# CIVILITY

*Maintain a civil conversation.*

Civility is a smartwatch application that acts as a personalized speech coach that helps individuals improve the way they communicate with others and present themselves.

## Team

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## Problem and Solution Overview

Conflicts are a common and normal part of relationships, regardless of whether they are romantic, platonic or professional. However, most individuals do not have any training in how to conduct a successful and civil argument and have to learn from experience or do not learn at all. Therefore, a large portion of all conflicts tend to be dysfunctional and stressful. In addition, due to the lack of a partial third-party, it is difficult for individuals to make improvements on their own behavior.

Our solution is an un-intrusive smartwatch application that uses natural language processing to offer suggestions during conflicts and provide feedback on emotional management on a day-by-day basis.



*Figure 1.1 Solution Design on Smartwatch*

## TASKS & FINAL INTERFACE SCENARIOS

**Task 1: Providing Personalized Feedback (Simple)**
Civility is able to perform the act of providing its user with feedback regarding emotion control. This data includes times that a customer lost his or her cool on a particular given day, that individual's aggregated average for losing his or her temper, and his or her current volume level and speech rate.

*Why we chose this task:* Civility is an application that focuses on improvement and the only way for a user to do so is for them to keep track of his or her own performance on a regular basis. In addition, regular feedback is necessary not only for logistical purposes but also for motivational purposes. Observing personal improvement is known to be one of the best ways of encouragement to stay on track.



*Figure 2.1 The different home screens that show personalized feedback*

**Task 2: Sending Warning Notifications (Moderate)**
The application will send vibrating notifications to the watch-wearer letting him or her know that the voice volume is getting too loud or words are being spoken too quickly, or both. In the case of the voice volume, the loudness threshold is determined by the background noise.

*Why we chose this task:* After conducting user testing sessions, we noticed that all of our subjects considered two main metrics when looking for signs of agitation in speech: volume and speed. Civility provides un-intrusive warnings when these metrics are violated as a gentle reminder to keep one's composure in difficult situations. This feature allows Civility to be more preventive as opposed to completely reactionary.
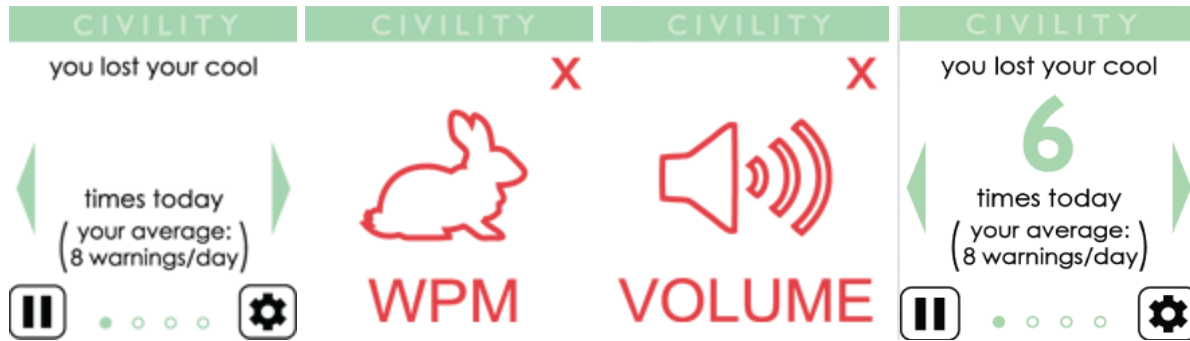
*Figure 2.2 Two types of warning notifications*

**Task 3: Tracking Customized Keywords (Complex)**
Given a list of words that the watch-wearer wants to avoid in conversation, such as "like",
"um", and "uh", Civility will track the number of times he or she has said each respective
keyword in the last 24 hours.

*Why we chose this task:* In addition to the fairly objective metrics of volume and speech rate,
Civility also provides a more personalized feature. Our team decided for this feature because
it is an extra step that allows the user to choose specific areas for desired improvement, be it
getting rid of filler words, avoiding problematic key phrases, or expressing ideas in a more
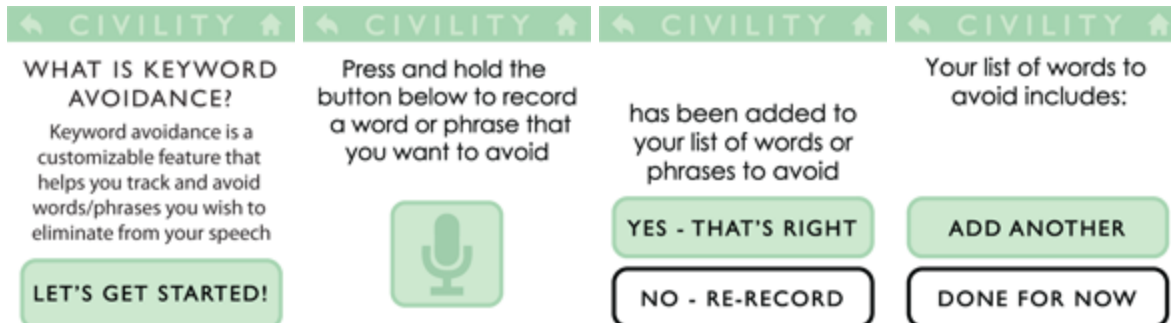constructive manner.



*Figure 2.3 Initial setup for turning on the keyword avoidance feature*

### MAJOR USABILITY PROBLEMS ADDRESSED

**Heuristic Violation 1: Data Input on a Smartwatch [Severity: 3]**
It is nearly impossible to type with a smartwatch; therefore, our settings page would not work
out very well unless there was a mobile companion.

*Solution:* Sign in is to be performed with a fingerprint as can be seen in the figure below and
the user's name is entered through voice. In this manner, it is not necessary to employ a small
keyboard to enter data like we had in our med-fi prototype.

*Figure 3.1 Sign up for Civility: Top - Before, Bottom - After*

**Heuristic Violation 2: Feedback Scores Do Not Provide Context [Severity: 3]**
The number of violations on the feedback screen does not include a "target score." As a result, the user cannot recognize what a good number is for this metric.

*Solution:* We chose not to change this approach to displaying our information because there is no one "target score" that the user should reach. Civility is based on improvement so seeing this over a certain period of time is enough. We have added how the number of violations is split between WPM warnings and Volume warnings instead of what the average words/min and average volume is as those values do not mean much.

*Figure 3.2 Providing feedback to the user: Top - Before, Bottom - After*

**Heuristic Violation 3: Lack of Cancel Button on the Pause and Settings Screens
[Severity: 4]**
On the "Pause" and "Unpause Now" screen, the user's only path to exit without
completing the pause/unpause now would be to click on the "CIVILITY" logo on
top of the screen. There is no obvious way for a user to navigate away from the Settings
page, other than tapping the top bar, which a new user may not think to do.

*Solution:* We simplified the Pause and Unpause function of Civility so that the app can be
paused directly from the home screen. It is no longer a part of the Settings page. Users do not
need to have a set amount of pause time. If Civility needs to be reactivated, the user can
easily do so manually.



*Figure 3.3 Pausing Civility: Top - Before, Bottom - After*

**Heuristic Violation 4: Lack of Color [Severity: 3]**
Almost no screens use color. They are instead all grayscale. Color is a great way
to convey some information, and highlight important or related elements.

*Solution:* While we do want to keep the look of the application as simple as possible, our
screens are mostly in greys and different shades of green. This way, important information
stands out more and data is easier to digest.



*Figure 3.4 Adding color: Left - Before, Right - After*

**Heuristic Violation 5: Small Buttons [Severity: 3]**
Some screens have very small buttons that would make it difficult for a person to tap on a
smartwatch.

*Solution:* We removed several features of our application that required smaller buttons. For
example, changing the email associated with the user's account is no longer provided.
Instead, we give the user the flexibility to change his/her name through a voice function.



*Figure 3.5 How a user can change his/her name: Left - Before, Right - After*

**Heuristic Violation 6: Lack of Logout Option [Severity: 3]**
Once the user has signed up in the watch, there is no option to switch accounts to another
user or to log out of their current account.

*Solution:* The way in which an user would log out of Civility would be through either a mobile or web extension. This is because the user signs up with a fingerprint and a smartwatch is not something that is commonly shared. As a result, we deemed this feature unnecessary for the actual smartwatch.

**Heuristic Violation 7: Off-Topic Feature Visual Cue [Severity: 3]**
There is nothing in the main screen that lets the user know that off-topic conversations are being tracked.

*Solution:* We have completely overhauled the off-topic conversations feature. Since the smartwatch is worn everywhere, there are no off-topic conversations. As a result, we will not need the visual cue any longer.

**Heuristic Violation 8: Indication of Current User [Severity: 4]**
After signing in, there's no indication of whose account is open (people may have multiple accounts on the same wearable).

*Solution:* Contrary to the evaluator's beliefs, we are actually making it difficult for two people to actively use different accounts in the same smartwatch. Because Civility is an application that is always on and due to the nature of a smartwatch, it wouldn't be necessary to indicate who is using the application. We decided not to add the username on every screen as this would be repetitive and unnecessary. However, we have added a confirmation message after signing up.



*Figure 3.6 Confirmation for username/name: Left - Before, Right - After*

**Heuristic Violation 9: Save Changes Button [Severity: 3]**
If the user were to change something like Notification Type, there is no function for saving that change.

*Solution:* We are no longer giving the option to choose alerts on the Settings page because we want Civility to be as hassle-free and straightforward as possible. However, we have added a confirmation screen to the other settings available.

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*Figure 3.7 Adding a confirmation screen: Left - Before, Right - After*

**Heuristic Violation 10: Affordability of Different Screens [Severity: 4]**
It is unclear that there were other views reachable from the "you lost your cool" page, because there were no arrows on the left and right. Users only realized they were there when they accidentally clicked off of a button and all of the hotspots showed up.

*Solution:* We have added circles at the bottom of the screens to indicate which view the user is currently on. These circles also show the different number of views available.



*Figure 3.8 Adding arrows and circles for clear direction: Left - Before, Right - After*

**Additional Changes:**
1. Third Task Change: Removed Fruitless Conversation Feature and Implemented Content Flagging

   Originally, our application was meant for a professional setting in which employees run in the danger of engaging in fruitless conversations and wasting company time. However, once we switched our consumer base to everyday individuals, the fruitless conversation feature no longer made sense. Instead, we have added a feature that allows the user to enter certain keywords that he or she wants to track. While there will not be any notifications every time the word is used, the user will be able to see usage daily and weekly. This could help individuals have more constructive conversations by avoiding offensive or apathetic phrases, lessen the usage of filler words, amongst others.

*Figure 3.9 Change in Task 3: Left - Before, Right - After*

2. <u>Units for Metrics: Use Times Violated Rather than Decibels</u>
   Originally our feedback showed the user's average volume in decibels as the information provided. However, we noticed that *decibels* is not a unit that means much to any particular individual. Instead, our current unit is much more relatable. Instead of telling users how many decibels too loud, it will simply show how many times the user spoke too loudly.
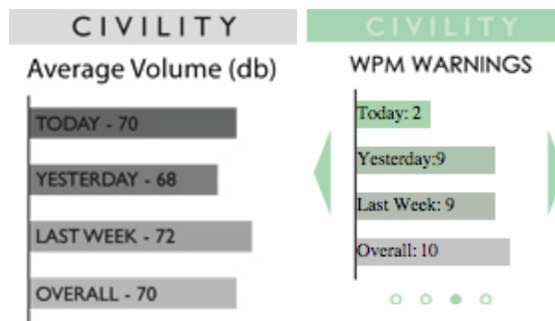


*Figure 3.10 Changing the units for metrics: Left - Before, Right - After*

3. <u>Logging In: Fingerprinting</u>
   It would be very difficult for a user to type an entire email and password on a smartwatch. In fact this could detract users from even using the application. Instead, we have changed the login process so that the user can sign-up and log-in by putting their fingerprint on the screen. This is not only a unique ID that cannot be replicated, but it is also very easy to perform.

*Figure 3.11 Different sign up screens: Top - Before, Bottom - After*

## DESIGN EVOLUTION

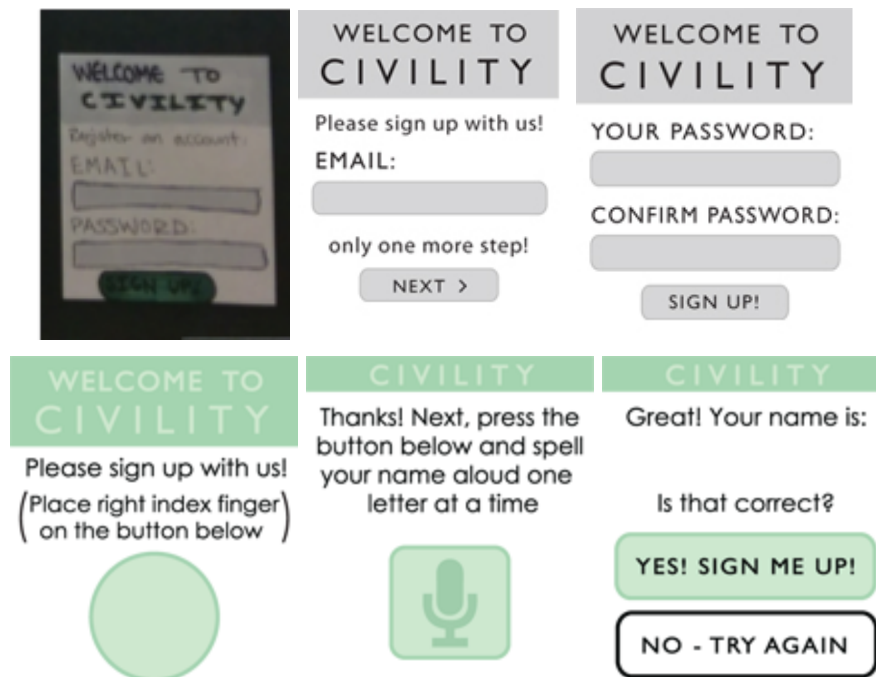**Design Change 1: Signing Up for Civility**



*Figure 4.1 Changes in signing up for Civility: Top Left - LoFi, Top Right - MedFi, Bottom - HiFi*

For our low fidelity prototype, we initially had the username and password signup on the same page. After testing this screen with users, we realized how insecure and unreliable it would be to have an app that doesn't allow the user to confirm their password. For our medium fidelity prototype, we split up the username screen and the password screen. This would give the user the flexibility to confirm their password. However, after further consultation, we realized that typing on a smartwatch which has such a small screen would be incredibly difficult. As a result, we leveraged the touch screen capabilities a smartwatch has and changed it to signing up with a fingerprint. Every individual has a unique fingerprint so it would be easy to track users that way. We also give the user a chance to say their name so the app recognizes who he/she is verbally as well.

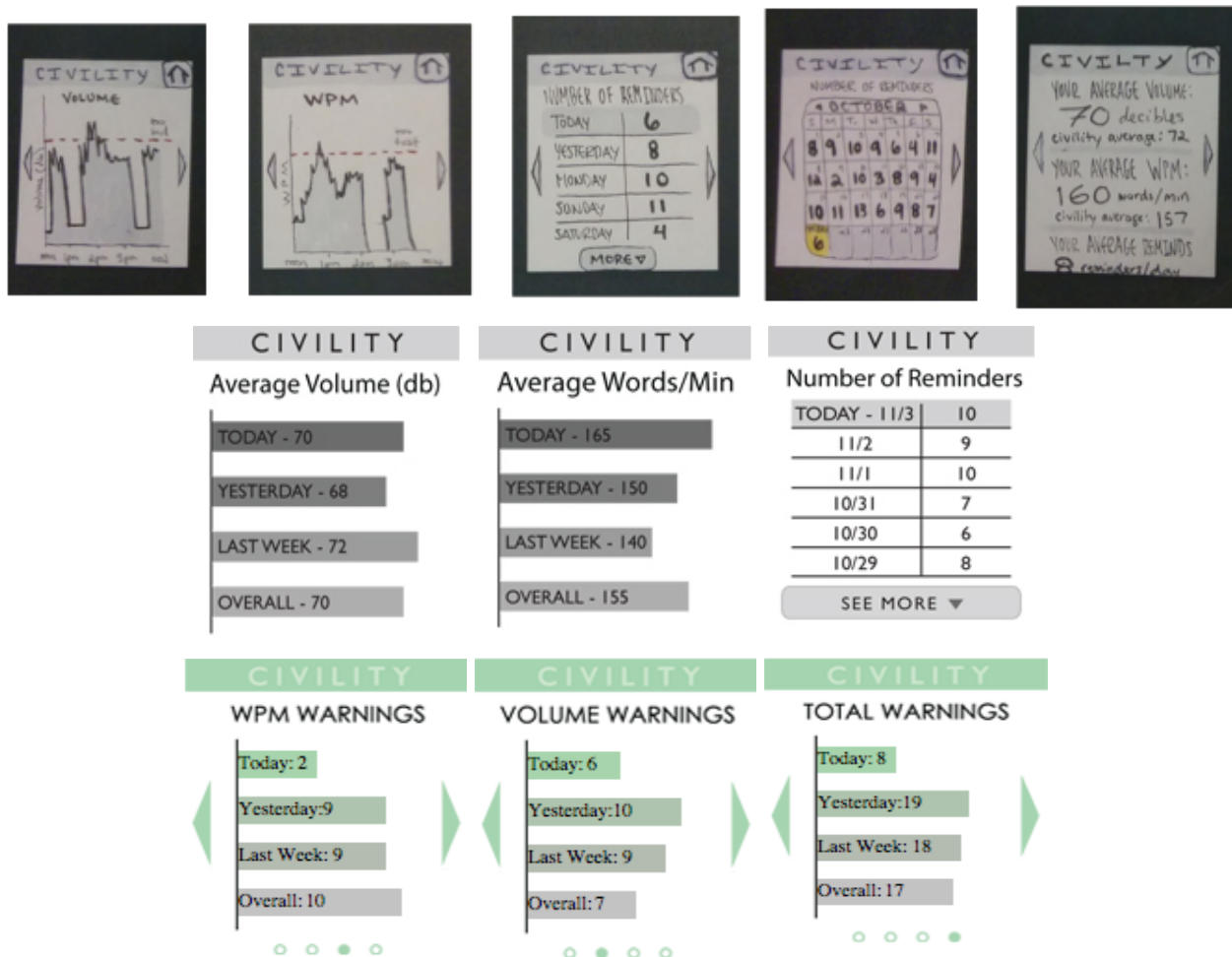**Design Change 2: Feedback Screens (Task 1)**



*Figure 4.2 Changes in the feedback homescreens: Top - LoFi, Middle - MedFi, Bottom - HiFi*

Initially, we had many different home screens to show users the feedback they have received from the app. This included a line graph, a mini calendar, and a text heavy screen. However, after talking to our test participants, we realized that much of our screens are unintuitive and hard to read. For example, it is extremely hard to understand what the what the red line means in the line graph on the low fidelity prototype in the top left. Furthermore, it is hard to read so much text like in the figure on the top right. So, for our medium fidelity prototype, we removed many unnecessary screens and simplified the way we displayed the data. Then, the problem of what the average volume and average wpm actually meant as people don't normally think about how they speak and how loud they speak through these units. As a result, for our high fidelity prototype, we simply provide feedback on how many notifications the user has gotten for each type of warning. This will easily show improvement while keeping the information relevant to the user.

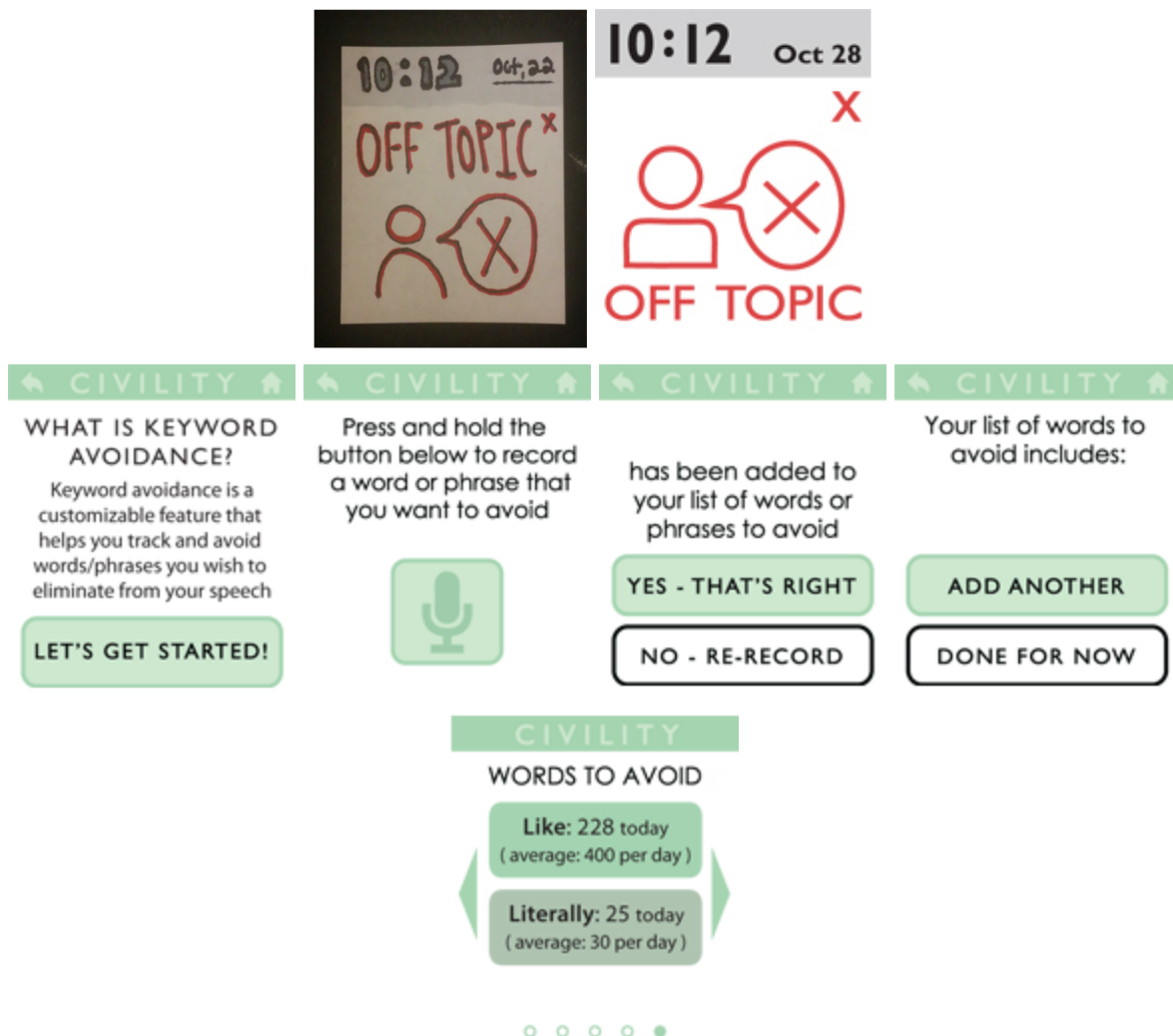**Design Change 3: Tracking Customized Keywords (Task 3)**



*Figure 4.3 Changes in design for Task 3: Top Left - LoFi, Top Right - MedFi, Bottom - HiFi*

Originally, we had intended for Civility to be a tool for professionals to use in the workplace. As a result, our third task was to detect fruitless conversations. When an individual is talking to a client or a potential partner at the workplace, the meetings should be as efficient as possible and for that to be possible, the conversation should stay on track. Civility would be able to warn the user when the conversation had strayed off in order to avoid unnecessary side conversations. As we kept iterating through our product, we decided that Civility should be able to be used on a daily basis, not just in the workplace. As a result, the third task would no longer be needed because there is no way to detect a fruitless conversation if the application is used all the time. Instead, we decided to add another feature to help people improve their communication. This new feature allows the user to add keywords that they want to track, such as filler words, curse words, etc. Once these words are added, Civility would keep count of how many times the user has said the words on a day-to-day basis. In this case, the user would not receive a notification, they simply would be able to track their own progress.

**Design Change 4: Settings**



*Figure 4.4 Changes in the settings page: Left - LoFi, Middle - MedFi, Right - HiFi*

In early iterations of Civility, we provided the user with a very conventional way of signing into a page. They would have to enter their email and their password in order to sign up or log in. Our team realized that this was a very unreasonable demand to make of smartwatch users because typing on a smartwatch would be near impossible due to its small size. As a result, we changed the sign in to allow the user to access their account using their fingerprint. In order to edit their name, they would simply have to spell it using their voice to avoid any keyboard hassle.

**Design Change 5: Pause**

*Figure 4.5 Changes in the pause page: Top Left - LoFi, Top Right - MedFi, Bottom - HiFi*

Our team knew that Civility would need a pause feature to allow the user to stop Civility functionality in special circumstances in which having the application open would be problematic or an annoyance. At first, we wanted to allow users to set a timer that would count down until Civility would be activated again. We ultimately decided against this approach because users do not always know how long they want the application to be paused for. Often, they would very much prefer to manually pause and unpause the application, without having to worry about calculating the time counter amount. When the application is paused, all the features are grayed out as an indicator of the fact that the application is not providing any feedback or recording any statistics.

**Additional Comments:**
In terms of the design of Civility, something that has remained quite constant has been the presence of the large number displaying total number of violations that day. The design of this particular screen has remained similar because the violation counter is one of the central features of Civility. As a result, it makes sense to have this number remain quite large as compared to other features within the same screen. In addition, this screen provides just the feedback that our team deemed necessary to convey, nothing more and nothing less.
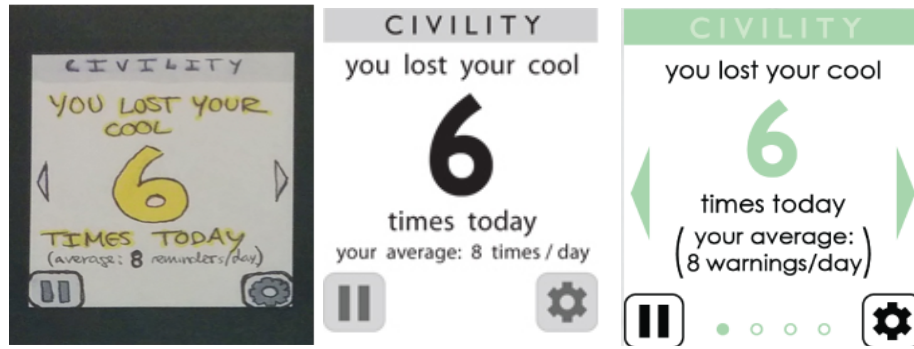
*Figure 4.6 Changes to the home screen: Left - LoFi, Middle - MedFi, Right - HiFi*



*Figure 4.7 Overview of several of the major design changes*

PROTOTYPE IMPLEMENTATION

**Tools**

*Tools Used:* We employed Adobe Illustrator and Photoshop to create all of the screens for Civility and InVision to link the screens together for the medium fidelity prototype.

*How the tools helped:* Using Adobe Illustrator to create the screens gave us the freedom to design our prototypes exactly how we wanted it to look. We were not constrained by the options such tools like Proto.io would have given us. Using Photoshop also helped tremendously with designing the different icons and images we used in our prototype. We would use Photoshop to modify some of the graphics pulled from Google so that they would better fit our app. InVision was used for our medium fidelity prototype because we had already designed many of the screens on Illustrator and simply connecting them was easy to do. The tool was very intuitive and it required a lower learning curve.

*How the tools did not help:* While Illustrator and Photoshop were incredibly useful and integral to the design of our project, both also had a high learning curve. Additionally, these tools were not conducive to collaborative work. Because only one of our team members had extensive experience with these tools, she did the majority of the design while the others helped with sketching out the layout and design by hand.

**Wizard of Oz**
Because an argument does not just happen organically when prompted to do so, we found ourselves in need of a Wizard of Oz approach. Instead of waiting for an argument to happen, the pop-ups are activated by one of the team members using the buttons located at the bottom of the browser screen, outside of the smartwatch screen. In this way, when one of the team members heard the watch user speaking too quickly or raising their voice, we activated the notification through our computer or phone. In addition, the name input was also through a Wizard of Oz mechanism. Every time a potential user approached our team, we made sure to learn his or her name first so that one of us would be able to write that name down in the back end. That way, once the user pressed the "voice recording" button to enter the name, it would appear on the next screen. Finally, we allowed the user to add one word to the list of words to avoid. We asked each user what he or she would pick before he or she tapped on the "voice recording" button and one member of our team made sure to enter this word before the user tapped on the button. It would then seem as if the user had entered the word to avoid by saying it into the watch microphone.

**Hard-coded Data**
Due to the nature of our application, there was some information that we had to hard-coded into Civility in order for it to appear functional. Although Civility technically requires a fingerprint to sign in, we instead made an area that simply requires a tap so that it would simulate scanning a finger. Other hard-coded data included information that we would have needed an extended period of Civility usage to collect. This included the graphs that provided the user with feedback about their violations over a week, a month, and overall. In addition, there were many instances in which we displaced the average number of times that a user violated a certain guideline. This was also hard coded because we would not have been able to collect enough information to calculate a helpful average.

**What is missing & what might you add in the future?**

Because Civility is a smartwatch application, there were many aspects that were reliant on the assumption that there exists some kind of hardware technology that would be able to support the different features of our application. Currently, smartwatches are not powerful enough to support the capabilities that we envision for Civility but we are confident that this will become possible. In addition, we hope that we will be able to implement the functionality of the watch once more refined speech recognition technology becomes available. Again, this is not quite possible yet but with products such as the Amazon Echo coming out, we are confident that the technology will be available sooner than later.

One feature that we hope to add in the future is the ability to pause select features as opposed to pausing the entire application. For example, a person might want to stop receiving notifications for a while but they might still want Civility to keep count of the words that they have decided to avoid. We believe that this would be a great feature to add to improve functionality. In addition, we would like to add more support on a mobile application. Currently everything is in the smartwatch but our team realizes that this is not entirely feasible because there are just some aspects that are much more practical implemented on a phone. This type of mobile companion would increase practicality and ease of use of Civility.