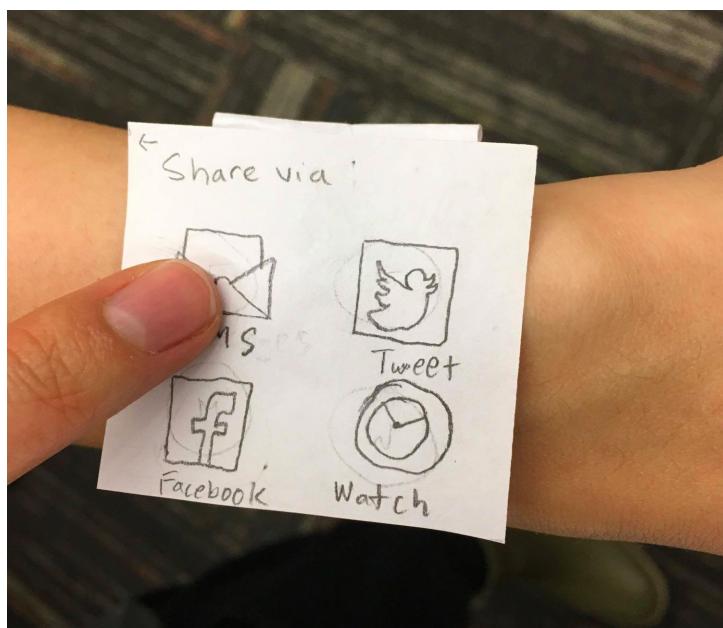
Mum swipes through the memories to select the ones she wishes to share. She swipes right to select the first picture.



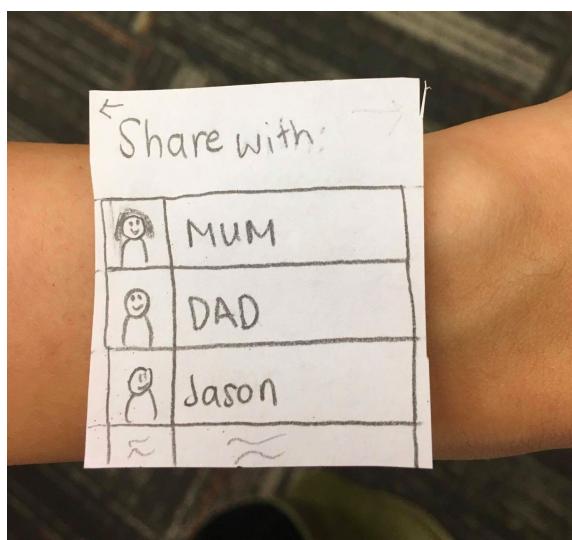
Mum holds on the photo to go into selection mode and then taps on the memories she wishes to share.



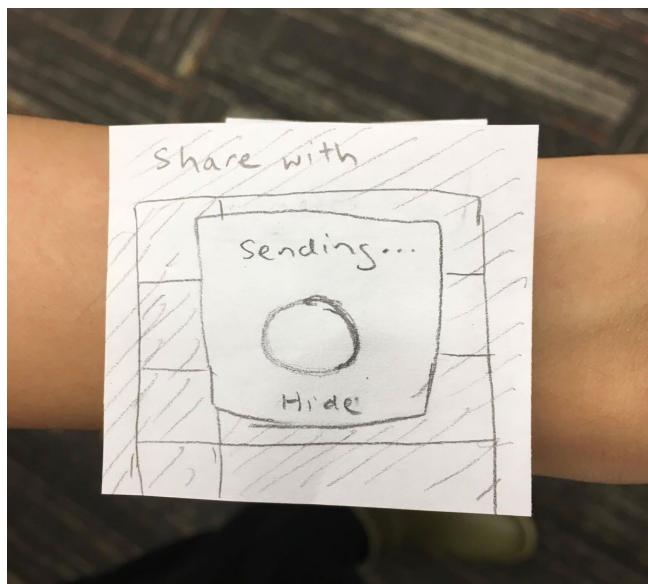
After mum is done selecting the memories, she chooses the platform she wants to share on. She chooses "SMS".



After mum is done selecting method of sharing, she chooses the people on that platform whom she wants to share the memories with.

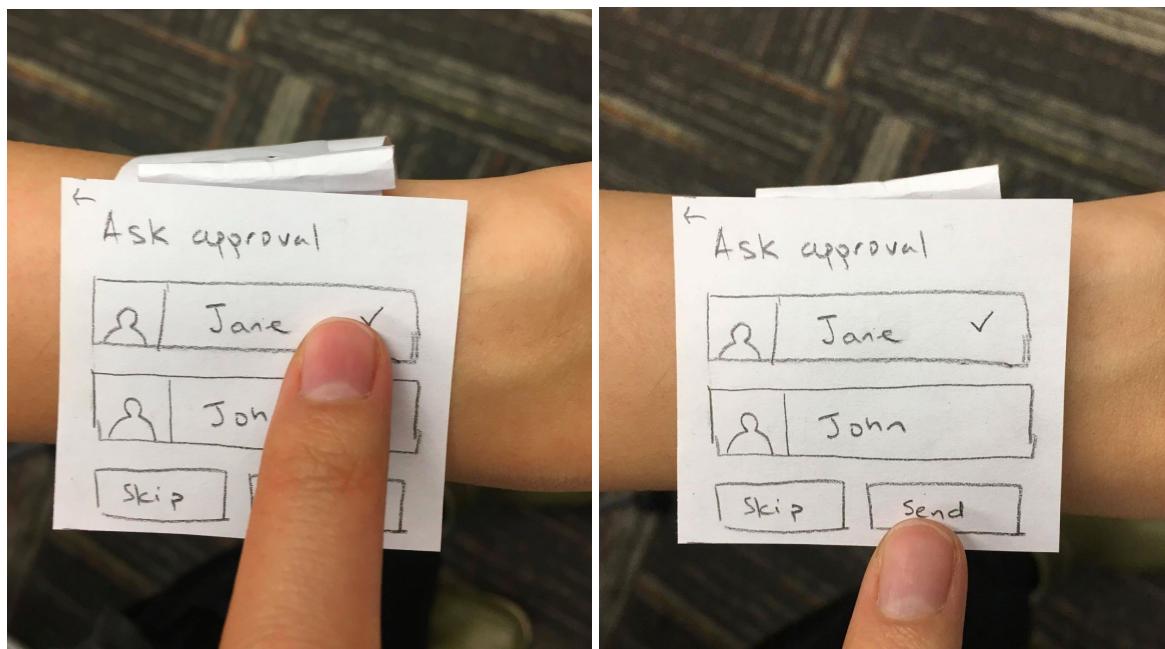


If there is no child watch connected to the parent watch, then mum's memories will be processed instantly after she clicks on the right arrow as shown below, and eventually she will be brought back to her albums.

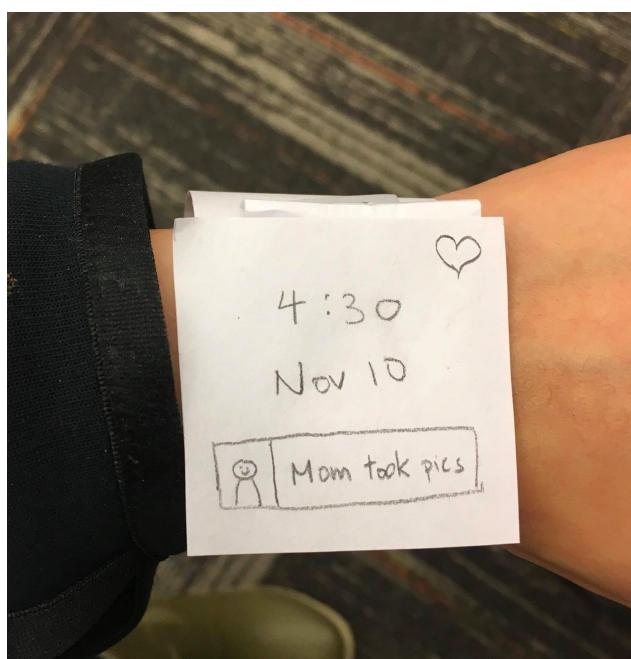


Task 2: Allowing Young Children to Participate in the Sharing of Memories

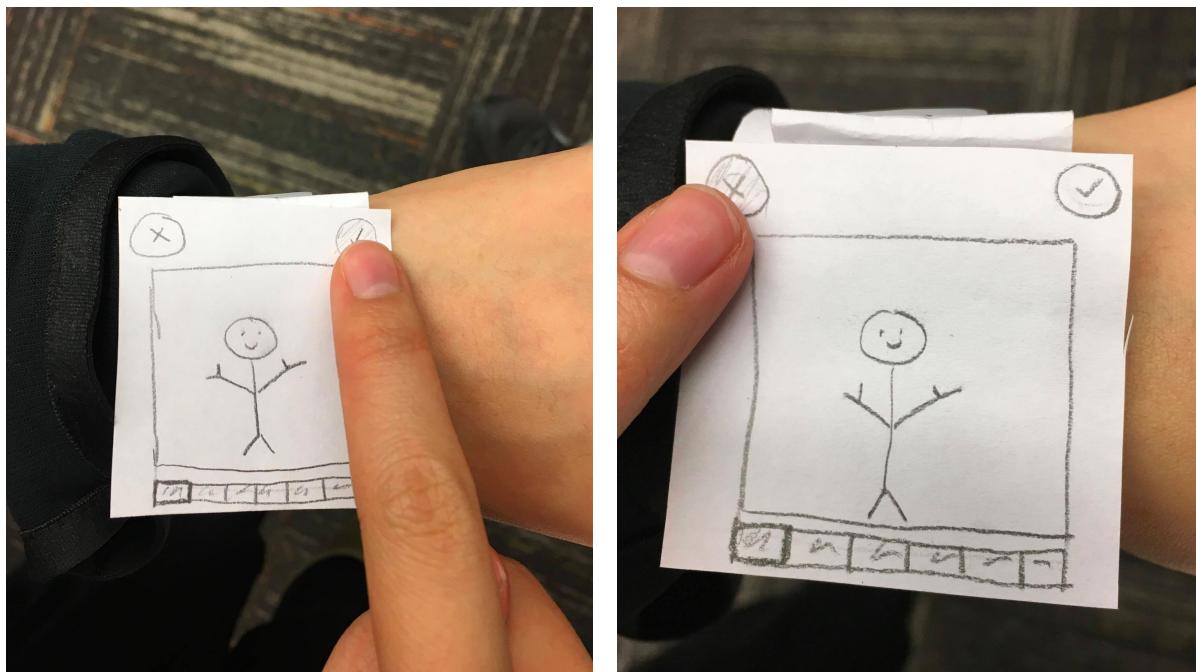
Otherwise, if there is at least a watch synced, then mum is brought to this screen where she selects the children she'd like to send the memories to for approval. She chooses Jane only.



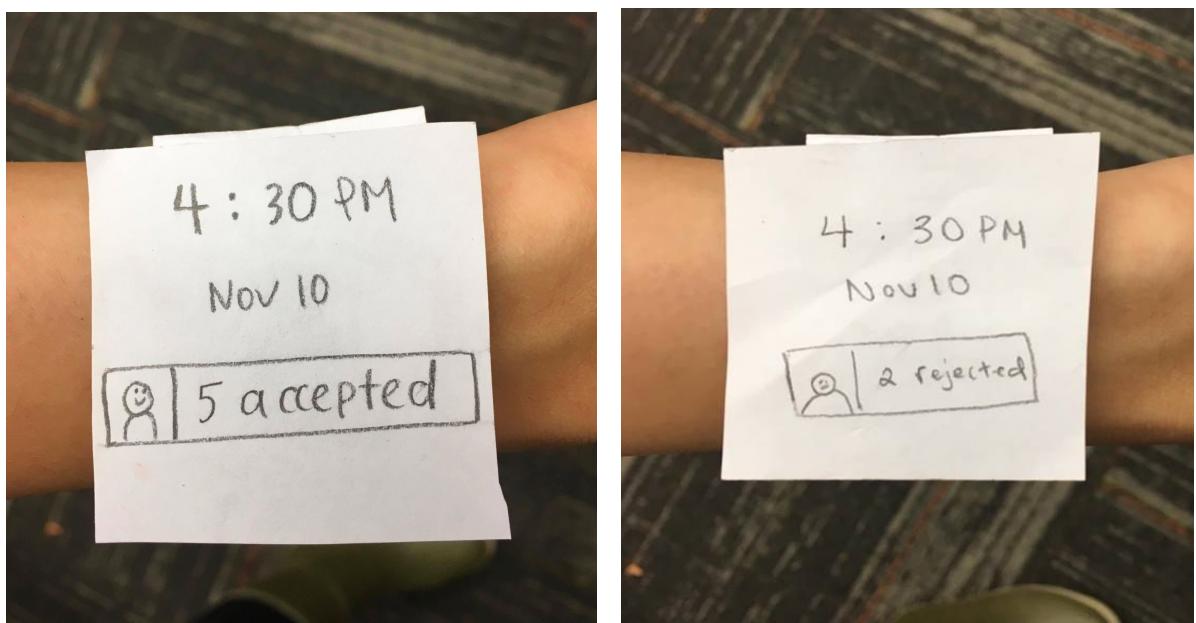
Jane gets a notification on her smartwatch that mum has captured memories of her and wishes to share them.



Jane then looks through each of the memories, and either approves or disapproves of the request to share that particular memory.



After Jane has finished checking through the memories, they are automatically shared with the selected recipients through SMS. Mum is also notified of the number of memories Jane has allowed or disallowed her to share, which she can click on to view the memories that have been accepted or rejected. If there are multiple notifications, after the first type of notifications are looked at, subsequent notifications are shown.



Testing Process

Our first participant is a 35-year-old mum with two daughters ages 1.5 and 3.5, and who is a nurse practitioner. We carried out the usability test with her at the clinic she works at in downtown Seattle (US Healthworks) because it is a convenient location for her. Our second participant is a 29-year-old father with a newborn daughter who is now around two or three months old. He is a web developer. We conducted the usability test at a local coffee shop near his home because it was most convenient for him. Our third participant was a 43-year-old assistant kids director who has two boys ages 17 and 18, and a 5-year-old daughter. We conducted the usability test at Angela's church because that is where she works at. We chose these participants because they were the parents whom we had interviewed for our design research, so it was logical for us to have them test our prototype.

All three of us were present during the test, and our roles were: David the talker, Anita the computer, and Angela the note-taker.

During the usability tests, we got them to test out our two main tasks: 1) Allowing parents to share memories securely and 2) Getting children's approval to share memories with others. To emulate a realistic setting, we got them to wear the paper watch we had made for them, with the first screen being that which requires them to use their fingerprint to unlock. We also explained to them how the rollable camera attached to the top of the watch works.

Before each task, we gave them a scenario. The scenario for the first task was: You are a parent and you have an eight-year-old son, Jason. You are currently watching over Jason as he is playing at the playground with a few other kids in the neighborhood. The scenario for the second task was: You are Jason and your mum has just sent you a request to check through the photos that she wants to share with a few of your family members.

While running through the steps, we were able to easily switch between different screens because we attached a small piece of tape under each of them. Hence, they are easily attached and removed. Additionally, for our second task, we told them to assume the role of their child and interact with the watch.

Overall, we learnt that the tests would have been smoother had we organized the screens better before the tests, specifically laying out the parts beforehand. This is because we found ourselves fumbling with the screens at a few points during the test just to find the next screen.

Testing Results

Issues Identified from Usability Test 1

We identified some issues during our first usability test. First, we learnt that swiping to get to the next image is not as intuitive as tapping on the image at the bottom. To fix this, we have a pop-up menu, which gives more information to new users about how to interact with our app. We have an “X” that allows them to close the window, and an optional “Do Not Show Again” checkbox so that experts (or just tech savvy individuals) don’t have to deal with it showing up every time they open the app. When the user clicks “X,” they can swipe right to view and select the next image. Second, we learnt that we forgot to handle the case where a memory has two children in it, but one child rejects while the other child accepts the request to share. Though we did not make any changes to our designs, we have decided that any rejection means no sharing out of respect for children’s privacy, at least by default. Finally, we learnt that the latter part of the message (“hold”) is easily forgotten, so we decided to change the message to “Tap to select” instead.

Issues Identified from Usability Test 2

We identified some issues during our second usability test. First, we learnt that the screen that you get to after pressing the back arrow changes based on how you navigated to the album. If you got to the album from the camera, then you will go back to the camera whereas if you got to the album from home, then you will go back to home. Hence, we have decided to add an indicator to show if pressing back would bring you to camera or home. Second, we learnt that it is clearer to use an icon for the share button. Third, we learnt that we should only ask for approval if a child’s face is detected in the photo and if the child has a watch as well. However, we did not make any design changes since the suggestion requires us to change our backend rather than frontend design, which cannot be reflected in our prototype. Furthermore, we also learnt that participants tended to swipe to unlock instead of tapping and holding, so we decided to change this to match to what people are used to. Finally, we learnt that we missed out the feature to delete a memory, thus we added an options menu for the user to delete as well as share the memory.

Issues Identified from Usability Test 3

We identified some issues during our third usability test. First, we learnt that the album icon and the photo taking button are confusing: the former looks like a photo taking button while the latter looks like a video taking button. Hence, we decided we should include a video button to let the user switch between modes by tapping on it. Second, we learnt that the heart icon is misleading as it looks like it can be interacted with when it is actually just part of the design of the lock screen. Hence, we decided to take away the heart icon and only worry about customizing the lock screen of the

child watch while doing digital mockups. Finally, we learnt that the latter part of the message (“hold”) is easily forgotten. Hence, we decided to change the message to “Tap to select” instead.

Heuristic Evaluations

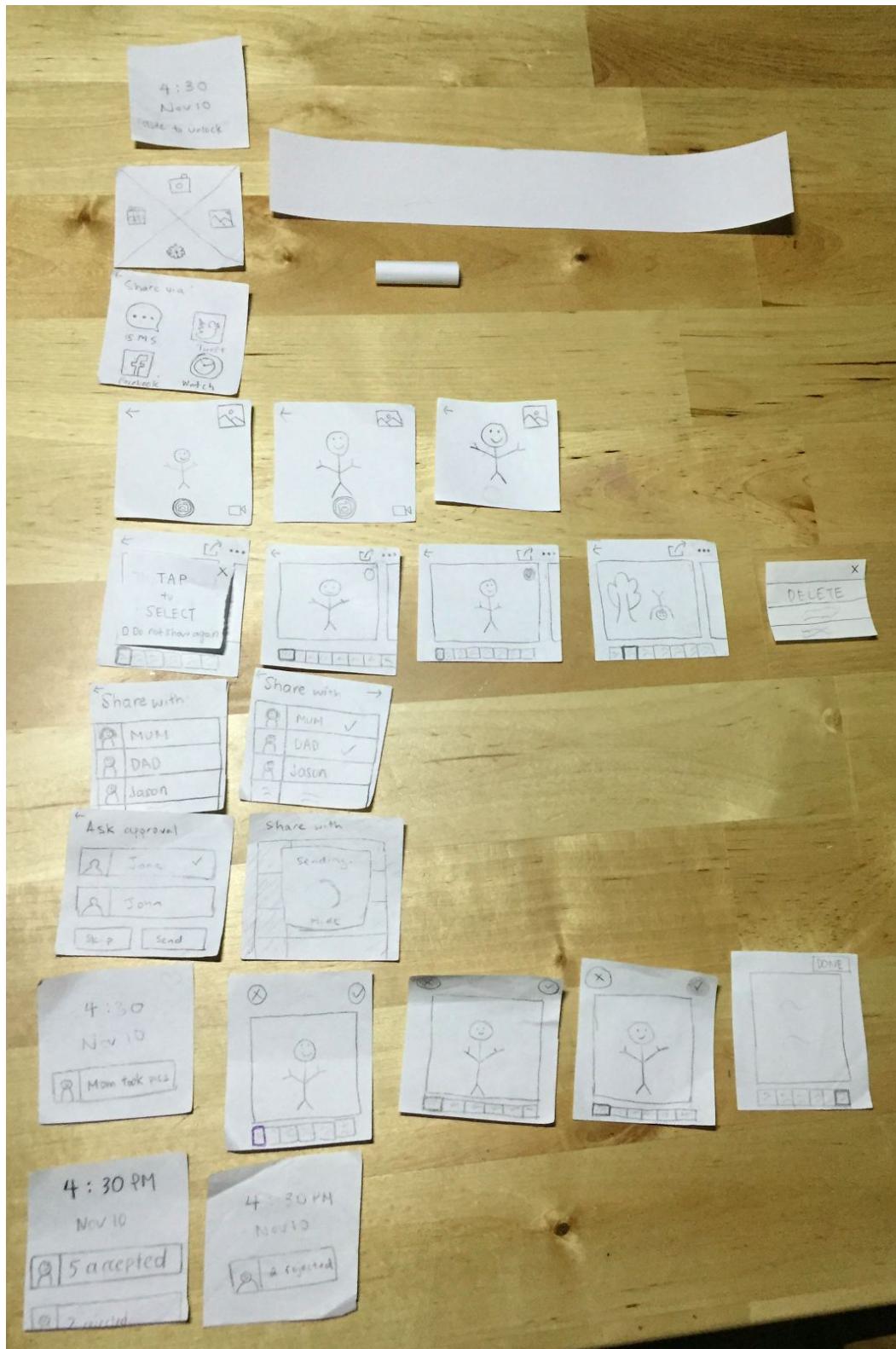
We identified several valuable issues during our heuristic evaluations. For the lock screen, it is unclear how to unlock the watch. In the gallery, it is unclear how to go into selection mode and what the dot represents. Also, what the user should do after selecting a memory to share is not intuitive eg. whether to tap or swipe and in what direction. For the home screen, the icon for sms is misleading because it looks like an email icon. For the home screen, it is unclear to new users what the different features of the smartwatch are. Furthermore, for the screen where users have to ask their children for approval to share memories of them with others, it is unclear what “Skip” does. We should also consider using facial recognition to eliminate the need for this screen, and giving users the option to skip the screen if it is wholly unnecessary. Based on the feedback, we made several changes to our designs. First, we included new-user onboarding for various screens eg. lock screen, home screen, album screen, permissions screen. Second, we changed the sms icon to a speech bubble. We also added the settings screen where users can add or remove child watches. Finally, we added more screens for smoother flow.

Design Critique:

We also received very valuable feedback from our TAs and classmates during the design critique sessions. First, we were advised to be mindful of the physical constraints of the screen, since a smart watch is pretty tiny, so we should not squeeze too many words and graphics into a screen. A suggestion was to attempt drawing the designs on paper of the actual size of the watch screen to see if the words would be visible and if the controls would be easily touched. Second, we were advised to take into account the child's perspective since teenagers may be more picky about how they look in photos, and that some children might be concerned about their own privacy. Finally, we were advised to find an easier way to connect the watch to other social media accounts such as through a web browser where new users first login to their accounts, or automatically passing data consisting of their username and password via bluetooth. This way, the user would not need to go through the hassle of typing their username and password on a tiny screen.

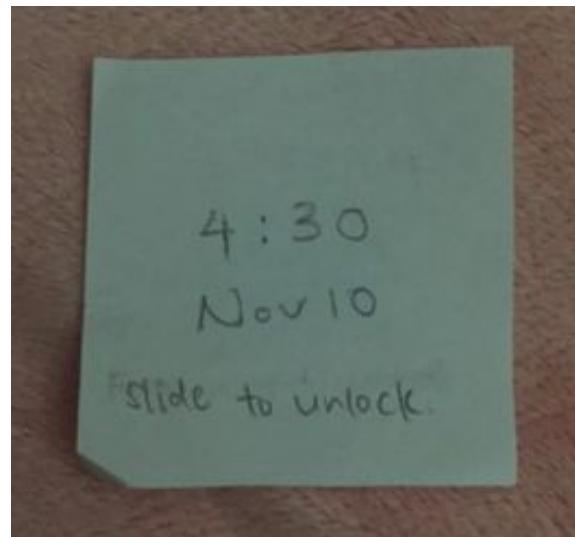
Final Paper Prototype

Paper Prototype Overview

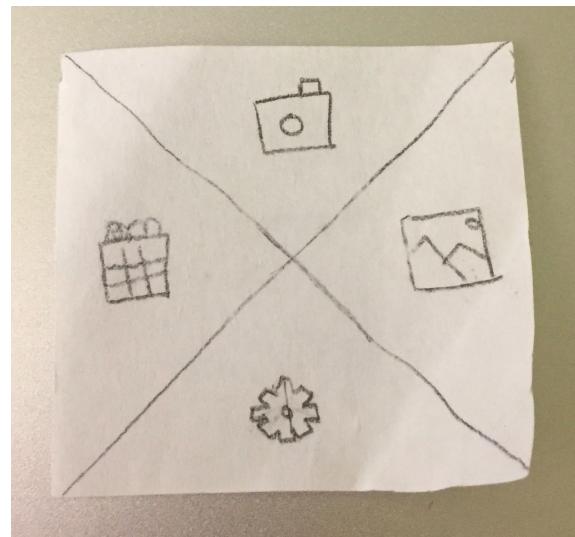


Task 1: Allowing Parents to Share Memories Securely

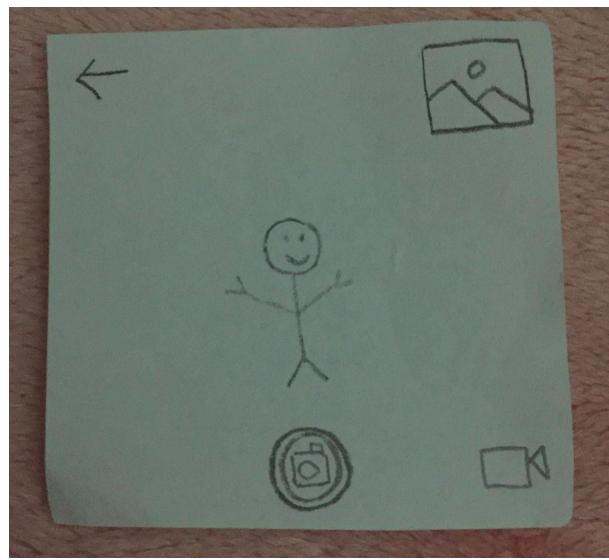
This is the lock screen that displays the current time and date. The smartwatch supports fingerprint unlocking.



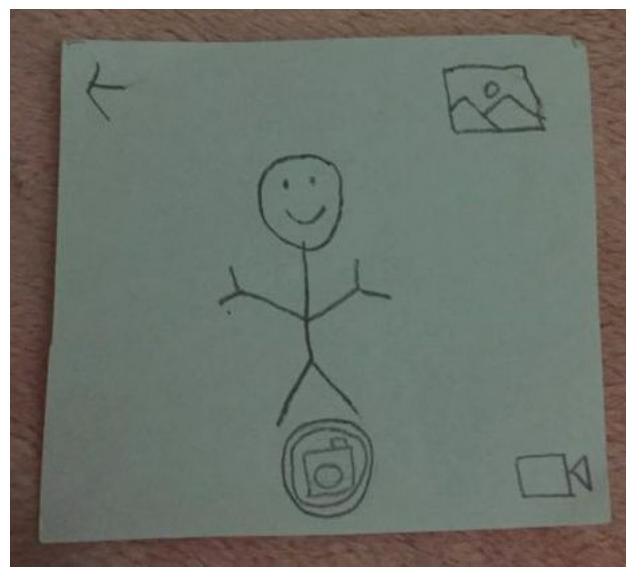
This is the home screen. Mum quickly clicks on the camera icon to take a picture of her daughter, Jane, who is doing a cute pose.



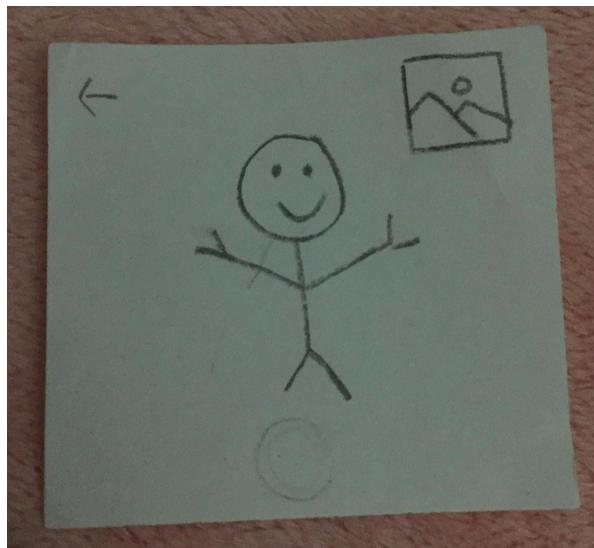
Mum positions her watch in such a way that she can see Jane on the screen.



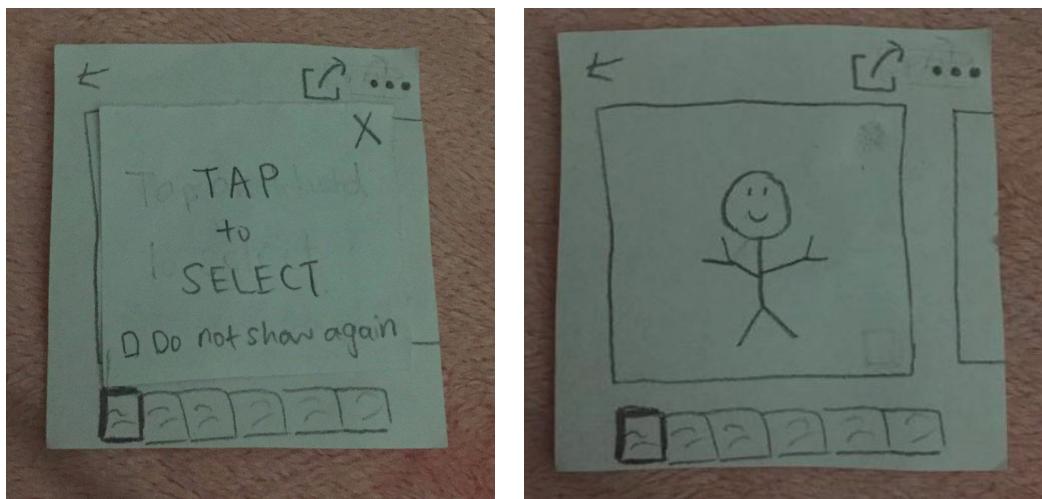
Mum moves fingers in an outward motion to zoom in so that she can get a clearer picture.



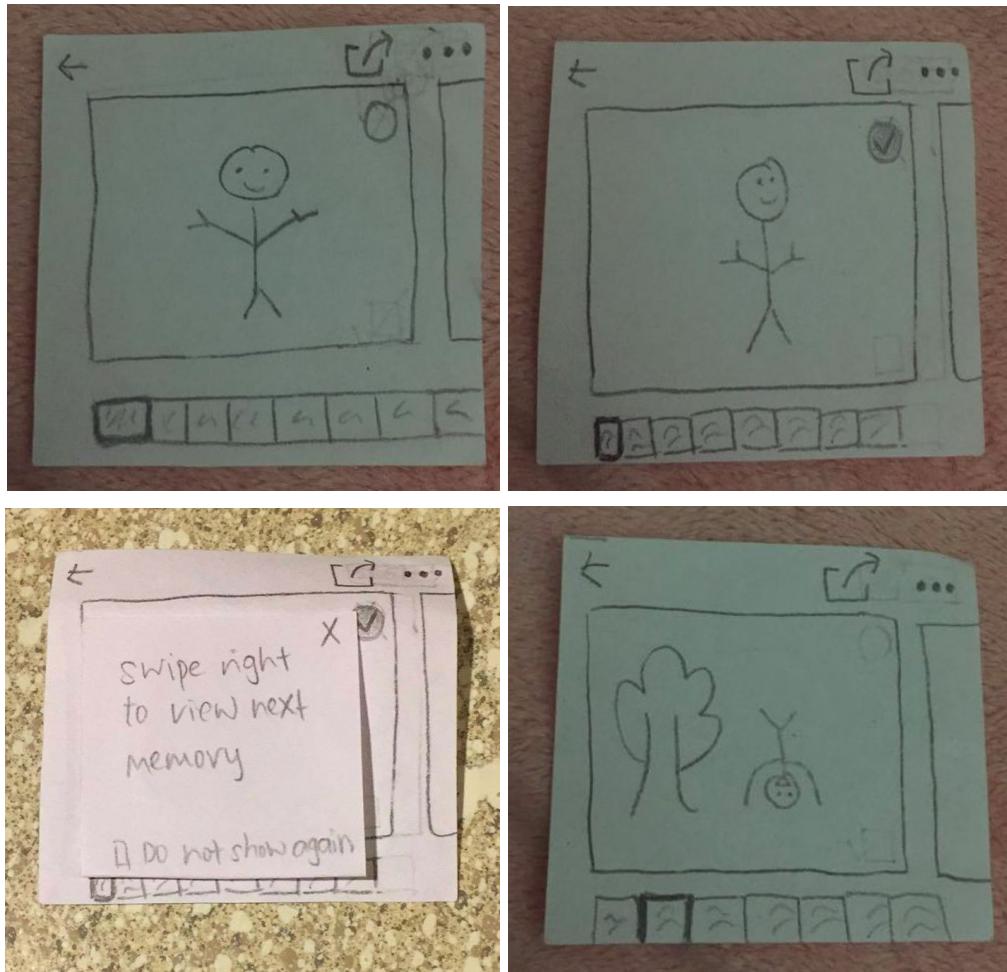
Mum taps the photo icon to take a picture of Jane. Mum clicks on the album icon at the top right to look through all the memories.



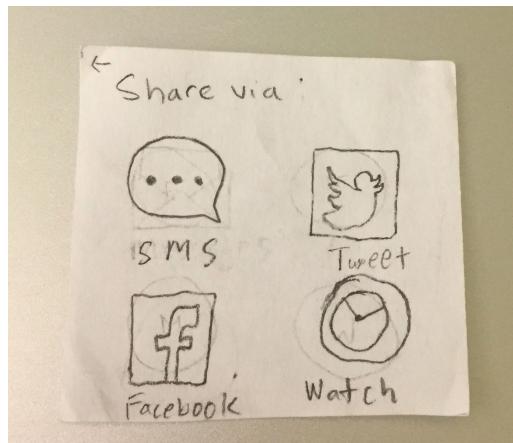
Mum sees a popup message telling her to tap to select. She closes the box and proceeds to look through her memories.



Mum selects the first memory to share. Then a popup message appears telling her to swipe right to view the next memory. She closes the box and swipes right to look at the next memory.



After mum is done selecting the memories, she hits the share icon at the top right of the screen and is brought to the screen below, where she chooses the platform she wants to share on. She chooses "SMS".

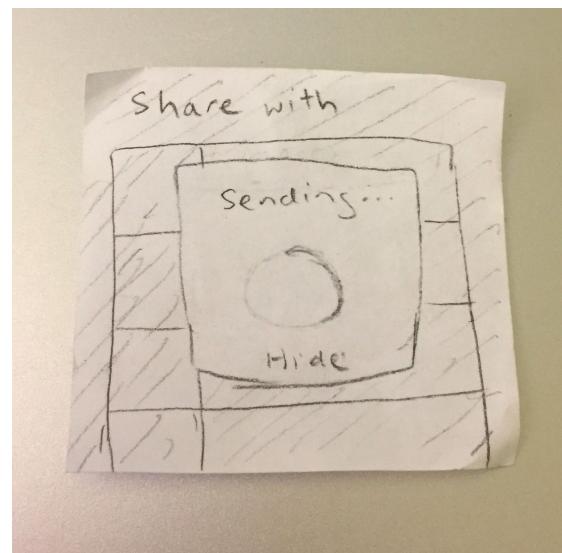


After mum is done selecting method of sharing, she chooses the people on that platform whom she wants to share the memories with.

Share with:		
	MUM	
	DAD	
	Jason	

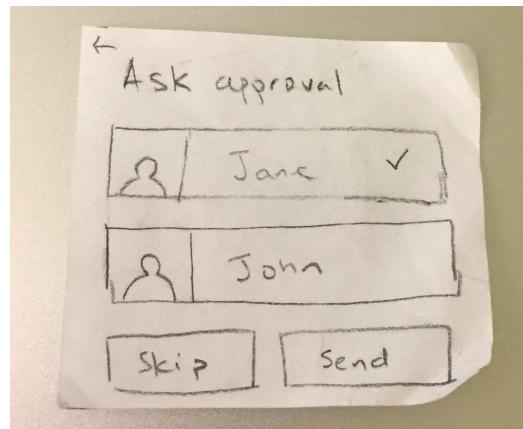
Share with		
	MUM	✓
	DAD	✓
	Jason	

If there is no child watch connected to the parent watch, then mum's memories will be processed instantly after she clicks on the right arrow as shown below, and eventually she will be brought back to her albums.

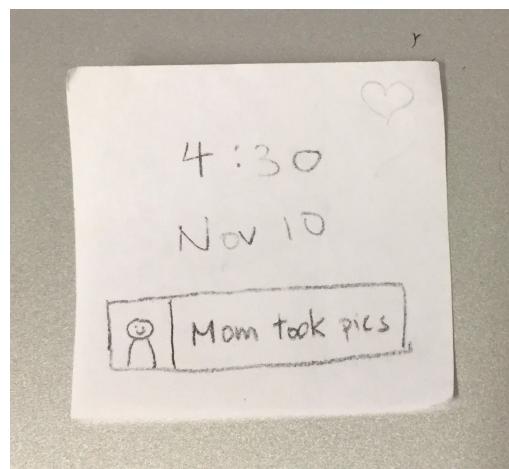


Task 2: Allowing Young Children to Participate in the Sharing of Memories

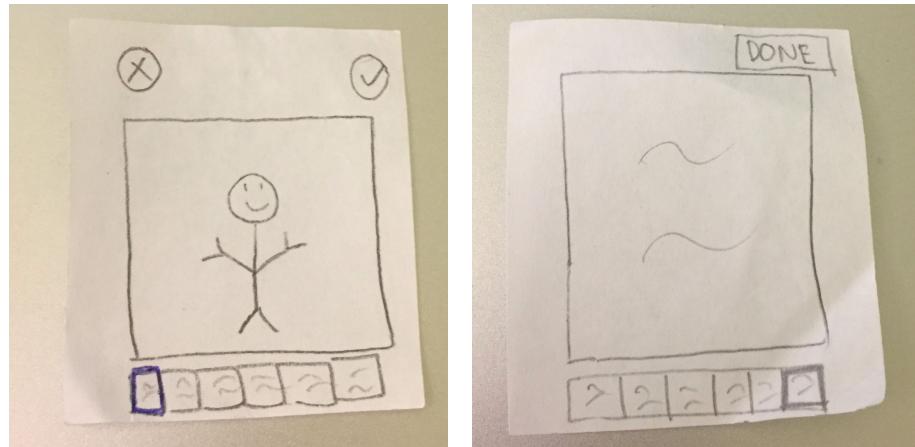
Otherwise, if there is at least a watch synced, then mum is brought to this screen where she selects the children she'd like to send the memories to for approval. She chooses Jane only.



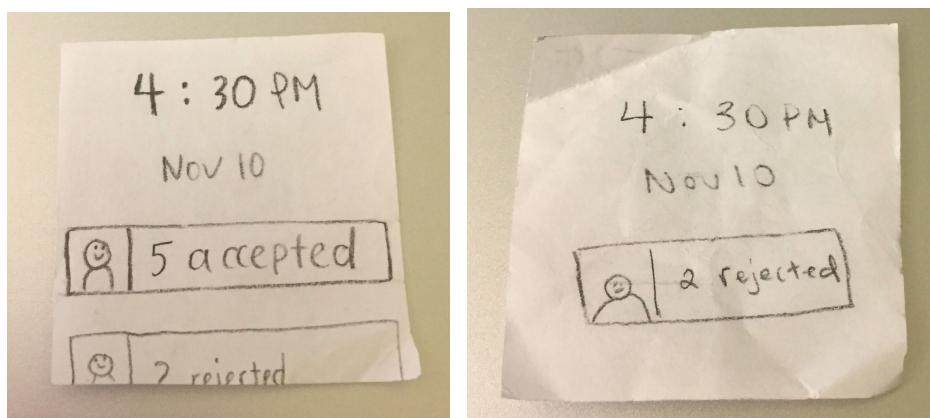
Jane gets a notification on her smartwatch that mum has captured memories of her and wishes to share them.



Jane then looks through each of the memories, and either approves or disapproves of the request to share that particular memory.

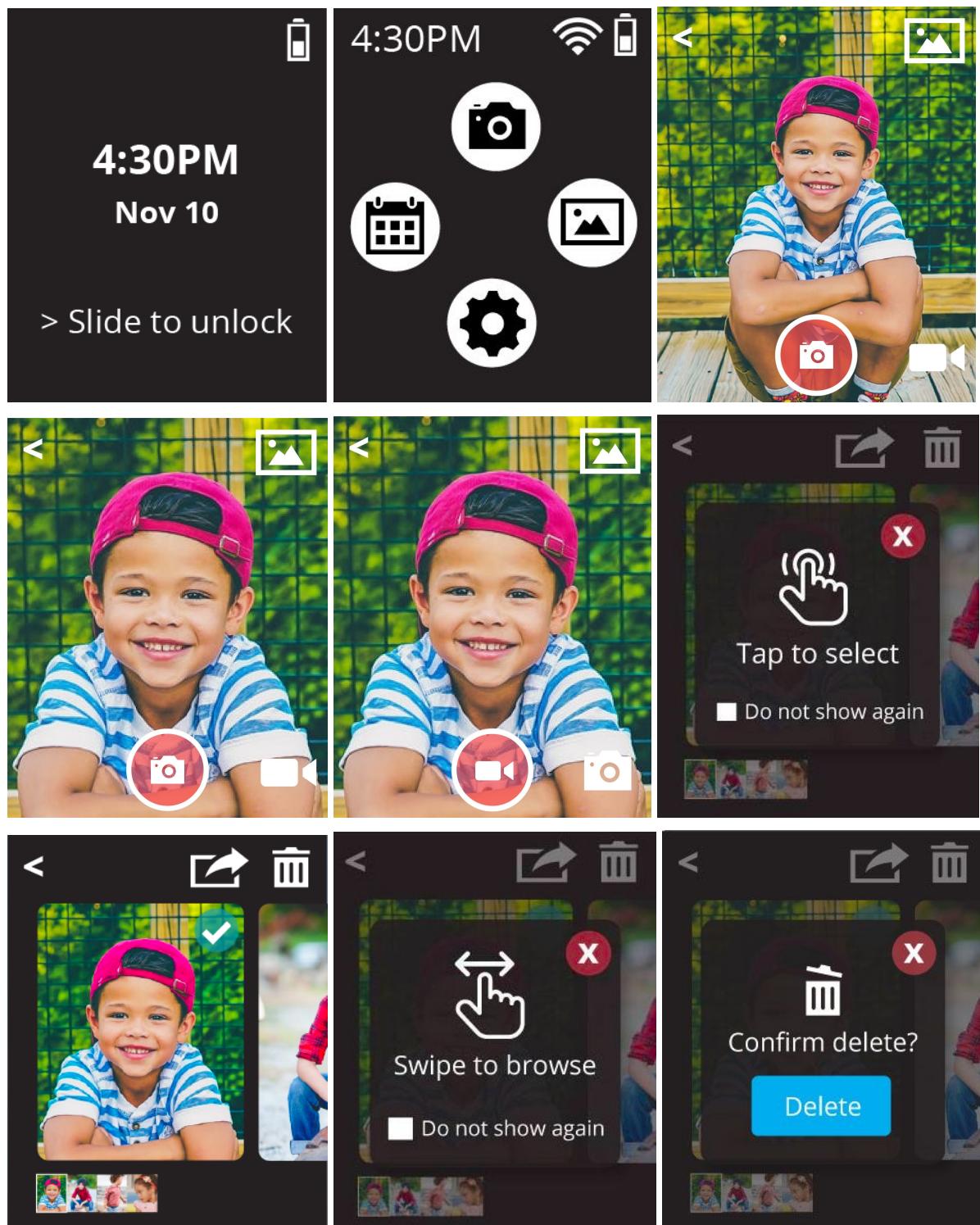


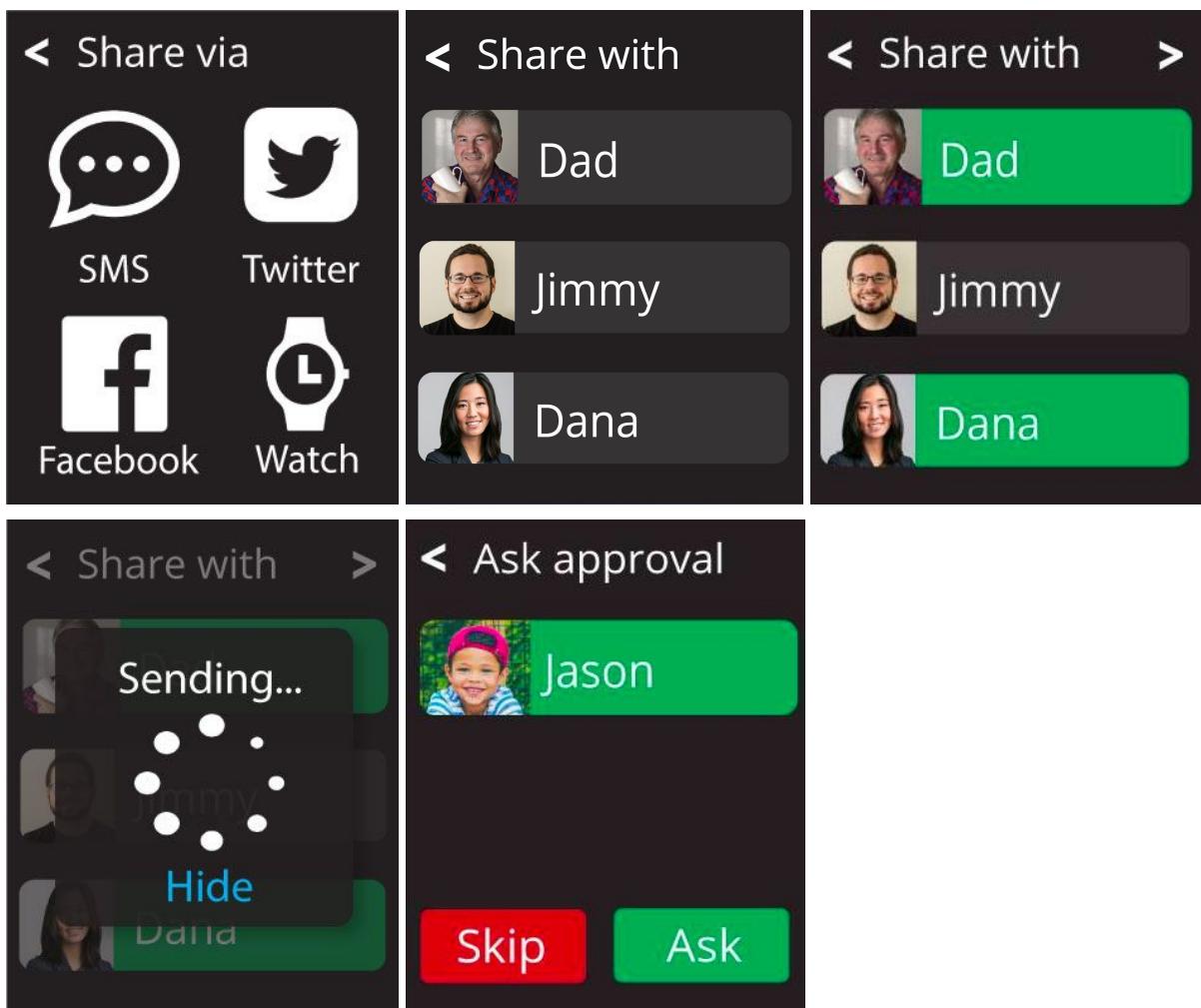
After Jane has finished checking through the memories, she clicks “DONE”, and they are automatically shared with the selected recipients through SMS. Mum is also notified of the number of memories Jane has allowed or disallowed her to share, which she can click on to view the memories that have been accepted or rejected. If there are multiple notifications, after the first type of notifications are looked at, subsequent notifications are shown.

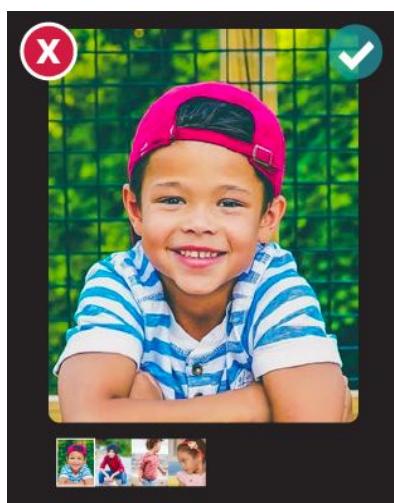
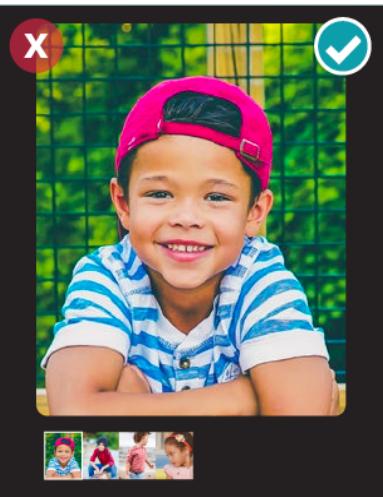
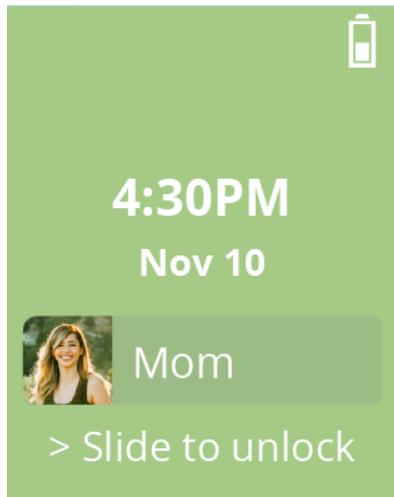


Digital Mockup

Digital Mockup Overview

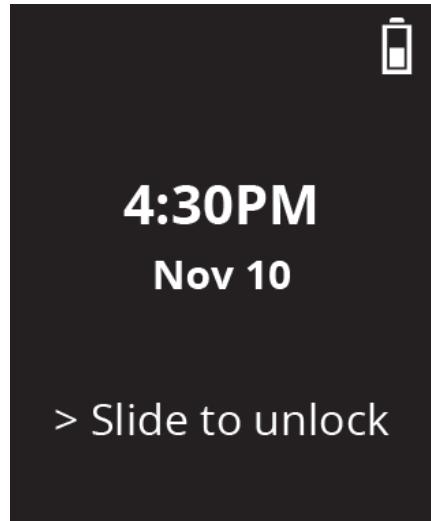




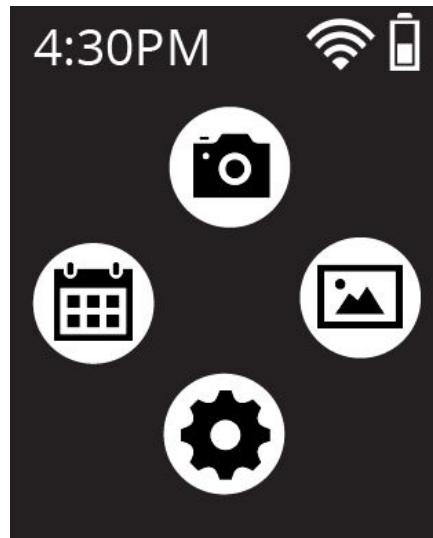


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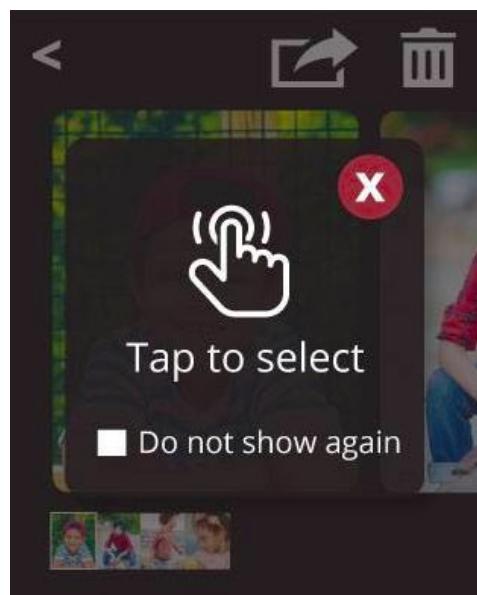
Mum positions her watch in such a way that she can see Jason on the screen.



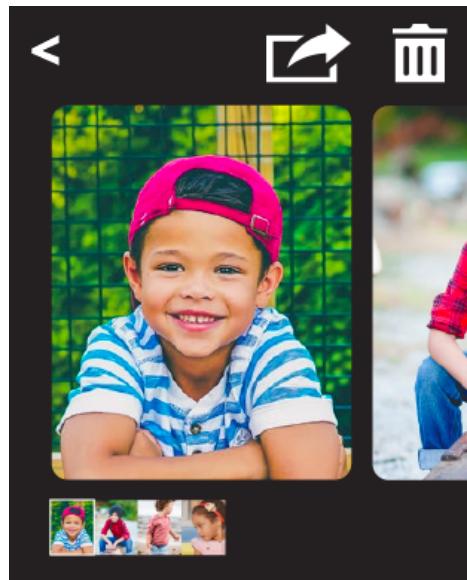
Mum moves fingers in an outward motion to zoom in so that she can get a clearer picture.



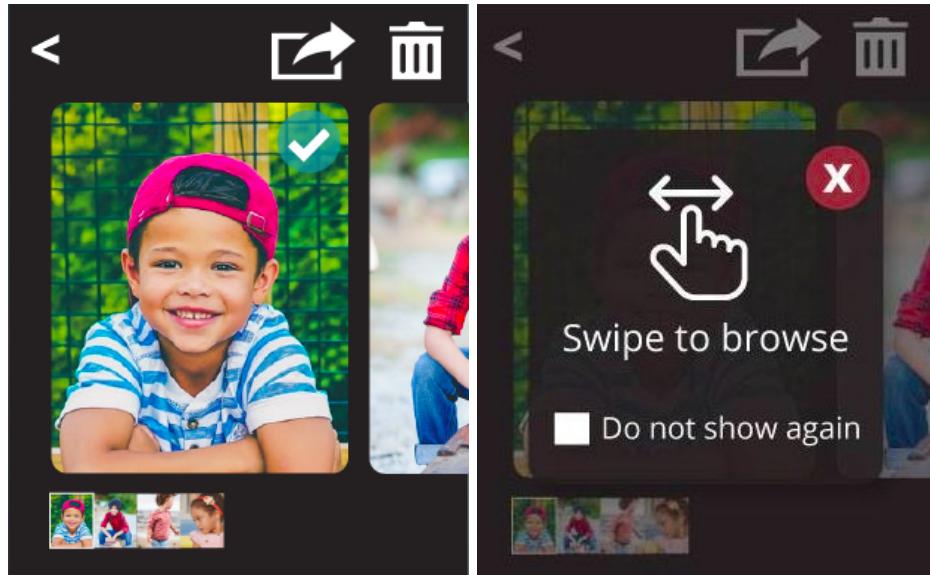
Mum taps the photo icon to take a picture of Jason, then clicks on the album icon at the top right to look through all her memories. She is then greeted with a popup message telling her to tap to select the memories she wishes to share or delete.



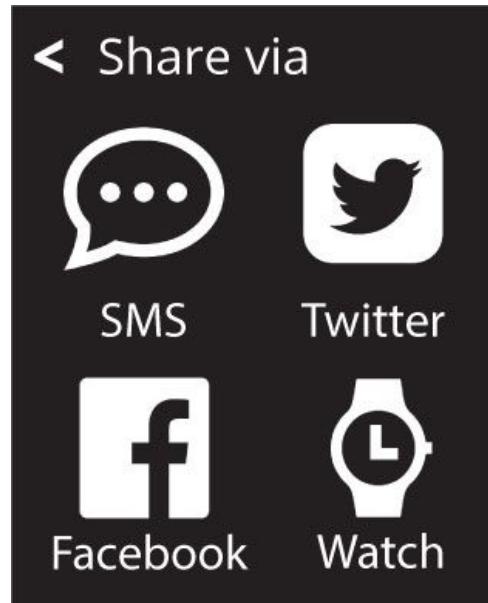
She closes the box and proceeds to look through all her memories.



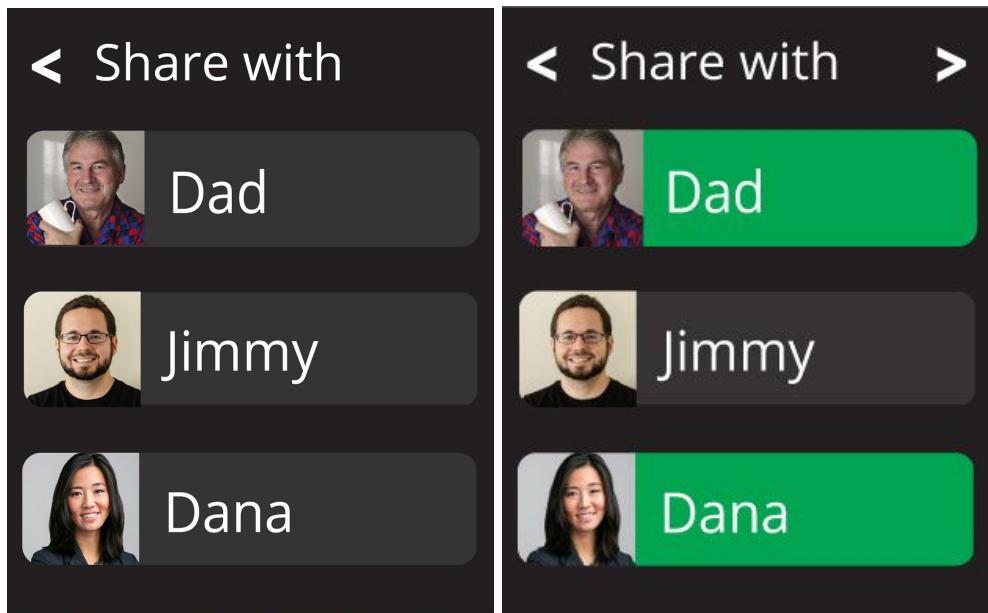
Mum selects the first memory to share. Then a popup message appears telling her to swipe to view the next memory. She closes the box and swipes right to look at the next memory.



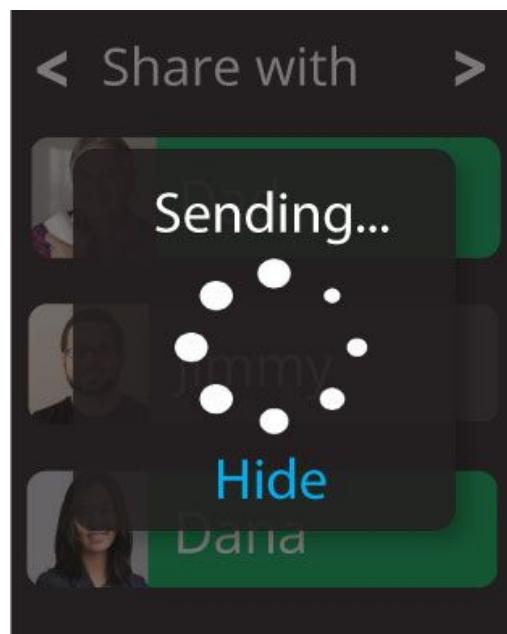
After mum is done selecting the memories, she hits the share icon at the top right of the screen and is brought to the screen below, where she chooses the platform she wants to share on. She chooses "Facebook".



After mum is done selecting method of sharing, she chooses the people on that platform whom she wants to share the memories with.

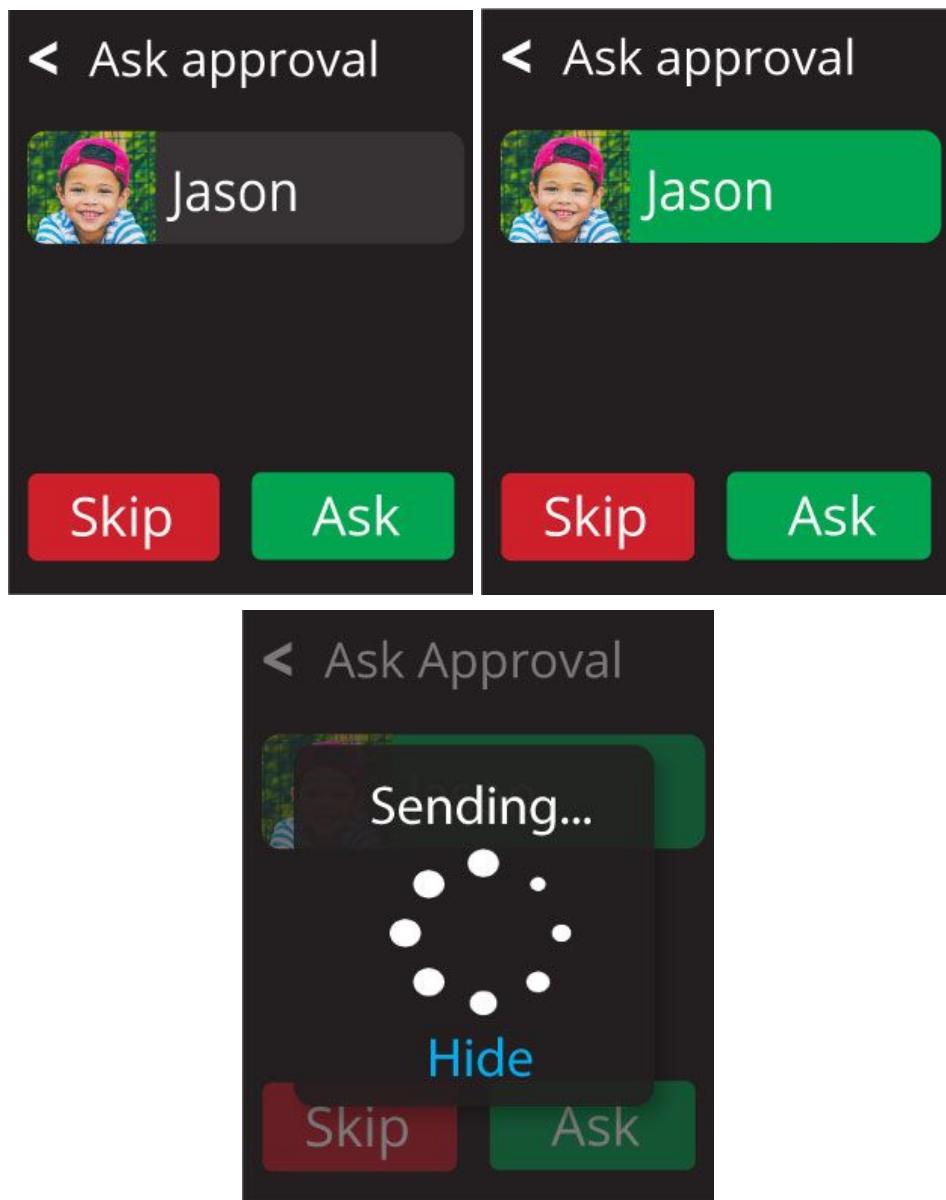


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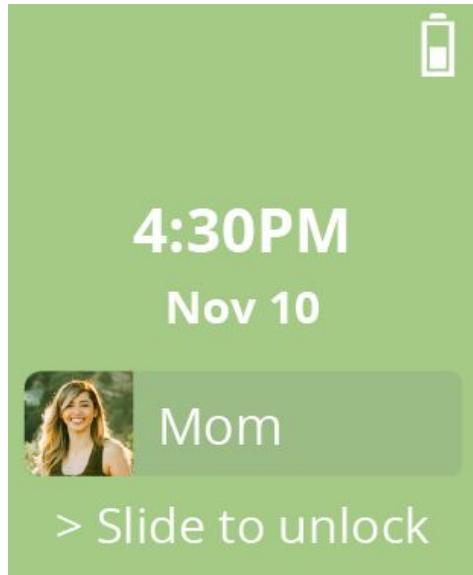


Task 2: Allowing Young Children to Participate in the Sharing of Memories

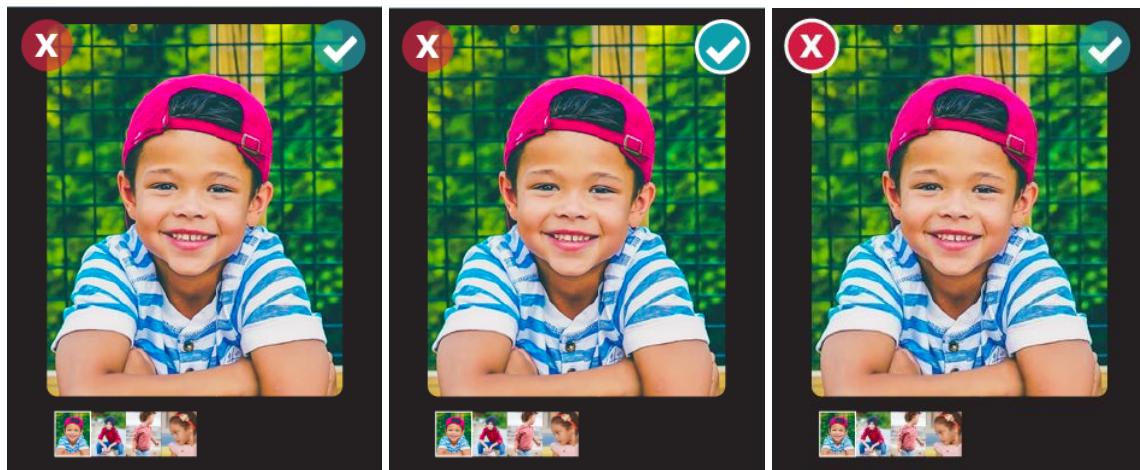
Otherwise, if there is at least a watch synced, then mum is brought to this screen where she selects the children she'd like to send the memories to for approval. She chooses Jason only.



Jason gets a notification on his smartwatch that mum has captured memories of him and wishes to share them.



Jason then looks through each of the memories, and either approves or disapproves of the request to share that particular memory.



After Jason has finished checking through the memories, she clicks “DONE”, and they are automatically shared with the selected recipients through SMS. Mum is also notified of the number of memories Jason has allowed or disallowed her to share, which she can click on to view the memories that have been accepted or rejected. If there are multiple notifications, after the first type of notifications are looked at, subsequent notifications are shown.



Decisions and Changes

We decided to change the screen from square to a vertical rectangle. We felt that this would be a better design for organizing notifications and elements like the battery level and time since the height is longer than the width.

We added a lot of circular borders around edges to make them softer and more visually appealing.

We no longer have an options menu in the gallery, and instead opted to focus on just sharing and deleting memories.

We added a screen to show the difference in icons between picture mode and video mode, and then made that transparent for aesthetics and clarity.

We added in a “Done” background to the end of the accept/rejection screen, which makes it easy to know when you are finished.

We changed the clock icon that represents the watch to an icon that more resembles an actual watch, for the sake of clarity.

From the feedback we received in section, we reduced the number of people shown in the share screen at one time and enlarged them so that it would be easier to select on a small screen.

When asking for approval, we decided to use a highlighted border rather than a check mark, in order to allow more characters of their name to show.

Discussion

What did you learn from the process of iterative design?

From the process of iterative design, we were able to identify the strengths and weaknesses of our design. As a result, we were able to improve on our design after each iteration for better user experience. Through this process, we also learnt how to come up with and test out design ideas quickly and effectively through various prototyping techniques. Furthermore, the iterative process also allowed us to think broadly of the possible design ideas we could use and then narrow them down as we picked the ones we wanted.

How did the process shape your final design?

The process helps us first focus on the main functionalities of our design, and then focus on the aesthetics and visual details of our design. This is very important because it is crucial to get the main functionalities right or we might risk scrapping all our work over and over again. Also, through the several rounds of design critique, we were able to refine on our ideas and design, which culminated to our final design - one that had been modified many times based on the feedback we received.

How have your tasks changed as a result of your usability tests?

We decided to narrow down on our tasks in order to focus on the main functionalities of our application, two of which are allowing parents to share memories securely and allowing children to participate in the process of sharing memories. By narrowing down on our tasks, it also gave our project a clearer sense of direction so we wouldn't risk creating an app that does everything for everyone.

Do you think you could have used more, or fewer, iterations upon your design?

We thought that the number of iterations was perfect, because we felt that we had gained just the right amount of useful feedback which effectively helped us to modify and refine on our design ideas. We did not feel like we were caught in the vicious cycle of obsessing over minute details, or that we were not getting enough feedback on our design. That being said, it might have been useful if we had been able to test out our digital mockup since it has the closest design to our actual application.

Appendix

Usability Script and Tasks

Hi (name of participant)! My name is (name of facilitator) and I am going to guide you through this session. We are designing an app that helps parents store and share memories of their children securely, while also allowing children to participate during the process by getting their permission to share those memories. The purpose of this test is to help us identify the strengths and weaknesses of our design so that we can modify them for better user experience.

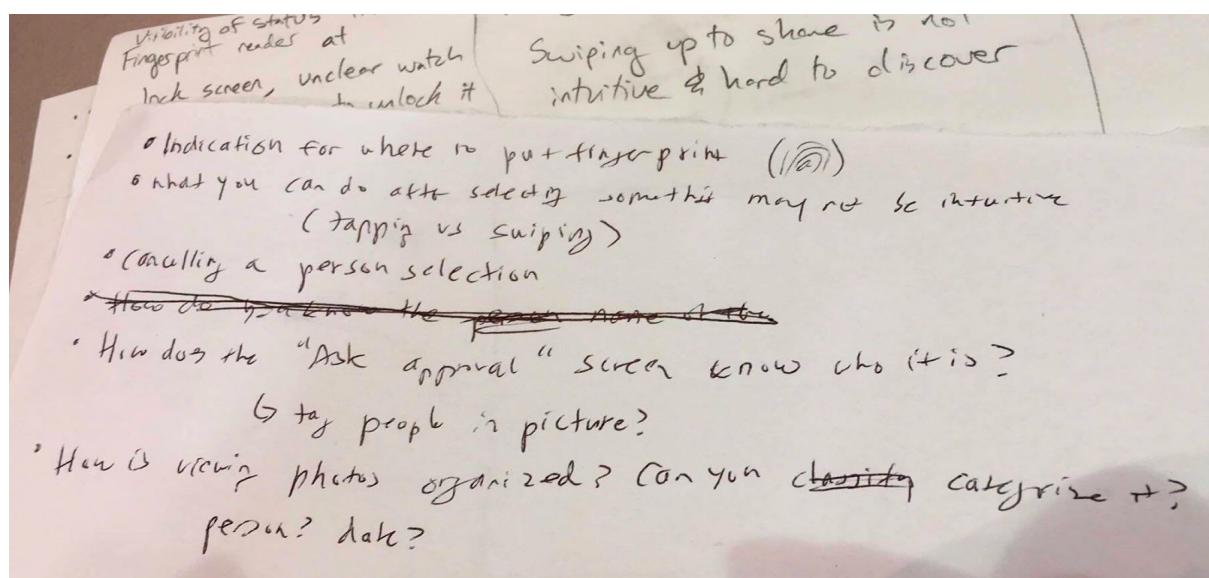
This test will take a short amount of time. The two main tasks we will have you test our today are:

1. Allowing parents to share memories securely
2. Getting children's permission to share those memories

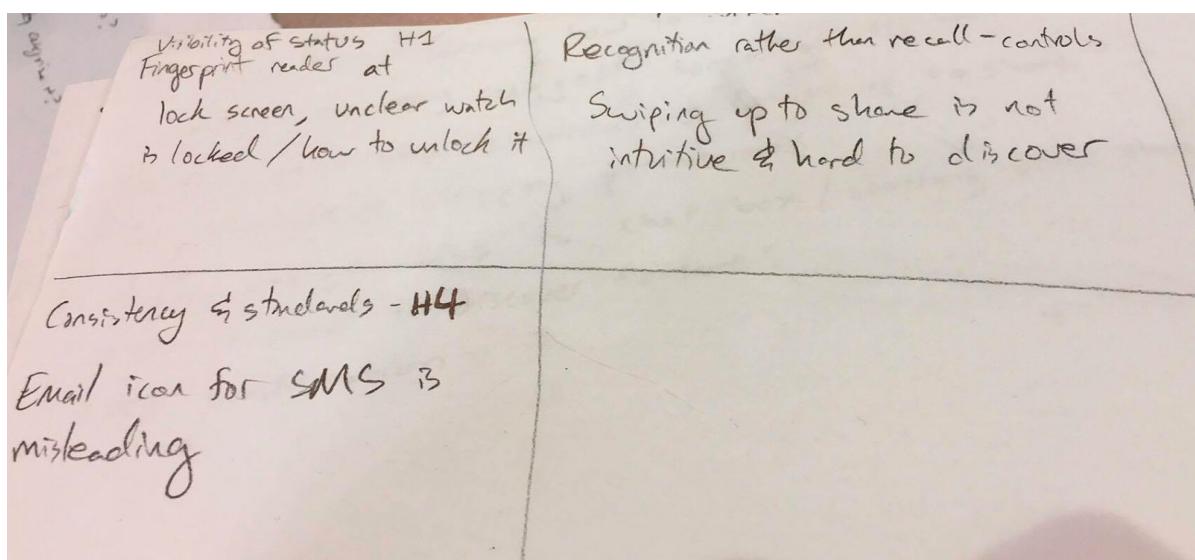
If you encounter any problems, please do not feel as if you are making any mistakes as they are most likely inherent flaws in our design, and not a reflection of your abilities. We need your honest feedback about our design so do not worry about hurting our feelings. We will not be timing you, so take as much time as you need to complete each task. We might also ask you some questions during the test to learn more about your interactions with the tasks. Finally, we will also try not to answer questions during the test because you might figure out the answers yourselves after further interactions with our app.

Heuristics Evaluations Feedback

From: Smoke filter team



From: Athletic runners team

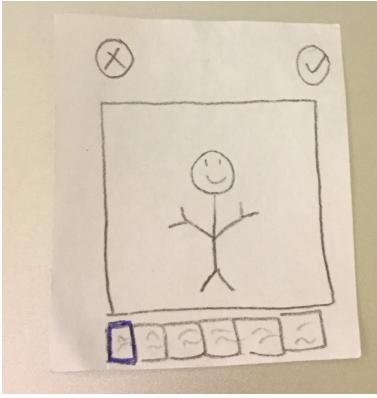
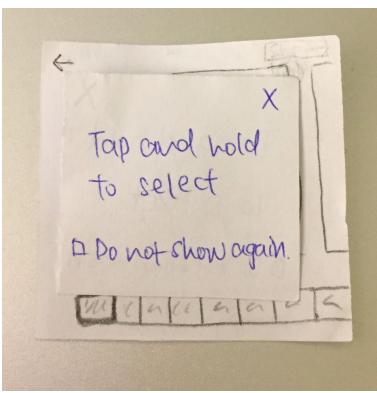
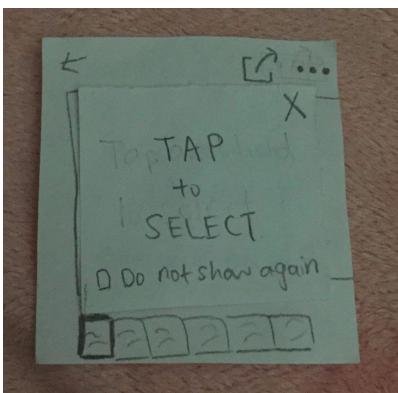


- Start -screen still confusing how to interact
- Selection icon may suggest something it shouldn't
- Gallery next step is unintuitive (swipe up to share?)
- Do we allow skipping permissions
- Maybe change SMS to chat box / something other than mail
- Make it easier to discover features
- Skip confirmation

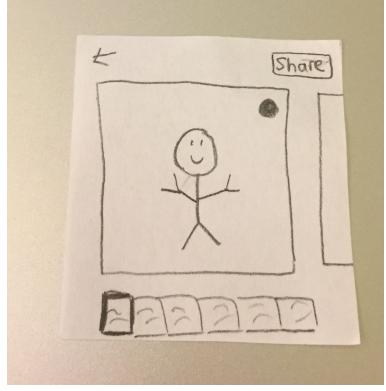
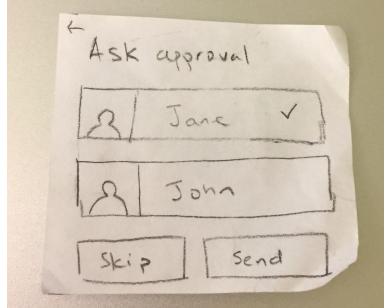
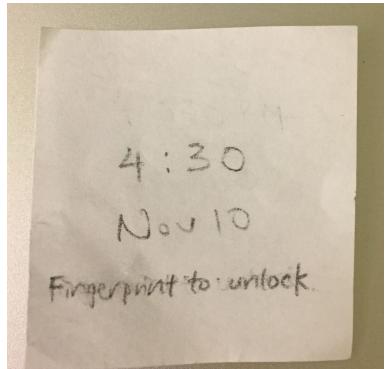
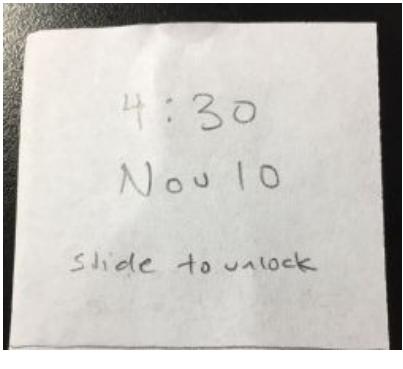
Critical Incidents and Results from Testing

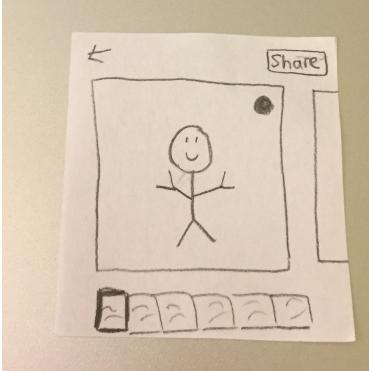
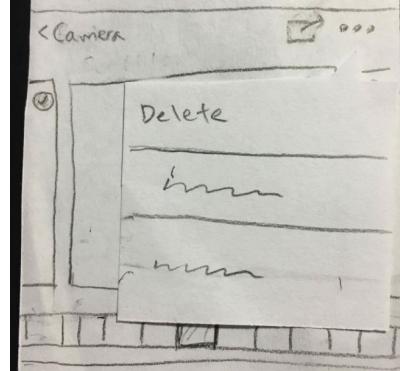
Usability Test 1

Image (before revision)	Severity and Issue(s)	Images (after revision)
	<p>Severity: 2</p> <p><u>Visibility of System Status</u></p> <p>Swiping to get to the next image is not as intuitive as tapping on the image at the bottom.</p> <p>To fix this, we have a pop-up menu, which gives more</p>	

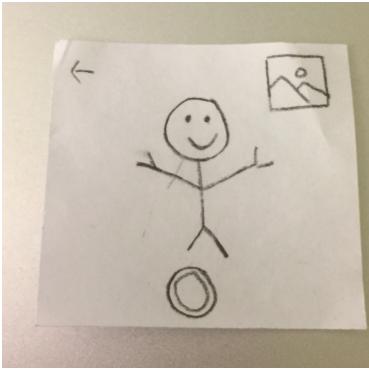
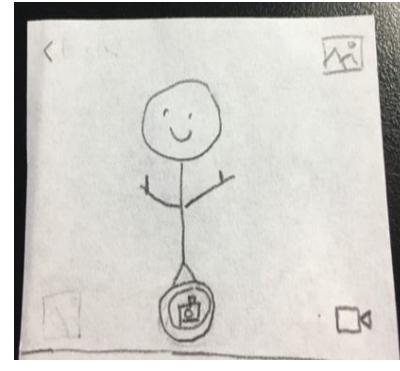
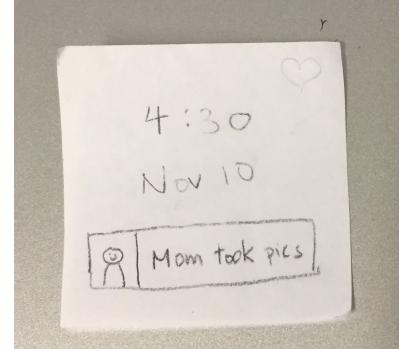
	<p>information to new users about how to interact with our app. We have an “X” that allows them to close the window, and an optional “Do Not Show Again” checkbox so that experts (or just tech savvy individuals) don’t have to deal with it showing up every time they open the app.</p> <p>When the user clicks “X,” they can swipe right to view and select the next image.</p>	
	<p>Severity: 4</p> <p><u>Error Prevention</u></p> <p>What to do if a memory has two children in it, but one child rejects while the other child accepts the request to share?</p>	<p>No changes to our designs, but we have decided that any rejection means no sharing out of respect for children’s privacy, at least by default.</p>
	<p>Severity: 3</p> <p><u>Recognition rather than recall</u></p> <p>The latter part of the message (“hold”) is easily forgotten.</p> <p>We decided to change the message to “Tap to select” instead.</p>	

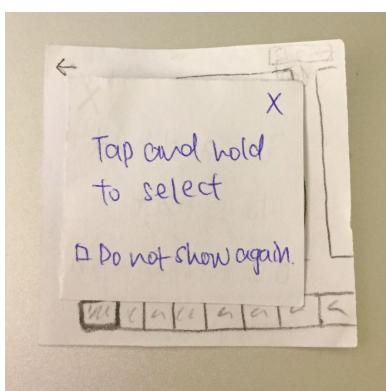
Usability Test 2

Image (before revision)	Issue(s)	Images (after revision)
	<p>Severity: 1</p> <p><u>Consistency and standards</u></p> <p>Sometimes pressing the back arrow changes based on how you got to the album. If you got to the album from the camera, then you will go back to the camera while if you got to the album from home, then the back should go back home. We'll add an indicator if pressing back would go back to camera. We also saw that it's a better design approach to use an icon for the share button.</p>	
	<p>Severity: 3</p> <p><u>Recognition rather than recall</u></p> <p>A suggestion was to only ask for approval if the person's face is recognized in the photo, and to display that recognized person's face in the profile picture area.</p>	<p>No changes to our design since the suggestion is on backend rather than frontend design, which cannot be reflected in our prototype.</p>
	<p>Severity: 1</p> <p><u>Consistency and standards</u></p> <p>We saw that participants tended to swipe to unlock instead of tapping and holding, so we decided to change this to match to what people are used to.</p>	

	<p>Severity: 3</p> <p><u>Error Prevention</u></p> <p>There was no function to delete a photo, thus we added an options menu for the user to delete the photo as well as share.</p>	
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Usability Test 3

Image (before revision)	Issue(s)	Images (after revision)
	<p>Severity: 3</p> <p><u>Consistency and standards</u></p> <p>The album icon and the photo taking button are confusing: the former looks like a photo taking button while the latter looks like a video taking button. We decided we should include a video button to let the user switch between modes by tapping on it.</p>	
	<p>Severity: 1</p> <p><u>Aesthetic and minimalistic design</u></p> <p>The heart icon is misleading: looks like it can be interacted with when it's actually just part of the design of the lock screen.</p> <p>We decided to take away the heart icon and only worry about customizing the lock screen of the child watch while doing digital mockups.</p>	



Severity: 3

Recognition rather than recall

The latter part of the message ("hold") is easily forgotten.

We decided to change the message to "Tap to select" instead.

