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Assignment #5
Final Project Report

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Introduction

Skype is a free instant messaging system that allows people to voice chat, video chat, and instant message others from around the world. It allows users to choose from multiple ways of communication all in one application. Users can access Skype by downloading the software from the official Skype website.

Skype is produced by Skype Technologies, a telecommunications company, that is parented by the Microsoft Corporation. Skype was first developed in 2003 by Niklas Zennstrom and Janus Friis and in September 2005, it was acquired by eBay for $2.6 billion. Following that, there was a 65% acquisition by Silver Lake, Andreessen Horowitz and the Canada Pension Plan Investment Board. Finally in May 2011, Microsoft bought it for $8.5 billion. Skype was originally a hybrid peer-to-peer and client-server system, but after security concerns were brought to light by the 2013 mass surveillance disclosures, Microsoft transitioned it to a centralized Azure service and began to focus on the text chat features rather than voice and video calling. That overhaul was the only big change to Skype recently and it has since been constantly updated, but has remained stagnant in terms of new features and functional changes.

Originally, Skype was primarily used for business conferences, but it eventually grew a much more versatile user base. The purpose of this report is to explore how this popular video conferencing, VoIP, and instant messaging system gained traction so quickly from 2010-2014 and lost it in the years that followed. The data collected from this research is intended to produce recommendations in regards to updates Skype should pursue in order to reestablish itself and continue being a lead competitor in the industry.

This usability testing report will explore the various methodologies and their findings. These methods consist of: competitive analysis, user research, usability testing, cognitive walkthrough, and heuristic evaluation. Some of these methods will highlight problems regarding connectivity whereas other methods will demonstrate interface ambiguity and user confusion. It is imperative that Skype reviews the findings in this document to improve and enhance the experience of their current and future user base.

Executive Summary

Regarding the competitive analysis and user research, much of the findings were about connectivity issues and how intensive running Skype is on computers. Only after conducting the cognitive walkthroughs and usability tests did user interface issues became apparent. These issues inherently affect the usability of the application for both novice and expert users. An example of a problematic user interface feature would be the ambiguous "+" navigation symbol used for creating a group chat that many participants believed was for adding contacts. It is uncertain as to whether these issues are the reason for Skype's decline; however, we believe that these pain points are detrimental for Skype's overall growth. It is recommended that Skype makes their additional call features more obvious, improves the process of adding contacts, and centralizes their profile privacy settings.

Using the aforementioned recommendations, we created redesigns that we believed would benefit users greatly. Brief results of our heuristic evaluations are as follows:
- Redesign #1: Make additional call features more obvious
  - It gives great feedback and ensures that users know the call status while reducing the amount of clutter on the screen. Much of the icons are unambiguous as they have both recognizable symbols and captions. However, there is no obvious way to undo actions other than to re-select the icon. Furthermore, users may not realize the function of the additional call features dropdown button and search elsewhere.
- Redesign #2: Improve process of adding contacts
  - This redesign lessens the need to recall contact information for adding contacts because of the quick profile view feature. It is also easy to exit the overlay and recognize the icons. Unfortunately, there are no accelerators available for expert users to speed up the process and there are no specialized features for searching such as filters.
- Redesign #3: Centralize profile privacy settings
  - The checkboxes provide a clear and familiar control for users. The feedback is appropriate and it allows users to quickly make changes. However, there should be a cancel button to exit the settings menu and a revert button to undo all changes. Furthermore, the design is not minimalistic and is overwhelming.

Project Methodology

Competitive analysis

The first step in understanding Skype is to analyze its competitors. Four competitors (two direct and two indirect) were identified and analyzed in order to understand the strengths and weaknesses of each application and Skype itself. The two direct competitors were Facebook Messenger and Google Hangouts while the two indirect competitors were Discord and Raidcall. What the application is, how it is accessed, what it offers, and what the application's targeted user base is are the information compared and contrasted.

User Research

Interviews

Interviews were held in order to understand Skype's potential user base or why users moved away from Skype. A total of 10 interviews were conducted and lasted between 30-45 minutes each. Each interviewee was asked the same set of 25 questions. These questions focused on the user's lifestyle, such as what they do in their free time, their Internet use, such as how long and the reasons why they use the Internet, and their application use, such as whether or not they use Skype or a different competitor. Depending on whether or not they use Skype, they were asked more questions about their past experiences with it and reasons why they like or dislike it. If a user said they did not use Skype anymore but used a different competitor, they were asked the same questions, but about the competitor and why they switched.

To analyze the data collected, an affinity diagram was created from the answers. Important details from each interview were written down on sticky notes and grouped by patterns found within them. After each group was labelled with a generalizing statement, findings were made from analyzing the data in their newly organized form.

Survey

A Google Forms survey was sent out primarily through Facebook that asked 19 questions in total, taking about 10 minutes to complete. Basic questions about demographics, Internet use, and Skype use were asked in order to understand the background of users. A total of 118 participants responded to the survey within 24 hours.

Cognitive Walkthrough

A cognitive walkthrough was conducted with the following tasks: log into Skype, start a screen share in a video call, private your Skype profile, and add contacts to their contact list. These tasks were chosen to cover the basic features and functionalities of Skype. For every task, a complete list of steps required to complete the task was first created along with accompanying assumptions made about the user and scenario.

The cognitive walkthrough consisted of four questions listed below that were answered for each step of each task.

What is the user's goal and why is it their goal?
Helps us understand what the user is trying to accomplish at every step of each task, the reasoning behind why they are trying to accomplish a task, and which part of the task the user is on.

Are the necessary actions available on the interface?
Helps us identify the level of difficulty the user is experiencing when navigating the interface and critique the design of the interface.

Once users see the control, will they recognize that it does what they want?
Helps us determine if users are able to recognize the actions the control will exhibit and determine if the users are able to tell whether the control does what they want it to do.

After the action is taken, is the feedback appropriate? Will the user understand it so they can move on to the next action with confidence?
Helps us determine if the user receives any feedback, if the user understood what their action did and if the feedback was appropriate and if the user is able to proceed.

Usability Testing

A usability test with a think-aloud protocol was developed in order to understand what users had trouble with when interacting with Skype. A script was devised for the usability test, detailing the tasks and instructions that were to be given to the participant. The script included the selected tasks, detailed instructions and scenarios, and logistics for setting up every test. The test totaled five tasks, taking participants 30 to 45 minutes to complete. Each participant was given an instruction sheet prior to the test with account information and other instructions they would need to use throughout the test. Though the instruction sheets provided clear direction for the participants, minimal clues about how to achieve the tasks through the application were given for thorough usability testing.

For every usability test conducted, there was at least a designated moderator and note-taker present with the participant. Participants were encouraged to speak their thoughts as they navigated the tasks for the think aloud protocol to gain insight on their thought process. Difficulty was the main aspects observed along with any interesting thoughts, remarks, and suggestions the participant had. At the end of each test, participants were asked a few questions ranging from how they felt the test went and whether they were familiar with Skype. The tests provided data for areas of the application that had poor usability for our target population of users as well as possible solutions for these areas.

Redesign

Using the data gathered from the cognitive walkthrough and usability testing, 3 targets were negotiated and chosen. These targets represent the most important usability issues that need to be fixed. Wireframes were created in order to lay out the winning design and then finally a high-fidelity mockup was created.

Heuristic Evaluation

Taking the three final redesigns that were decided upon, we all did individual heuristic evaluations. Working remotely, each person's notes were compared and contrasted. All the heuristic evaluations were made based upon Nielsen's 10 Heuristics for User Interface Design:

1. **Visibility of system status**

   The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

2. **Match between system and the real world**

   The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

3. **User control and freedom**

   Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

4. **Consistency and standards**

   Users should not have to wonder whether different words, situations, or actions mean the same thing.

5. **Error prevention**

   Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions

or check for them and present users with a confirmation option before they commit to the action.

6. **Recognition rather than recall**

   Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

7. **Flexibility and efficiency of use**

   Accelerators — unseen by the novice user — may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

8. **Aesthetic and minimalist design**

   Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

9. **Help users recognize, diagnose, and recover from errors**

   Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

10. **Help and documentation**

    Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

User Profiles

Target Users

Our target population consists of people around the age of 15-25 years old. We chose this population because we felt that the younger range of 15-20 would know about Skype and a number of other different competitors and we wanted to explore how competitors fare against Skype. We also included the ages 21-25 because we felt that this age range grew up in the years that Skype was the most prominent and may include some business people. We assumed that many of these people would either still use Skype or move onto a competitor, therefore, we would have an easy time to extract consumer's likes and dislikes about Skype. To break down our population even more, we specifically targeted users that we thought would use Internet-based communication systems the most, such as students, gamers, and business workers.

Personas

Matthew Simmons

"I've only used Skype before and I didn't like it. I would like to find alternatives."

Bio: Matthew is a student studying Mechanical Engineering at San Jose State University. He occasionally has to use video chatting applications to have online meetings with his project group. He is frustrated that he cannot find an application that is easy on his computer and has smooth functionalities.

Age: 18
Occupation: Student
Status: Single
Location: San Jose, CA
Goals:
- Find a video chatting application that is not so processor heavy
- Spend less time looking for contacts to add

- Have smooth video conversations

Frustrations:
- His computer is slow, it can't handle processor and graphics intensive applications
- Always has trouble spelling the names of his contacts right
- Hates hearing his own echo while in a video chat

Motivations:
Price: 9
Comfort: 10
Convenience: 6
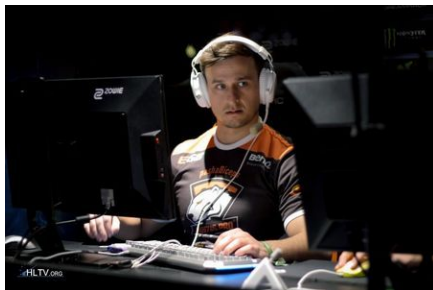Speed: 10

Personality:
Introvert
Sensing
Feeling
Judging

Allen Wolf

"I like to use Discord since it allows me to easily communicate with my teammates when I play games."

Bio: Allen is a professional gamer and spends almost the entire day playing video games. He uses Discord as his primary voice chatting system since all of his teammates use it. He enjoys how easy it is for him to leave and join different chat rooms with a simple link. He also like that there is a web application for it so that anyone can join it. He is frustrated when the application takes a long time to open and when people talk over him.

Age: 22
Occupation: Professional Gamer
Status: Single
Location: Los Angeles, CA
Goals:
- Easily join and leave different chat rooms
- Spend minimal time opening the application
- Have uninterrupted voice calls

Frustrations:
- Having to pause his game before leaving a chat room
- When it takes forever to open applications
- When someone is talking and someone else talks over them

Motivations:
- Price: 5
- Comfort: 6
- Convenience: 7
- Speed: 10

Personality:
- Extrovert
- Intuition
- Feeling
- Perceiving

Kenny Nguyen

"I need to be able to have daily conversations with my long-distance wife."

Bio: Kenny is a graphic designer and works in Manhattan, New York. He and his wife are often separated since they both travel for work. Thus, he often uses Skype to keep in contact with her. He likes that there is a mobile application for Skype since he is always on the go. He is frustrated when he is not able to see his wife when video chatting her. He also hates it when apps force-updates since he is mainly calling on mobile networks. He sometimes uses Skype for group conference calls for his job.

Age: 25
Occupation: Graphic Designer
Status: Married
Location: New York, New York
Goals:
- Be able to have conversations on the go
- Have video calling functionality
- Ability to use an app without updating it
- Have Group calling functionality

Frustrations:

- When a mobile application is not an option
- Not being able to see their conversation partner
- Force-updates

Motivations:

Price: 1

Comfort: 10

Convenience: 10

Speed: 5

Personality:

Extrovert

Sensing

Feeling

Perceiving

Findings

Competitive Analysis Findings

	Skype	Facebook Video	Google Hangouts	Discord	Raidcall
Video	Yes	Yes	Yes	No	No
Voice	Yes	Yes	Yes	Yes	Yes
Text	Yes	Yes	Yes	Yes	Yes
Contacts	Yes	Yes	Yes	Yes	Yes
Groups	Yes	Yes	Yes	Yes	Yes
Mobile	Yes	Yes	Yes	Yes	Yes
Webapp	Yes	No	Yes	Yes	Yes
Screenshare	Yes	Yes	Yes	No	No
User Base	Working professionals, gamers, long distance relationships	Facebook users	Google account holders, working professionals, social communicators	Casual, Gamers, Communities / Groups	Casual, Gamers,Russian speakers,Communities / Groups

User Research Findings

Understanding Skype's competitors and each applications strengths and weaknesses allowed for a deeper understanding of features users desire. The competitive analysis allowed us to analyze different applications, which helped with understanding why people chose or moved away from Skype. The competitive analysis also helped us receive information from users because we were able to ask which features of any communication software was the most important to them.

Interview results

The use of different communication methods (video, voice, text) depended on the social context.
In the conducted interviews, users were specifically asked about whether a majority of their social network was within driving distance, how much time they spent with other in person, and their communication habits. Users that spend more time with their social network in person spend less time video chatting while users who are unable to spend time with others in person tend to video chat more often. Multiple users mentioned that video chatting is used as a way to catch up with friends that they cannot see in person while voice and text chatting are used as a daily, more convenient communication channel with people they often see.

Users want to be in control of their conversations more creatively.
Users found it difficult to find their various group chats because it gets merged into a list with all of their other direct messages. Other than favoriting it, there is no real way for a user to organize their group chats in a hierarchical manner. Even with the favoriting system, users do not have the freedom to give their chats a nickname or order them in a specific manner. Because Skype limits users from utilizing these core functionalities for free, many have moved onto other applications such as Discord or Facebook Messenger.

A reliable connection and good performance are the most important qualities for users.
A majority of users agreed that unstable connection ruined the flow of communication which defeated the purpose of calling in the first place. Some interviewees said that the main reason why they call others is because texting is insufficient in terms of getting their message across quickly and effectively. Performance issues are also very important to users. Many of the users preferred other software over Skype because Skype has a lot of lag. Considering that 28% of those surveyed play video games, that is a significant problem. Many video games on the PC require a fair amount of processing power and are sensitive to changes in ping.

Users want a better interface that's more intuitive and professional.
Some users stated that they prefer other software over Skype because Skype is "ugly", "looks like a kid's toy", and is confusing. This suggests that Skype may need to rebrand themselves and adjust their user interface through research and user feedback.

Survey results

Our survey provided some insight to Skype usage with a sample of our user base. A majority of our survey sample, 98.3% of the total responses, reported to have had used Skype before. When it came to the frequency of Skype use, 45.3% of those who have used Skype don't use Skype at all anymore and 8.5% only use it about once a year (Figure 1). Many of our interviewees recall being regular users of Skype in the early 2000's with the reason being that it was the only option for video and audio calling features online at the time. Since then, many of them have moved onto other applications in replacement. Many of the users that reported to not using Skype anymore suggested the reason for this was that other applications offering similar features were faster, more convenient, or more reliable.
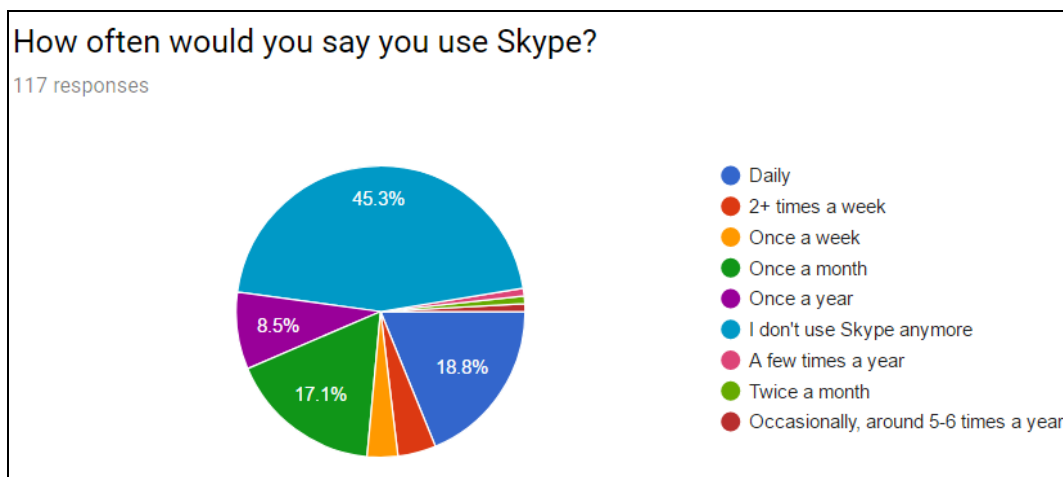

Figure 1

Skype features that users reported most used in the survey were direct video chatting, (video chatting with only one person), followed by group voice chatting. Over 80% of our sample primarily use Skype for casual communication with friends and family (Figure 2). Though one-on-one video chatting is the most popular feature we found, many users who reported using other applications for group video conferences over Skype, such as Google Hangouts. A large portion of the interviewees remember past experiences of video conferences on Skype being laggy and not smooth, resulting in direct video calling being the more used feature of Skype rather than conferences with multiple parties.
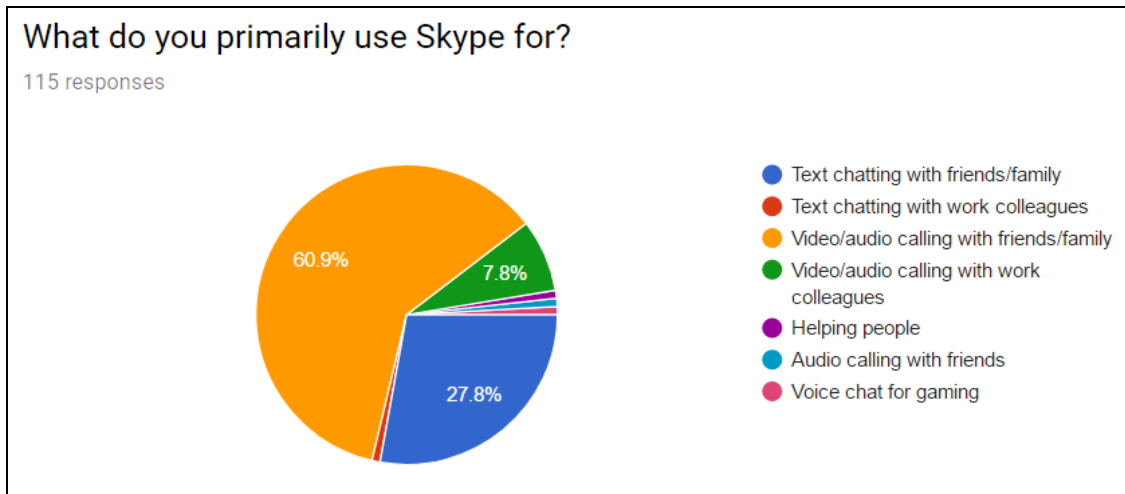
What do you primarily use Skype for?
115 responses

Legend:
- Text chatting with friends/family
- Text chatting with work colleagues
- Video/audio calling with friends/family
- Video/audio calling with work colleagues
- Helping people
- Audio calling with friends
- Voice chat for gaming

60.9% 7.8% 27.8%

Figure 2

Although group voice chatting was the second most used feature according to the survey, direct voice chat (also known as audio call) was the least commonly used feature. Only 13.2% chose direct voice chat as their most commonly used Skype feature (Figure 3). A potential reason as to why direct voice chat is a less popular feature on Skype could be that users find it more convenient to use a different mode of communication. Certain interviewees stated that they preferred calling people with their mobile phones because it is quicker and they only use Skype for the video or group aspect of a call.
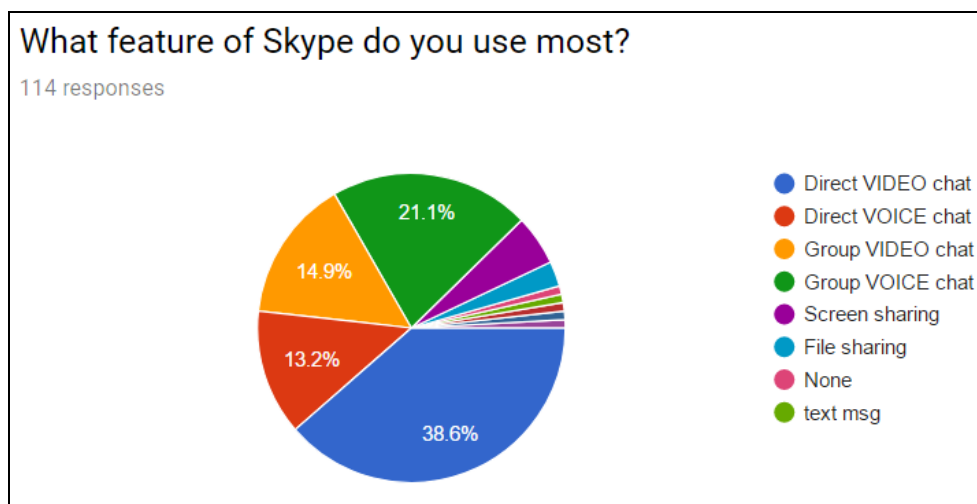

What feature of Skype do you use most?
114 responses

Legend:
- Direct VIDEO chat
- Direct VOICE chat
- Group VIDEO chat
- Group VOICE chat
- Screen sharing
- File sharing
- None
- text msg

21.1% 14.9% 13.2% 38.6%

Figure 3

Skype was rarely the preferred platform for text-based chatting for our users. Texting and Facebook Messenger were the most popular answers. The most common reasons presented were that it was easy and instant. A majority of these users stated that they preferred these platforms over Skype because of the easy

access to all their contacts, making it far more convenient. Another factor to the popularity of Facebook Messenger with advantage of texting was that users found it easy to switch between devices. Only about 7% of those surveyed reported to using Skype on platforms other than Windows and Mac such as Linux and mobile devices. Experiences with Skype's mobile app from our interviewees were mainly unpleasant or nonexistent.

Skype User Testing Findings

The user research gathered by our interviews and survey allowed us to create very thorough user testing. We took the most used features of Skype based on our user research and conducted a cognitive walkthrough and usability testing on them. The findings for each type of test is summarized below.

Cognitive Walkthrough Findings

Task 1: Log into Skype	The process of logging into Skype is drawn out, as users are must input their username, click "Next" to be shown another window where they may enter their password, and then click "Sign in" to be signed into their account. From a user design perspective, this process contains too many steps and gets in the way of users getting right to using the application.
Task 2-2: Click on the contact button of the contact you would like to video chat with	The necessary actions are not obviously available on the interface. The action is more intuitive and the user needs to explore around the application in order to start a video chat to screen share with a contact. When the user sees the control, they will not recognize that it does what they want. Before the user does the action, there are no real indicators that they can do it in the first place. For example, when a user hovers over a contact, there is no change in mouse cursor or any pop ups to help the user realize they are able to do the action.
Task 2-4: From video window, click circle icon with image of "+" symbol	Once the users see the icon, initially, they will not recognize what the button will do. The icon with the "+" symbol in the video screen is what users should select in order to be provided with the screen sharing option; however, the Skype interface uses icons with "+" symbols for multiple other actions, such as starting a new conversation, or adding new contacts.

Task 3-1: Click "Skype" in your toolbar	People will not be able to easily recognize this control. Many people may not realize that they need to click "Skype" in order to change their privacy settings. Privacy settings could be located in any other tab on the toolbar. Usually, privacy settings or account settings are located in a "File" tab.
Task 4-1: Entering search criteria into the searchbar	The feedback is confusing because while the user is typing the search criteria, it will bring up users already on your contact list that fit the criteria as well as a "Search Skype" button. This confuses the user in two ways. First, it tricks the user into believing that the results are users that they can add to their contact list. Second, it tricks the user into thinking that the results displayed are the only search results.
Task 4-3: Select the correct user to add	The search results are presented in a list under the search bar with a profile picture, a Name and their location for every user search result. The only thing they can do to select the user they want is to click on it. It is not completely clear what clicking on the user will do, but it is presented as the only option.

Usability Testing Findings

Task 1: Logging in / Adding people to contact list / video calling them	Test users had trouble distinguishing which button completes their task. The "+" symbol on the homescreen was confusing because users thought it would add people into their contacts list, but instead found out that it started a new conversation. Both novice users and more expert users alike made the same mistake. One user showed that the ambiguity of the search bar made it confusing to recognize what it searched, whether it be the directory of all Skype users or only for searching the user's contact list.
Task 2: Screen-sharing	Users had some difficulty locating the option to screen share. Most were initially looking for a button that resembled sharing a screen. In an active call, there is another "+" button for additional options, which is where the share screen option is located. Users also used the top toolbar menu to find the share screen option when they could not find that on-screen control.
Task 3: Group video chat	For some users, making a group was not very intuitive. A common route that users took was opening the chat for one

	contact and adding the other for the group chat through there. The "+" button in the contact list that users misused in Task 1 is made for the function of making a group chat, but users don't intuitively recognize it for that function. The tasks for starting a video call and enlarging one member's video feed were easily accomplished by the users.
Task 4: Creating a list with contacts	The novice users had difficulty approaching this task. The interface did not make the buttons easily recognizable and made finding the option harder. However, the more expert users were able to complete this task since they remembered where the option was located, which indicates that it can be learned.
Task 5: Changing privacy settings and profile	This task was the most difficult for many of the users. Users got confused when changing their privacy. Some users found a quick way to change their privacy settings in their profile while other users went to their settings and manually adjusted their privacy settings according to who may or may not contact them. Users were still uncertain as to whether they made their profile as private as possible. However, changing their profile picture was fairly simple, but the control for it was not immediately recognizable for all users, leading to long completion times of the task.

Major Issues Identified

Icons - In conclusion, we discovered a large portion of issues pointed towards the confusion of similar iconographic elements on the interface. Namely, the "+" symbol shown below was confusing since the interface used it in varying contexts that each exhibited different functionalities. From the pictures below, one can see that the "+" button on the main interface created a whole new conversation instead of allowing a user to add a contact. Thus, users had trouble distinguishing what the button will accomplish.
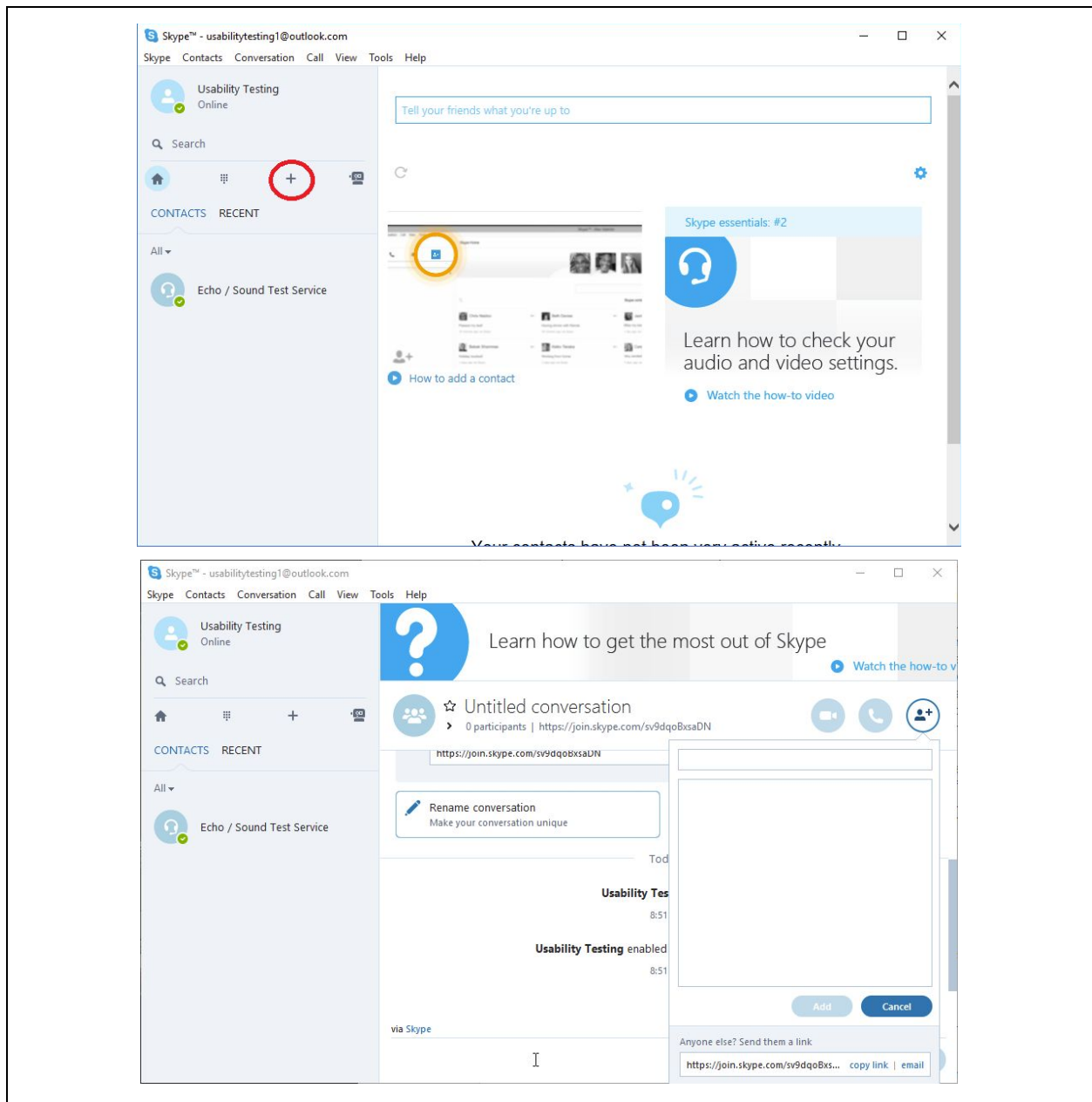
Figure 1: The "+" button opens a new conversation rather than adding a new contact.

Interface Structure - We also discovered that many problems were associated with the structure of the interface. Buttons users typically expected to be in one place were found elsewhere where they did not expect it to be. For example, the screen share button was not easily visible when in a call with someone. Users have to press another "+" button in order to bring up a list of options in order to start screen sharing as shown in the picture below. This caused a few problems during our tests because some users felt that the "+" button was for a different function and did not initially look at that to screen share.
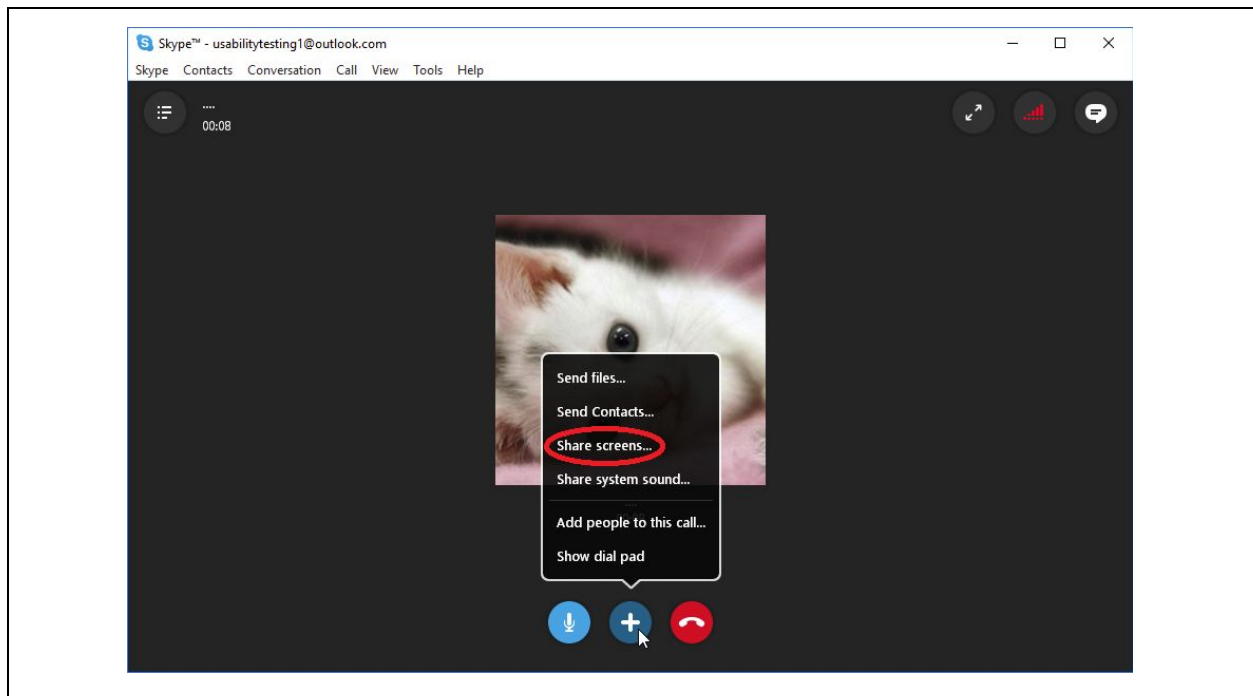
Figure 2: The "+" button is interacted with to access the "share screens..." feature

Ambiguity - In addition to problems with confusing imagery choices in the interface and interface structure, ambiguity in the affordances of controls caused confusion for users. The design of the search bar does not make its scope of functionality clear to the user. If the user starts typing in the search bar, live results start showing up for contacts already on the user's contact list. This leads to some users assuming that the search bar is only for existing contacts on their list. When prompted to add a new user to their contact list, one user accessed the top toolbar menu's "Contacts," then "Add Contact," and "Search Skype Directory…" This essentially brought the user back down to the search bar that was already present on the screen. However, the user believed that he was accessing a different search from directly using the search bar itself--accessing the "Skype Directory" versus just his contact list.
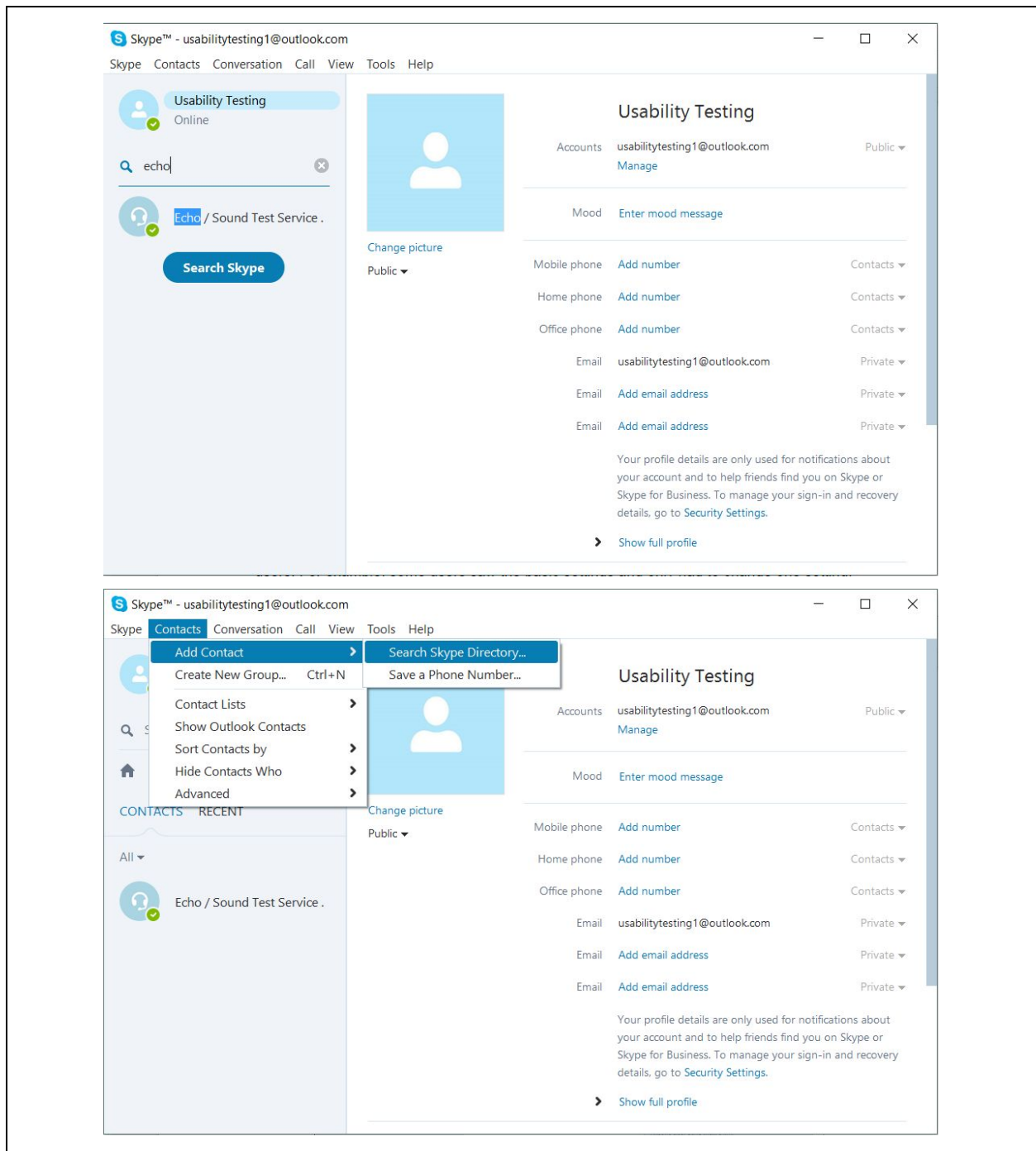
Figure 3: The ambiguous search bar gives confusing feedback and there is a duplicate control for search in toolbar menu.

Alternate Flows - Another problem that the scenario with the ambiguity of the search also highlights is the excessive amount of alternate flows Skype has for a given action. The inconsistencies between multiple controls with the same affordances in the application made it harder to navigate. The fact that there is an unclear control for the

search, the search bar, and the menu option for the search that is explicitly labeled "Search Skype Directory," it causes users to misunderstand that the controls have different affordances, when in reality they are the same. Another example for this is the accessing different of settings for the application and the user's profile. The top toolbar menu of the application contains menus for different settings for "Profile," "Privacy," "My account," as well as all the different settings for calls under "Call." In addition to these separately labeled menu items, there are alternative ways to access all of these functionalities through the "Tools," then "Options" menu and through clicking the user's name to access their profile. There are controls that are structured in inconsistent hierarchies throughout the application and controls that are duplicates that lead to the same functions. Instead of giving users easier access, it can overwhelm and confuse them. The application should have a single clear control for each function, rather than multiple repetitive ones.
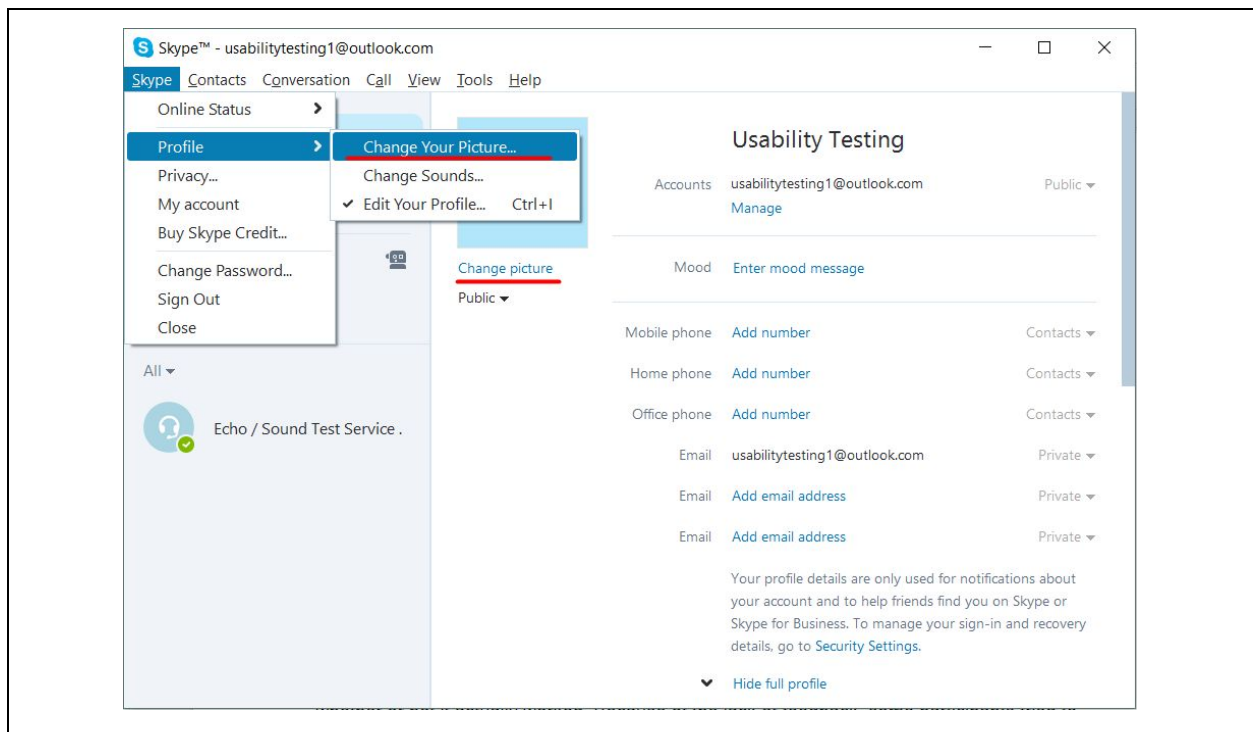

Figure 4: An example of duplicate controls for changing profile picture
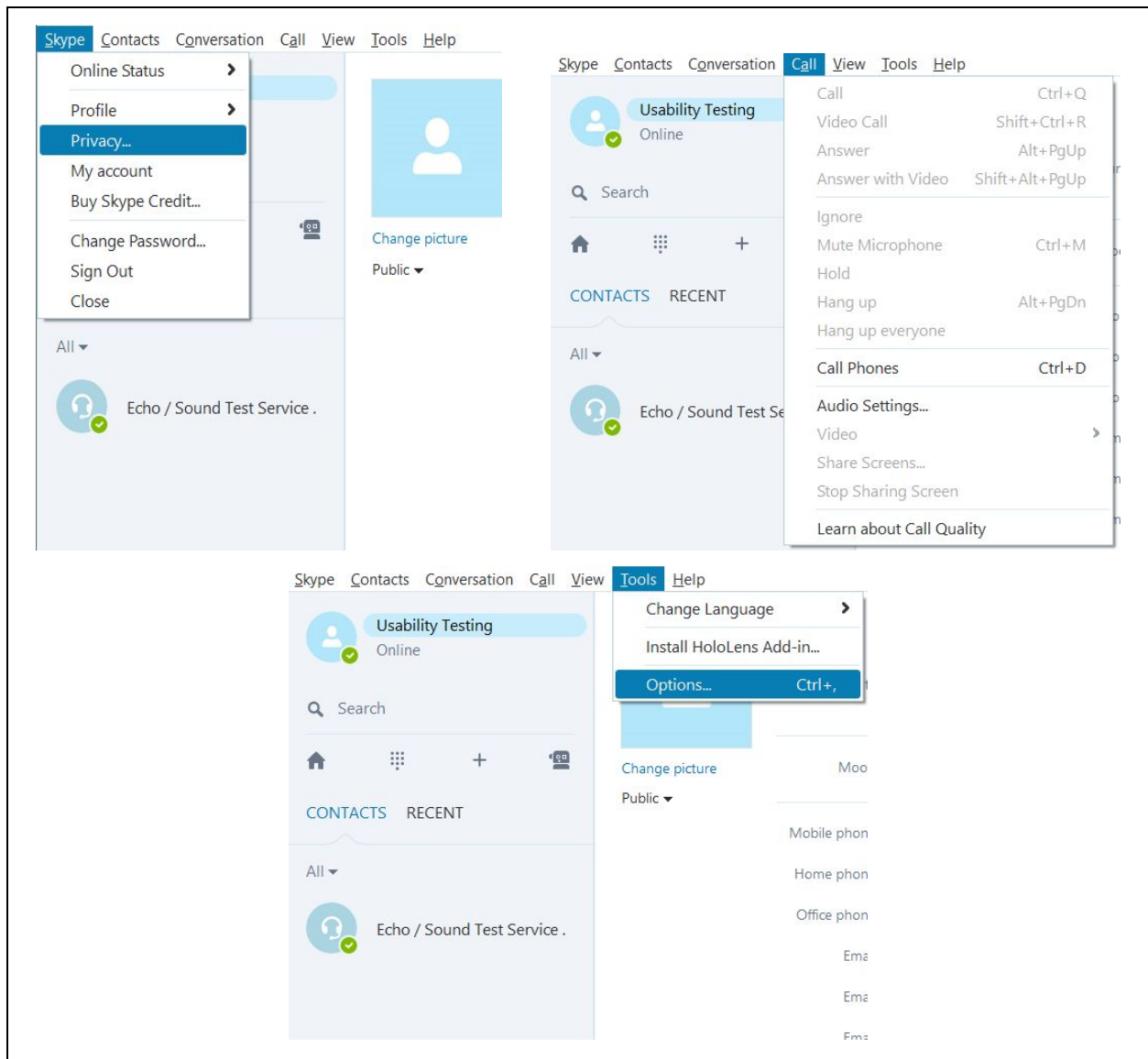
Figure 5: Many of the application settings have duplicate controls in the toolbar menu that all lead to the "Options" window that also has its own control.
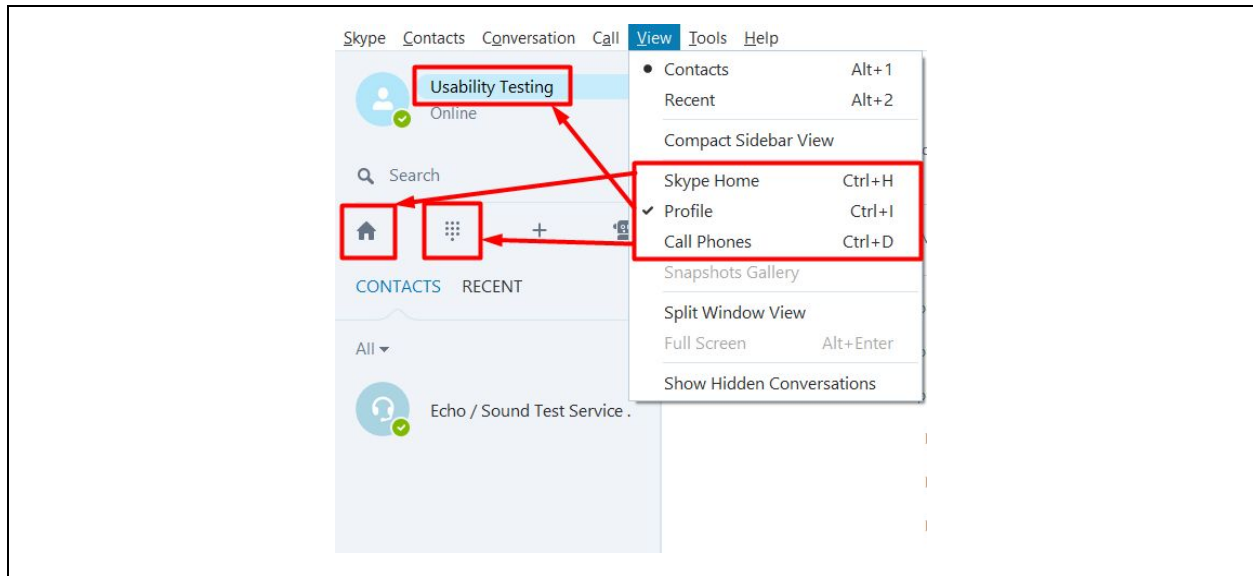
Figure 6: On-screen buttons have duplicate controls in the toolbar menu.

No Feedback for Certain Actions - As stated in the usability test chart above, changing the privacy settings was the most difficult task for most of our participants. Skype was inconsistent with which settings they showed to users. For example, some users saw the basic settings and only had to change one setting, while others had to manually change every section that was listed on the privacy page. These pages are both shown below. Changing these settings was not too difficult; however, Skype does not give any feedback when people change their settings. Our participants were confused whether or not it actually worked. Because of the lack of feedback, some participants tried to close and access the page once again to double check whether or not it worked.
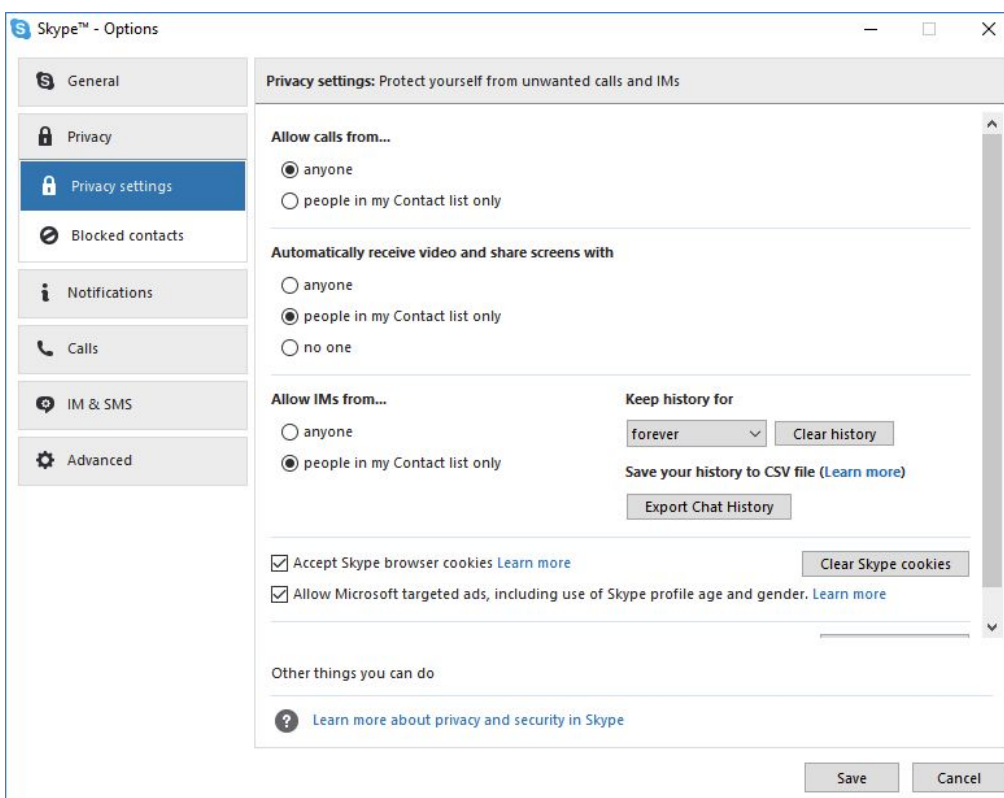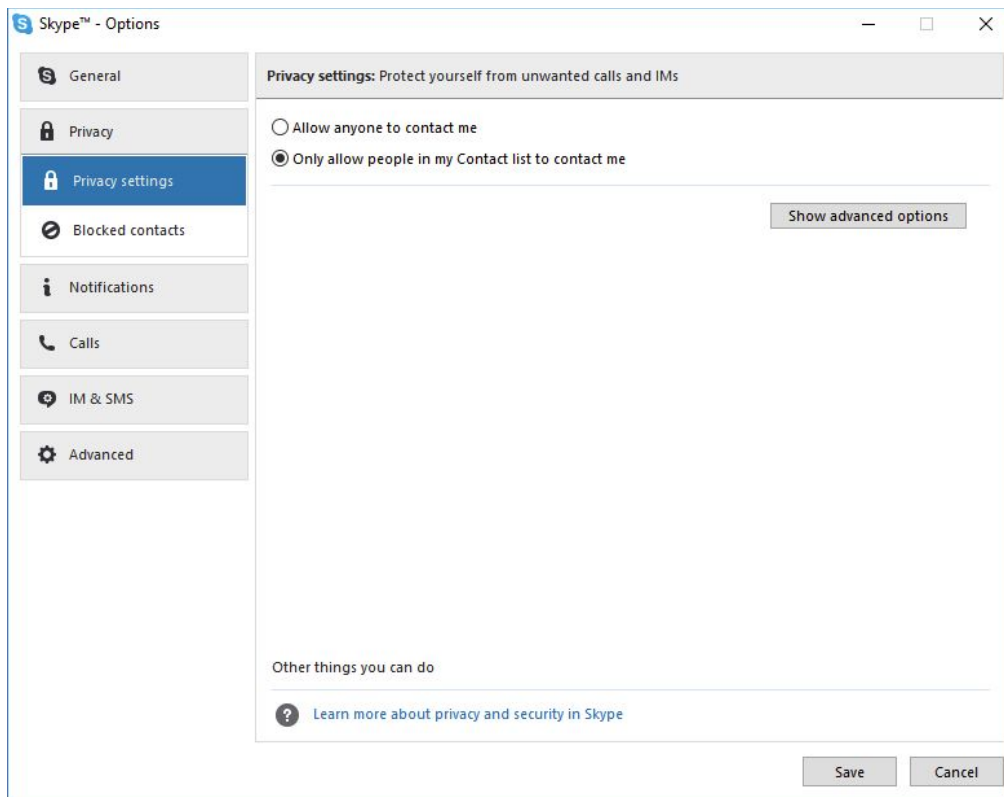
Figure 7: In order to change specific privacy settings, users must access advanced options.

Recommendations & Heuristic Evaluation

## Target #1: Make additional call features more obvious

The main features of Skype are video and audio calling in addition to text chatting. Other features available during a Skype chat or call include sharing screens, sending files, video snapshotting and more. In order to access these features during a call, the main control for accessing them is within an icon in the call window with the same '+' label as the new conversation button in the contact list. An alternative is to use the toolbar at the top of the application to find these features under the "Call" or "Conversation" sections.

Users had a hard time finding the share screen icon under the control within the call window.

For the users that were not already aware about the control within the '+' button, some found it within a few attempts after their initial one, while others resorted to searching the menu toolbar. Users would often misunderstand the button for adding something rather than accessing additional features. The whole purpose of having the control within the call window is to provide a shortcut for users to have easier access to these extra features. We found that due to the ambiguous iconography of the button, users were not able to recognize what pressing the button would provide.

In order to improve the accessibility of the additional call features, we want to improve the recognizability of the control. The redesign has to lower the amount of time it takes a user to find call features and retain accessibility to all the additional features.

Redesign
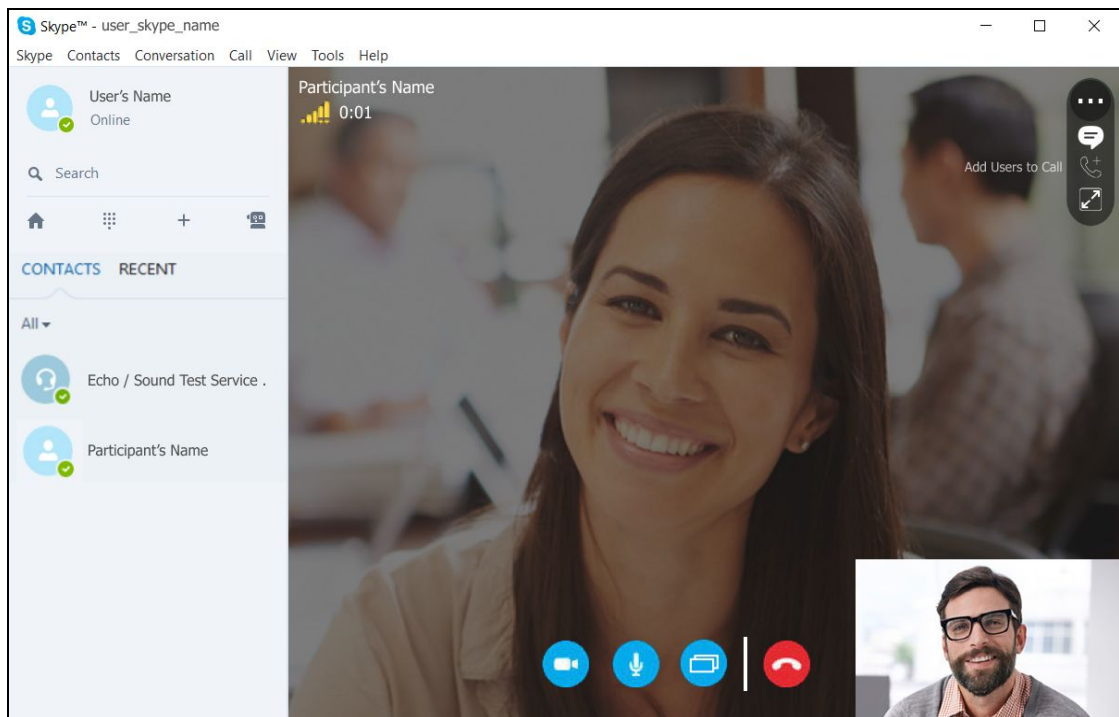
Redesign Recommendations:

The icon to access additional call features (the "+" button) within the call screen was too ambiguous for the user and needed to be changed. We recommend Skype make features such as screen sharing and adding other users into a call more intuitive by designating each feature to have its own unique icon that could be easily located. The screen should be minimalistic while still giving users easy access to all features. Users should be able to hover over the "..." in the top right of screen which should then show the various features that users can utilize during a call. Additionally, the screen share button should be included with the main call features at the bottom center of the screen because it is an important Skype feature for communicating.

Heuristic Evaluation Results

- What Works
  - Users are always aware of the status of their call because they are provided with signal information, call duration information, and live video feedback throughout the call.
  - Even when users access the additional call features list, the design ensures that users are always able to see the status of the call due to the use of heads-up displays.
  - When it comes to accessing the additional call features list, the heads-up display design works to ensure that users can see which overlay stems from which icon they have hovered over.
  - The design utilizes icons and captions that are commonly accepted and understood representations of each button's functionality. Providing illustrations (icons) and narratives (captions) supports both novice and expert users.
  - Since the design utilizes heads-up display overlays that are activated by a hovering motion, users can simply undo their access of additional call features by hovering away from the icons.
  - The design ensures users are in control of the call because it highlights key control buttons across the bottom of the screen. Controls that enable users to mute their voice or video, screen share, or end the call.
  - The design eliminates overlap in the meaning of icons or wordings that describe functionality to provide consistency throughout the application.
  - There are not many areas where the user can make an error in this design, so error prevention is proactive.
  - The design limits the number of features available during calls. It presents primary functions across the bottom so that they are

always visible, and it presents any additional features in an easy to access list.
- The design maintains a minimalist and aesthetic design by keeping the call window relatively clear of noise. The design does this by hiding away additional call features behind an icon that represents additional features.
- Areas for Improvement
  - If users select an additional call feature, there is no obvious method for undoing the action. Users will simply have to re-access the additional features list and click on the icon they accidentally selected to cancel the feature they have accessed. This is an issue because it assumes that users understand where their mistake action stemmed from and how to re-access the activating icon to undo the action.
  - The design does not account for error prevention. In the event that an error does occur for an unforeseen reason, the design does not implement any error messages because the range for error is so low.
  - The design presents the additional call features list in a hidden layer that is revealed only if users hover over the correct icon on the call window.
  - The design does not provide much help or documentation, other than the additional feature icon captions that appear when users hover over the icons. Captions can also be useful for the anchored icons at the bottom of the screen as well as the icon that hides away the additional call features.

Target #2: Improve process of adding contacts

The process of adding a contact is imperative to the use of Skype. To add a contact, users must use the search bar in order to find a contact. During our usability testing this became an apparent problem.

The search bar for adding contacts was too ambiguous.

Many users stated that they were uncertain of how to add contacts during the think-aloud protocol in the usability test. They stated it seemed like it was mainly for searching through their contacts list rather than the entire Skype directory. Also, the cognitive walkthrough highlighted the fact that users would be more likely to click on the '+' button (which is for creating a new
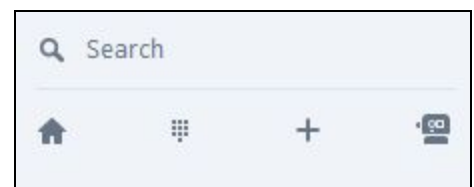
conversation) because it is a universal symbol for addition. The results from the aforementioned tests indicated the need to redesign the function of adding contacts. Considering that Skype's core features revolve around communication such as voice calling and instant messaging, it is imperative for users to be able to add their contacts and properly utilize these features.

Redesign
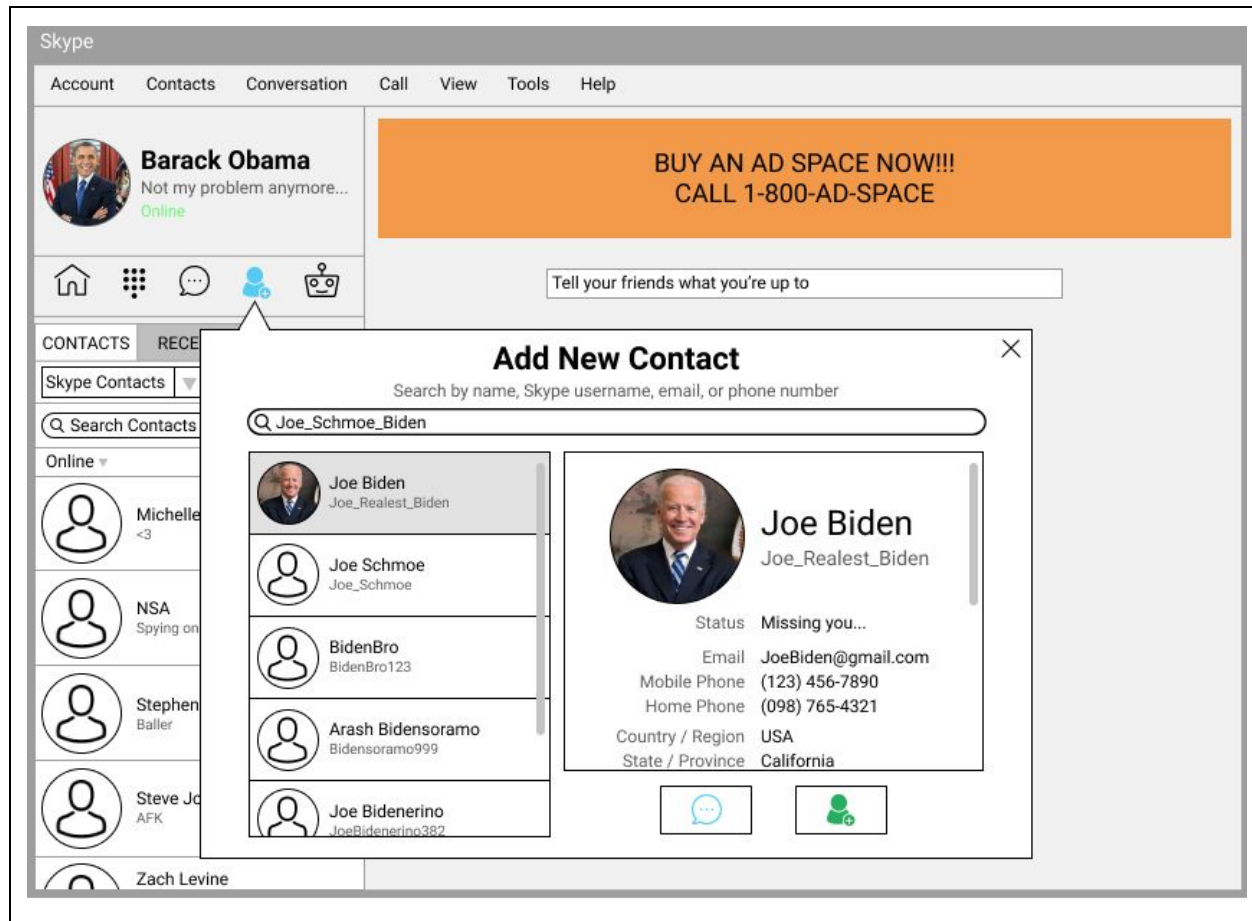
Redesign Recommendations:
We recommend Skype must get rid of the "+" button on the navigation bar because it is too ambiguous. We recommend to create a new icon dedicated solely to adding a contact to minimize any confusion and improve the intuitiveness of the target. We recommend that an overlay window pop up when a user clicks this icon. This window that pops up should show all of the profile information of the selected search result. With this design above, users can easily determine whether or not the search result is the right account to add.

Heuristic Evaluation Results

- What Works
  - Users are aware of what is going on because a new window pops up when clicking the "Add New Contact" icon within the sidebar. The overlay does not take away from what the user was previously doing and users can easily distinguish between the two.
  - The redesign includes icons that are universally understood such as the plus icon with the person icon to represent adding a contact. Terminology similar to what users are familiar with in the real world are also utilized.
  - Users have the ability to exit the search window whenever they want by clicking the "x" in the corner. Searching for different contacts is made easy and users can edit their search at any time.
  - The icons are consistent throughout the application and do what they are expected to do based on the iconography. Any ambiguity was removed from the sidebar and each icon is easily understood.
  - Replacing the "+" symbol with an icon that is universally understood as adding a contact helps prevent error. Having all the contact information listed in the overlay allows for an additional level of security.
  - The design is minimalistic enough for any novice user to use and understand. Only important information is listed within the preview profile.
- Areas for Improvement
  - Error messages are not shown within this redesign. Users will not be able to know whether or not something went wrong when adding a contact.
  - Not a lot of accelerators utilized. Users will have to go through the whole process of adding a contact through this window (searching, making sure the information is correct, etc).
  - Filters are not available during the search. Users will need to search through however many potential contacts come up.

Target #3: Centralize profile privacy settings

Privacy is an important topic among many users who use applications. All companies are required to have a privacy statement that specifies how they deal with user data.

Finding the correct location to adjust profile privacy is difficult.

During our usability tests, many of our participants had a difficult time finding the correct location to adjust their profile picture privacy. Many of them went through the toolbar to

Skype > Privacy… and only found settings for calls, video chat, and instant messaging. The main issue with this is the fact that the various privacy settings are scattered among the Skype interface and are not put in a centralized location which causes confusion and a negative user experience. Furthermore, the cognitive walkthroughs highlighted that it was ambiguous as to how many other privacy settings are available to change. Considering that there was a separate location to adjust a user's profile picture privacy, many of the experts conducting the cognitive walkthrough became uncertain as to how many other privacy settings they had yet to uncover.

Redesign
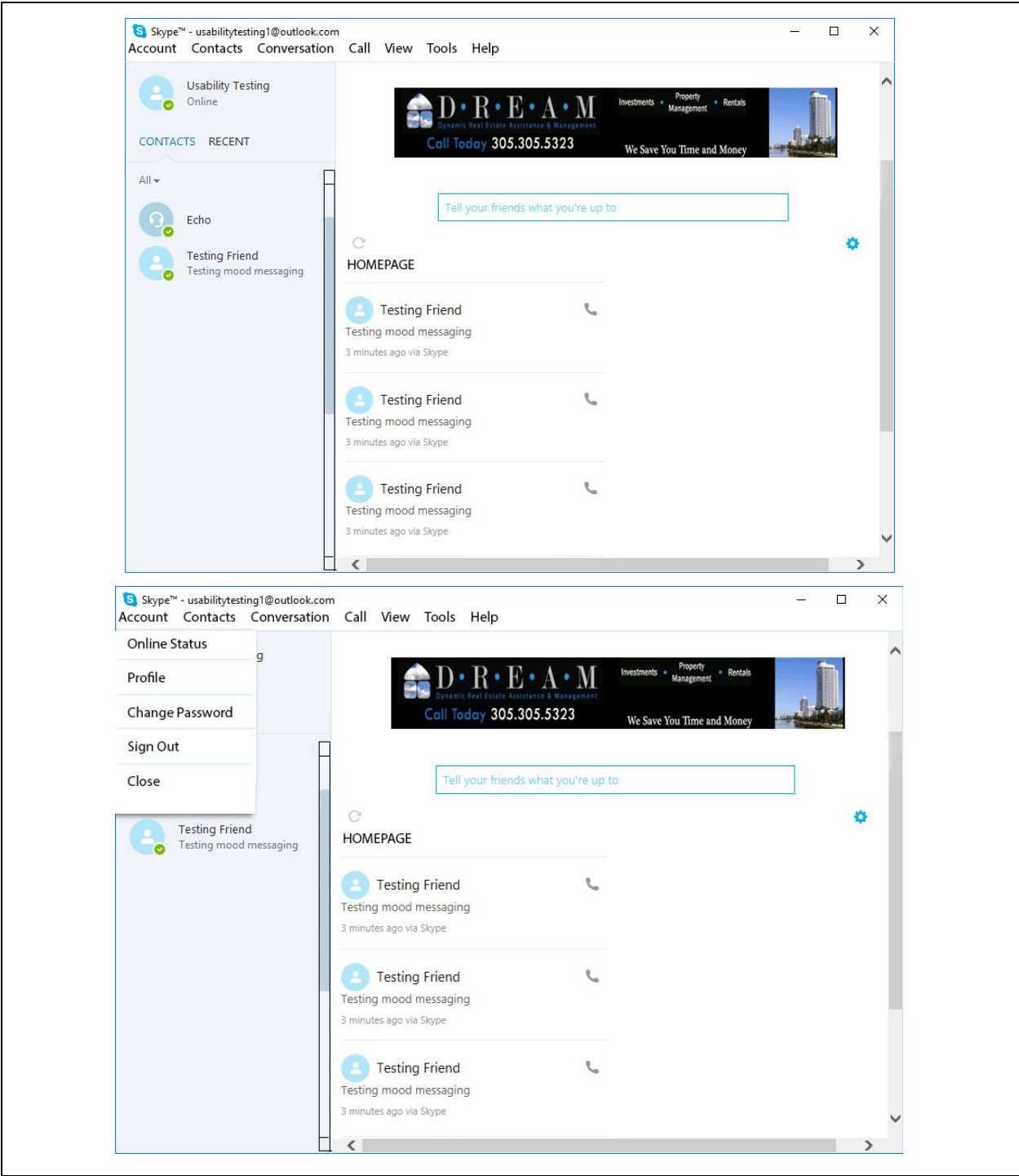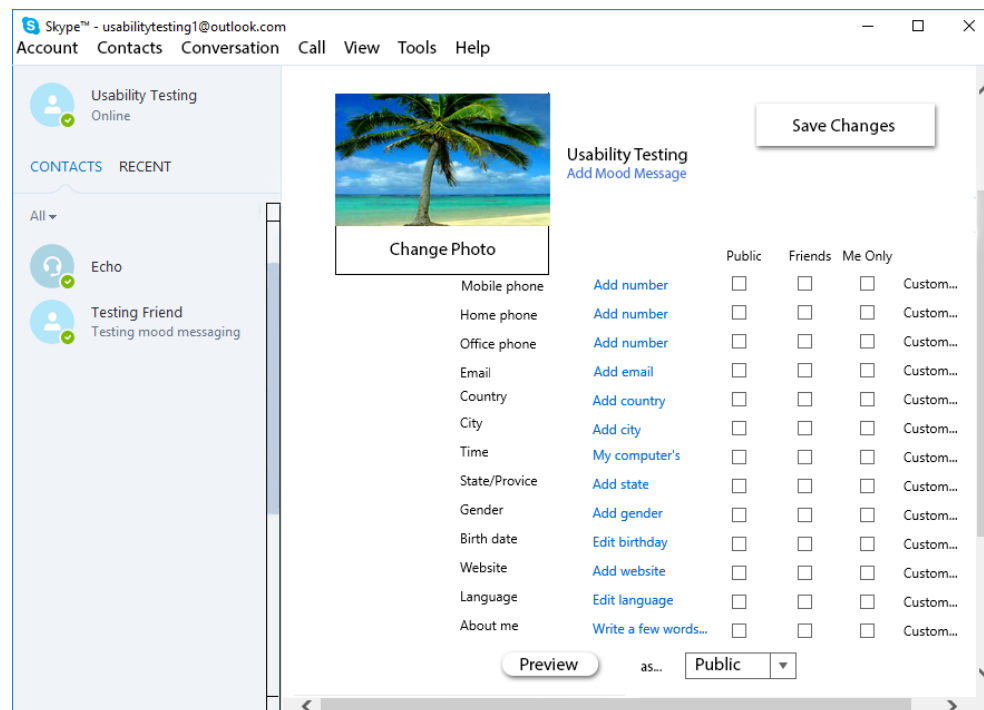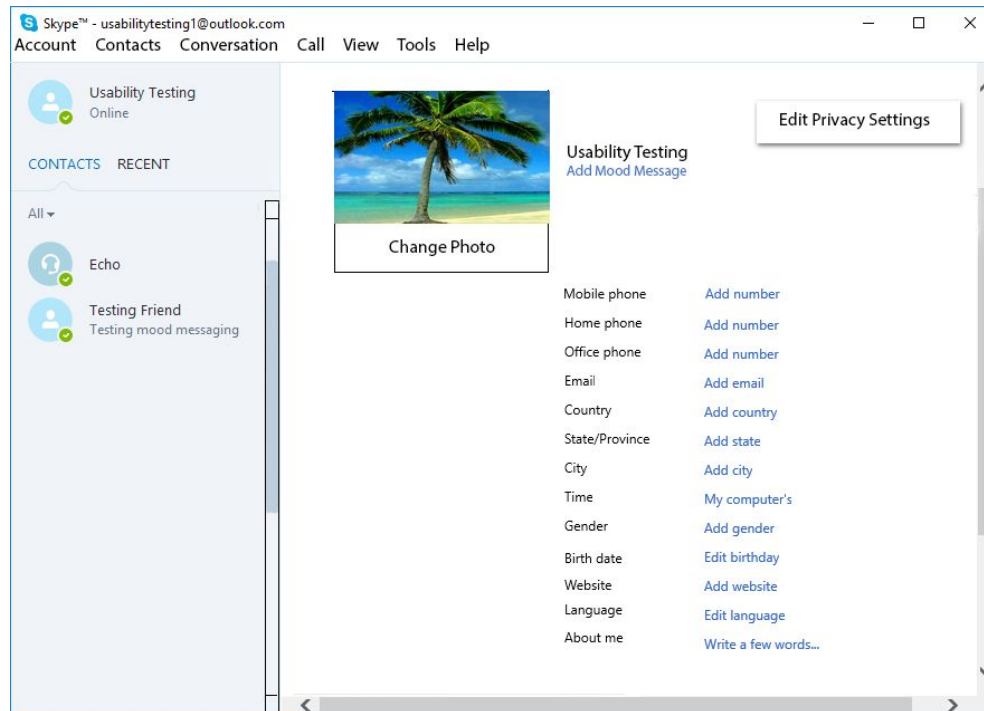
Redesign Recommendations:

The "Skype" section in the toolbar needed to be renamed. We recommend the section to be renamed to "Account" which makes more sense when trying to locate how to edit someone's profile, privacy settings, or general account settings. We recommend the user have a lot more freedom with their privacy

settings. For every category within a user's profile, they should be able to choose who can see it from public, friends, or me only. They should also choose individuals on their contacts and give them permission to see their information by clicking "custom…" Giving users the ability to preview their profile is also a good addition because it gives them a way to double check whether or not they missed anything.

Heuristic Evaluation Results

- What Works
    - Displaying all checkboxes for all profile details displays user's options and selections clearly and is a familiar control to work with for users.
    - Checkboxes work well as both a control and feedback indicator in itself.
    - The checkboxes are a clear indicator of when the user has entered editing the privacy settings.
    - Preview functionality provide a good verification for user's different privacy settings for different users.
    - Checkboxes allow for quick and easy changes and undoes.
    - Whether users are changing only one setting or multiple settings, they can save changes or preview changes at any time.
    - The "Edit Profile Settings" button is located in the user's profile view, making it easy to find and access.
    - Having the privacy settings load in the same existing profile view users were already looking at makes the
- Areas for Improvement
    - Design should include a "Cancel" button for users to quickly exit out of editing privacy settings.
    - A "Revert" button could also be included for users to quickly revert all changes made during their session of editing settings.
    - Displaying three checkboxes per profile detail does not make for a minimalistic design. It sacrifices some aesthetic for functionality.

Conclusion

After conducting research on Skype and inspecting deeply into the user experience of the application, we arrived at three targets for redesign in hopes of finding a solution for the application's waning popularity. Making additional call features more obvious, improving the process of adding contacts, and centralizing profile privacy settings were the three targets that were showcased in this report. Recommendations for redesign were made for every target and heuristic evaluations were conducted upon them.

The redesign solution for making additional call features more obvious kept much of Skype's original design intact while addressing the issue of the control for accessing additional call features being too ambiguous and confusing for users. The redesign successfully solves the issue with a more familiar iconography for the control and features a responsive hover menu that presents its menu items clearly. The design makes sure the features are easy to locate and recognize. However, the menu may be harder to notice for first time users and the design also fails to take error prevention into account.

In terms of improving the process for adding contacts, a lot of our inspiration came from a previous competitive analysis we conducted. Discord is a popular application that utilizes window overlays and contains all of their features in one singular window. Our redesign uses a similar concept by having a small window appear upon clicking the add contact icon, making the feature minimalistic. Alike the previous redesign mentioned, we wanted to make adding contacts more intuitive by presenting a new button that would have familiar iconography. We found that the redesign is much more intuitive and provides better feedback than the original Skype design. However, this redesign does not account for errors, has no accelerators, and does not include filters to make searches easier to browse through.

Lastly, the objective of centralizing the profile privacy settings to ease the process for users and mitigate confusion was solved with a redesign featuring privacy settings in the user's own profile view. The controls for editing profile privacy included checkboxes for every option and setting. These checkboxes appear in the same profile view once the "Edit Privacy Settings" button was clicked. This design allowed for user's complete control in one easy-to-find centralized location. The downfall of this design was that it sacrificed aesthetic for functionality. The many checkboxes left no room for confusion, but also cluttered the view. It was also found that the design would benefit from "Cancel" and "Revert" buttons to give users freedom to abandon or undo their actions.

In conclusion, we talked about some of the major findings from our research and recommendations to make Skype's interface more user friendly. We understand that our findings are biased due to the skew in our user sample, but we believe that these findings will give Skype some insight on what to research and potentially redesign. We hope that this usability testing report was helpful and informative in inspecting elements that may help make Skype one of the best communication systems again.

Appendices

Test Protocols

Interview Protocol

Introduction

Hi, before anything here's my contact information. Feel free to email me if you have any questions about the study after we part ways. I'm doing a class project about Skype's features. I'll be interviewing you to understand your overall experience with the application or any competitors you may use. This interview will be roughly about 30 minutes. There could possibly be a risk of discomfort in answering some questions; however, this interview will benefit us by helping us improve an outdated platform. You'll be compensated with the joy of helping us understand the way people feel about Skype and it will only cost you a few minutes of your time. All information discussed during this interview will be confidential and you may choose to not answer any question at any given time. <Is it okay if I record this interview?> Do you have any questions for me before we start? Alright let's begin.

Questions
User
1. What is your name?
2. Where are you from?
3. What is your current employment status?
   a. Are you a full time employee, part time employee, unemployed, full time student, part time student?
4. What is your age (or age range)?

Lifestyle
5. What do you usually do in your free time?
6. How often do you spend time with others in person?
7. What activities do you usually do when you are spending time with others?

Internet Use
8. On average, how many hours of the day do you think you spend on the internet?
9. How much of that time is on social media?
10. What do you primarily do on the internet?

Preferred Communication Methods
11. What is your most common mode of communication <INSERT EXAMPLES>?

a.　Why is that your most common mode of communication?
　　12. How does this mode of communication fare in terms of ease of use?
　　13. Do you find that a majority of your social network lives within driving distance?
　　　　　　a.　If not, how often do you meet up with them?
　　　　　　b.　If not, how do you keep in contact with them?

Application Use
　　14. How often do you video chat or voice chat?
　　　　　　a.　Why do you video/voice chat?
　　15. Who are you primarily communicating with when you video/voice chat?
　　16. Which app do you typically use to use video or voice chat?

Skype/Competitor from above question
　　17. Have you ever used Skype?
　　18. What do you primarily use Skype (or competitor) for?
　　19. Can you describe a good experience you've had in the past when using Skype (or competitor)?
　　20. Was there ever a time when you were frustrated with Skype (or competitor)?
　　　　　　a.　Can you tell me more about that experience?
　　21. Rank the following in order of most to least important: connectivity, video quality and audio quality. Please explain your ordering.
　　22. Rank the following in order of most to least unpleasant: visual freezing, audio stutter, delayed responses, hearing your own echo, unable to hear/see the other side. Please explain your ordering.
　　23. Is there anything you would change about Skype (or competitor)?
　　　　　　a.　If yes, what?
　　24. Is there an application you prefer to use over Skype (or competitor)?
　　　　　　a.　If so, why?
　　25. Is there anything else you would like us to know about your experience with Skype (or competitor)?

Conclusion
As a recap, in this interview we talked a little bit about your lifestyle, Internet habits, and how you communicate with others through the Internet. We talked about (either Skype/a Competitor), what you use it for, (if competitor: how it fares against Skype) and your likes and dislikes about the system. Before we end, do you have any questions regarding the whole interview? Thank you for your time!

Survey Protocol

Thank you for taking the time to view our survey! This survey will take about roughly 10 minutes and will ask questions about your experience with technology and Skype. Please read the questions carefully. Answer all of the following questions in order and to the best of your abilities. If there is a question that makes you feel uncomfortable, you may skip it, however we do encourage you to answer all questions. All entries will be anonymous.

1. What is your age?
   _____

2. What is your gender?
   a. Male
   b. Female
   c. Other _____

3. What is your ethnicity?
   a. White
   b. Hispanic or Latino
   c. Black or African American
   d. Native American or American Indian
   e. Asian / Pacific Islander
   f. Other _____

4. What is your employment status?
   a. Student
   b. Full-time
   c. Part-time
   d. Not employed
   e. Other: _____

5. On average, how many hours a day do you use the Internet?
   a. Less than an hour
   b. 1-5 hours
   c. 6-10 hours
   d. 11+ hours

6. Do you own a mobile device?
   a. Yes
   b. No

7. What is your preferred device when you use the Internet?
   a. Laptop
   b. Desktop
   c. Mobile
   d. Tablet
   e. Other _____

8. What do you primarily do on the Internet?
    a. Browse websites
    b. Watch videos
    c. Play video games
    d. Talk to friends
    e. Work related
    f. Other _____

9. Have you ever used Skype?
    a. Yes
    b. No (if answer no, you may skip all the questions pertaining to Skype)

10. How often would you say you use Skype?
    a. Daily
    b. 2+ times a week
    c. Once a week
    d. Once a month
    e. Once a year
    f. I don't use Skype anymore
    g. Other _____

11. What operating system do you primarily use Skype on?
    a. Windows
    b. Mac
    c. Linux
    d. iOS
    e. Android
    f. Other _____

12. What feature do you mainly use Skype for?
    ☐ Direct Video chat
    ☐ Direct Voice chat
    ☐ Group Video chat
    ☐ Group Voice chat
    ☐ Screensharing
    ☐ File sharing
    ☐ Other _____

13. What do you primarily use Skype for?
    ☐ Texting chatting with friends/family
    ☐ Text chatting with work colleagues
    ☐ Video/audio calling with friends/family
    ☐ Video/audio calling with work colleagues
    ☐ Other _____

14. If any, please check all of the following Skype features you have used.
    Direct implies only one person is involved versus group which is multiple people

- ☐ Direct instant messaging
- ☐ Direct VIDEO call
- ☐ Direct VOICE call
- ☐ Group instant messaging
- ☐ Group VIDEO call
- ☐ Group VOICE call
- ☐ Send/Receive files
- ☐ Screen share

15. If applicable, what is your average call quality feedback score for Skype calls?
    - a. ★
    - b. ★★
    - c. ★★★
    - d. ★★★★
    - e. ★★★★★

16. Have you used Skype for business purposes?
    - a. Yes
    - b. No

17. Do you prefer to use other software over Skype?
    - a. Yes
    - b. No

18. If you answered yes for the above question, please explain why
    _____

19. If any, check all software that you have used in place of Skype.
    - ☐ BlueJeans
    - ☐ Discord
    - ☐ FaceTime
    - ☐ Facebook messenger
    - ☐ Google Hangouts
    - ☐ Raidcall
    - ☐ Zoom
    - ☐ Other _____

Usability Test Protocol

Notes:
- Find a picture and save it to desktop with the name "profpic" for task 5
- Fill out the yellow highlighted parts with your own information
- Remove the green highlighted parts before you print for your user so it doesn't give them hints on what to do
- Notetaker, please log into test coworker account--account will be used for task 2 & 3:

- ○ Email: testassistant1@outlook.com
- ○ Password: hardpass123
- ○ If you want to make it seem more realistic, change the name of this account to something other than test coworker. Don't forget to change it in your printable for your user.

Method of Observation: think aloud protocol

Task 1: Logging In/Adding people to contact list/video calling with them
- You and your boss are preparing for a presentation; however, you are unable to meet-up in person to rehearse. Both you and your boss think it would be a good idea to watch each other practice in order to critique body language, hand movements, eye contact, etc. You decide to practice through a webcam call on Skype.
- Please log in to the Skype desktop application using the following information.
  - ○ Username: usabilitytesting1@outlook.com
  - ○ Password: hardpass123
- This is the account you will be using for the remainder of this session.

- You do not have any contacts on this account just yet, so you will need to add them. For this part, you will only need to add your boss, [insert moderator name here]. Your boss's information can be found below.
  - ○ Your Boss's Name: [insert moderator's first and last name]
  - ○ E-mail: [insert e-mail moderator used for Skype account]
  - ○ Phone Number: [insert moderator phone number linked to Skype]
  - ○ Skype Name: [insert moderator's Skype Name]

- Add your boss and proceed to call them. While in the call, send an instant message to your boss saying "Hello" and then go back to the previous screen. After that, mute your microphone and turn it back on again. Lastly, turn your camera on and off again, and then hang up entirely.

Task 2: Screen-sharing
- Your coworker needs help learning how to open up a web browser. Please add your coworker, Test Coworker, to your contact list. His/her information can be found below.
  - ○ Name: Test Coworker
  - ○ E-mail: testassistant1@outlook.com
  - ○ Phone Number: N/A
  - ○ Skype Name: N/A
- Show him/her how to open up any web browser in real time through your computer screen.

- Once it has been opened, proceed to search for "cute puppy" images.
- Lastly, end the session.

Task 3: Adding people to a group chat and video chatting them/opening contact's profile
- Your boss called you and said that there will be a group video chat between you, your coworker, and him/herself. He/she would like you to set everything up.
- Create a group video chat with both of them.
- Make it so one of the participants in the call has a larger video screen region than the other.
- End the call once you are done.

Task 4: Creating a list with contacts
- To make your life easier you have decided that you want to group your contacts together based on your relationship with them. For example, you would like your boss and your coworker from the previous task to be in one category for easy access.
- Please add your boss and coworker to a list named "Work", then navigate back to where you can view all of your contacts.

Task 5: Changing privacy settings and profile
- You have decided that you want to change your picture and update your profile but you don't want everyone to see this. You decide to change it so only your contacts can see.
- Please navigate to your profile and add your city and state. Next, on your desktop there is a picture named "profpic", use this picture as your Skype picture. Finally, change the people who have access to your profile. It should not be visible to everyone.

**After, reset profile pic and contacts list and recent conversations after every test -- clear cookies

After Interview questions:
- Have you used Skype before?
- Have you used all the features on Skype that were featured in this test?
- Before starting how easy did you think this test would be?
- How did you think you did?
- Were you surprised by your performance?
- Were these tasks difficult?
- Which task, if any, was the most difficult to perform?

Cognitive Walkthrough Protocol

Task #1: Open and log into the Skype application with their Skype account
1. Open Skype desktop application
2. Enter email, phone number, or Skype name in "Email, phone, or Skype name" field
3. Click "Next"
4. Enter password in "Password" field
5. Click "Sign in"

Task #2: Start a screen share in a video call
1. Navigate to Skype contacts
2. Click on the contact button of the contact you would like to video chat with
3. From messaging window, click circle icon with image of a video camera (upper right)
4. From video window, click circle icon with image of "+" symbol (bottom center)
5. Click "Share screens…"
6. Click "Start"

Task #3: Private Skype profile
1. Click "Skype" in your toolbar
2. Click "Privacy…"
3. In the "Privacy Settings" window that appears, select "people in my Contact list only" for all fields available
4. Click on "Save"

Task #4: Adding contacts to contact list
1. Enter an e-mail, phone number, Skype name, full name, or other search criteria into the Search bar
2. Click "Search Skype"
3. Select the correct user to add
4. Click "Add to Contacts"
5. Type in an invite message
6. Click "Send"

Individual Heuristic Evaluations

Fanny's Notes

Target #1 Redesign:

1. Visibility of system status

   The design keeps all HUD info intact and once the menu icon is hovered over, a dark overlay helps display the status of the menu opening. Text labels appearing display the status of current hovered icon. Icons will update with its state. This design keeps system status visibility well.

2. Match between system and the real world

   The iconography of the buttons are all familiar icons of the hardware or representations of the button's functionality. Text labels of the functionality in open menu further communicates to the user.

3. User control and freedom

   Opening and closing the menu only requires a hover, giving the user complete freedom to view the menu and its items and to quickly close it just by moving their cursor away.

4. Consistency and standards

   Along with familiar icons that are commonly used, text labels make it completely clear of the button's affordance.

5. Error prevention

   The state and actions of the buttons are easily reversible as most of the buttons are toggles and the actions can be easily exited.

6. Recognition rather than recall

   The main toolbar displays the buttons along the bottom while only have one menu for the extra features at the top right that can be easily viewed for the functionalities provides for good recognition.

7. Flexibility and efficiency of use

   All features can be quickly accessed by both novice and expert users. Accelerators are not even needed in this design.

8. Aesthetic and minimalist design

   Main toolbar is cleanly displayed at the bottom while the extra features menu tucks away extra features without making access hard.

9. Help users recognize, diagnose, and recover from errors

Text labels and the icons help users recognize the state of the feature. The icons change with the state of the feature (e.g. a slash through the mic icon when mic is muted).

10. Help and documentation

Text labels appear beside icons to help with identifying the buttons.

Target #2 Redesign:

1. Visibility of system status
Clicking icon for adding a contact immediately brings up window for the action. Clicking the message button should open a chat with the selected contact. Clicking add contact icon will need to provide feedback on status of sending a request.

2. Match between system and the real world

Icon includes a human figure and a add symbol to symbolize adding a new person as a contact. Window for adding a contact is labeled as such and instructions for searching for a contact is displayed in a sub-text.

3. User control and freedom

Users are free to change their search, click through search results, add/message selections or close the "Add Contact" window at any time.

4. Consistency and standards

All buttons are consistent with what is expected from their iconography and design only consists of one control per function. All non-icon controls are clearly labeled with text.

5. Error prevention

Including the profile information in this design helps prevent users from making the mistake of adding/messaging the wrong person.

6. Recognition rather than recall

Providing "Add a New Contact" its own button with familiar iconography help users remember where the feature is exactly without any confusion.

7. Flexibility and efficiency of use

The hover window for "Adding a Contact" can be open and closed quickly and easily. The process is intuitive for novice users and easy to navigate for users familiar with the system.

8. Aesthetic and minimalist design

   The pop up window successfully displays all information without cluttering the main window of the application.

9. Help users recognize, diagnose, and recover from errors

   Users can easily change their search and user selection during the process without changing the view or exiting the hover window.

10. Help and documentation

    Instructions for search are clearly displayed in text above the search bar and familiar icons for the messaging/contact request actions are displayed on their button controls.

Target #3 Redesign:

1. Visibility of system status
   Checkboxes for setting privacy settings appear when a user clicks "Edit Privacy Settings" display system status well. The button is also replaced with a "Save Changes" button to further display the change in status.

2. Match between system and the real world

   Using checkboxes for selecting privacy options is a good visual representation of what users are familiar with for making decisions for a large number of items.

3. User control and freedom

   Users are free to make changes as well as undoing them. A "Revert Changes" button could be added for users to completely revert their changes in their session. A "Cancel" button is also missing for users to freely exit making changes without saving.

4. Consistency and standards

   The design does a good job of displaying settings in the existing view without being interrupted while also clearing communicating. All functionalities have only one control and are clearly differentiated and labeled.

5. Error prevention

The design is missing a "revert" or "cancel" button. However, the checkboxes allow users to easily move between settings options.

6. Recognition rather than recall

The "Edit Profile" button is clearly displayed within their profile view making it intuitive and easy to find the privacy settings.

7. Flexibility and efficiency of use

Whether users want to make privacy changes to one or all of their profile details, having all the options displayed outright makes the process fast for both novice and expert users.

8. Aesthetic and minimalist design

The privacy settings appear in the same existing view when the control for it is clicked and is hidden again when the user is finished. The design does well for the amount of settings it needs to provide without the need to open any new windows or views.

9. Help users recognize, diagnose, and recover from errors

The settings users choose are clearly displayed with the checkboxes and a preview button for their profile is provided for users to verify their settings before saving changes.

10. Help and documentation

The check boxes and the accompanying labels for them clearly communicate their affordance. If users are still unclear, the preview functionality help reinforce their changes.

Julia's Notes

Target #1 Redesign:
1. Visibility of system status
The users are aware that the call is going on and with whom it is going on with (top left). In the case that there is a disconnection, they will know through the yellow bars changing color and size. Furthermore, there will be a call screen that appears. As for the buttons, it is obvious as to when the user is opening the extra button features as the screen grays out and more buttons appear at the top left.

2. Match between system and the real world

There are many symbols in this redesign that mimic certain things in the real world. For example, the screenshare icon is something people often look for when they want to screenshare. The new features at the top right are also recognizable as there is a chat bubble for chatting, "..." instead of + which is seen as addition, and an enlarge symbol.

3. User control and freedom

The redesign does not have special emergency exits but there is a way to undo features by clicking on the button again.

4. Consistency and standards

The redesign is pretty consistent and unambiguous as each button has only one sole feature and style. The only thing that may be confusing is the 'Skype' button on the toolbar.

5. Error prevention

There aren't many areas where users can cause an error. The only area where a user would need an error message is in the case the call disconnects or they cannot use a feature like screenshare.

6. Recognition rather than recall

The call has a lot of information so a user won't need to remember it. They include everyone's name who's in the call.

7. Flexibility and efficiency of use

There's no real accelerator here because we removed alternate flows to reach the additional call features. Regardless, the buttons are easily accessible. Possible hotkeys may be implemented.

8. Aesthetic and minimalist design

The redesign is fairly minimalistic as it only has the buttons at the top right which are hidden until clicked on. Additional information on what a button means will be showed upon hovering the mouse over it.

9. Help users recognize, diagnose, and recover from errors

As previously mentioned, there are not many areas where users will face an error unless the call times out or they cannot access a feature. This has not been addressed but we will consider adding constructive error messages.

10. Help and documentation

The help feature will be accessible at the top right in the toolbar under "help".

Target #2 Redesign:

1. Visibility of system status

There is appropriate feedback when the user tries to add a new contact. Upon clicking the add contact button, a new window overlay appears immediately and the user has grayed out contacts when they are viewing that person.

2. Match between system and the real world

Much of the terminology is simple and easy to understand. Furthermore the add contacts button has symbols that are universally understood.

3. User control and freedom

In the case that the user does not want to add a contact anymore, they can click anywhere outside of the overlay. When they add the new contact, a new icon will appear that signals to undo the friend request at the same place where it allowed them to add a contact.

4. Consistency and standards

The add button is at a place that is consistent to the other navigational features such as the home button. Also to reiterate, the symbol for adding a contact is easily recognizable and understandable. Users will often know what this feature is for without needing to read into it too much.

5. Error prevention

In the case that the user cannot add someone, there will be an error message stating that the user is unable to be added. However, this is not shown in the redesign

6. Recognition rather than recall

There is a feature that allows users to quickly view the profile of the person they are about to add which lessens the amount a user needs to remember and allows them to recognize who they are about to add. Also, upon typing any information relevant to a user, it will auto suggest people in a list.

7. Flexibility and efficiency of use

Instead of having to go to contacts to add a user, they have this quick add feature which should become the main way to add people. Other than this, there is no other accelerator.

8. Aesthetic and minimalist design

The design overall is minimalistic as it hides all of this information unless needed by the user. It is also aesthetic in how it resembles a user with a chat bubble.

9. Help users recognize, diagnose, and recover from errors

No error messages have been considered with this redesign yet

10. Help and documentation

There is the help feature at the top right where the toolbar is. There is no specific help documentation for the add contacts in the window overlay.

Target #3 Redesign:
1. Visibility of system status
Upon clicking account>profile there is a edit privacy settings button. All of the feedback is appropriate because it changes the page the Skype window is on and when a user clicks on edit privacy settings, the page changes to show boxes that users can check mark.

2. Match between system and the real world

The word privacy is used because it is one word that users will often look for when they think of their account security. Much of the words are colloquial. The only term a user may get confused with is custom but at the very least they know this is a special custom setting

3. User control and freedom

In the case that a user makes a mistake in this step, they can easily change their settings and even preview to make sure they chose the right setting.

4. Consistency and standards

The overall layout of this privacy settings page is consistent as there are boxes for each setting

5. Error prevention

There is very little room for error here thanks to the boxes. (no text boxes)

6. Recognition rather than recall

   All of the possible settings to change are located here which limits the amount a user needs to recall.

7. Flexibility and efficiency of use

   One way we can improve this is to create an overarching box for each particular setting so that users can massively check mark all of their settings to be public for example.

8. Aesthetic and minimalist design

   This design is not very minimalistic as it lists all of the potential settings. We need to think of a way to make it more minimalistic and gentle on the eyes as this may overwhelm users

9. Help users recognize, diagnose, and recover from errors

   Because there aren't many errors users will face in this section, there is no real need to have error messages.

10. Help and documentation

    The help feature is at the top right of the Skype window that users can refer to.

Shereen's Notes

Target #1 Redesign:
1. Visibility of system status
   - Users can easily see how long the call has been
   - When hovering the user will be told what each icon does
   - When video chatting users will easily understand that it's working because they'll be able to clearly see the other person

2. Match between system and the real world
   - When hovering the user is told with phrases what each icon does so it's easier for the user to understand

3. User control and freedom
   - If a user did not mean to call the person, the hang up button is clearly marked because it's a different color and there is a universally used icon that means hang up on it

- User is also in control of their camera, microphone, and screenshare with the easily accessible icons

4. Consistency and standards
    - Each icon has their own function that it is in charge of
    - Nothing overlaps

5. Error prevention
    - There's not really any error prevention
    - For example: when clicking screen share there will not be a pop up that asks the user if they want to continue

6. Recognition rather than recall
    - This interface utilizes commonly used icons to allow the user to understand what each does
    - Users will recognize each icon and know what function goes with it

7. Flexibility and efficiency of use
    - There's not really a way to move the user's personal screen
    - If they don't want it located in the right corner there's no way to move it around

8. Aesthetic and minimalist design
    - Clean, not cluttered
    - Good that when video chatting, the other person is the whole screen

9. Help users recognize, diagnose, and recover from errors
    - From this picture, there's no way of knowing whether or not any pop up shows when someone doesn't pick up/something went wrong

10. Help and documentation
    - For the drop down menu it labels every icon
    - Other than that, there's not really any pop ups when hovering

Target #2 Redesign:

1. Visibility of system status
    - Highlights which person you're looking at
    - Makes the ad icon on the navigation bar a different color to tell the user that they are on that section

2. Match between system and the real world
   ○ It gives instructions in words so the user knows to search using any type listed
   ○ Users aren't left wondering what to do with the screen because it tells them what to do

3. User control and freedom
   ○ Users are allowed to pick which person they want to view through the drop down menu
   ○ They have freedom to search different names if they wanted

4. Consistency and standards
   ○ The add contact icon on the navigation bar is consistent with the add contact icon when the user searches a name
   ○ The preview profile on the right will always have the same information listed even if it's not filled out

5. Error prevention
   ○ It gives you profile information so it helps users find the right person they're looking for
   ○ Can't undo sending an add request (?)

6. Recognition rather than recall
   ○ Uses symbols that people will easily recognize and understand
      i. Search magnifier glass
      ii. Add contact icon
      iii. Message icon
   ○ Clearly tells the user what the pop up is for (adding a contact)

7. Flexibility and efficiency of use
   ○ Only add one person at a time
   ○ If someone wants to add multiple people, they need to search for each person individually and add them then repeat
   ○ No filters to filter out location, what they are searching by, etc.

8. Aesthetic and minimalist design
   ○ If there are many potential contacts, the design could get messy because the user would have to scroll through so many people
   ○ Other than that it's simple and easy to use

9. Help users recognize, diagnose, and recover from errors

- Not sure if any error messages come up if Skype can't find any potential contacts

10. Help and documentation
    - It tells the user to search based on certain criteria
    - Other than that there's no pop ups or anything to tells the user what each icon means

Target #3 Redesign:
1. Visibility of system status
    - There's not really any way that this screen can show visibility of system status
    - Could add a progress bar on the profile to show the user how many sections they've filled out?

2. Match between system and the real world
    - It uses words to tell the user what to do like edit their privacy settings or preview as a certain type of person

3. User control and freedom
    - Users are able to preview the profile before they actually save so they can redo/undo anything
    - It gives the user freedom over who they want to allow to see certain aspects of their profile

4. Consistency and standards
    - The layout is consistent
    - The picture/change photo and where the username and status message is located stays the same

5. Error prevention
    - Allows users to preview what their profile would look like to prevent people they don't want to see their profile view it
    - Check boxes allows users to easily choose who they want to view it and they can easily revert anything back

6. Recognition rather than recall
    - Most people will know that to edit their profile you usually go to "account" or account settings so people will recognize that is where they go to get to their profile
    - Many people might not know right away that to change their privacy settings they need to go to their profile though

7. Flexibility and efficiency of use
    ○ Check boxes make choosing privacy settings for each category easy
    ○ Not very efficient if the person wants to set everything to public/private though
        i. They would have to click every check box in order to do that instead of clicking something that says set all to private

8. Aesthetic and minimalist design
    ○ Having all the categories/check boxes in one area like that looks a bit cluttered
        i. There are so many categories that it looks like too much at first glance

9. Help users recognize, diagnose, and recover from errors
    ○ As other numbers, the preview button helps with recognizing and recovering from errors
    ○ Users are able to look at their profile before saving to lower any chance of making information available to people they don't approve of

10. Help and documentation
    ○ Not really any help documentation
    ○ If a person wants to find how to get to their profile they have to find it themselves
    ○ Users won't know where to edit their privacy settings until they get to their profile

Victoria's Notes

Target #1 Redesign:
1. Visibility of system status
    This design provides appropriate feedback in order to keep users informed about where they are in the process of accomplishing their desired goal of accessing additional call features. In this design, the design is almost instantaneous. Once users hover over the additional features (...) icon, the video call is covered with a transparent overlay and the icons for additional features show up in a dropdown menu. Additionally, once users scroll over the icons of the additional call features, captions appear to assist users in identifying what each icon

represents. In both cases, the feedback is made to stand out in order to keep the user informed in regards to the system's status.

2. Match between system and the real world

   The design elements in this redesign focus on providing clear representations of how to access additional features and clear representations of the additional features offered by Skype. The design relied heavily on concepts that are familiar to users who have experience in other technology systems and applications. However, the design also makes up for this knowledge gap by providing accompanying captions for each icon representing an additional feature or action of a video call.

3. User control and freedom

   Users have the ability to exit out of the process of accessing additional call features by simply hovering away from the additional call feature icons. However, there is no clear indicator of this. Instead, it relies on user intuition of moving ones' cursor away from undesired states, which may be an issue.

4. Consistency and standards

   This redesign is meant to streamline a single method of accessing additional call features in order to avoid confusion of alternate flows. Additionally, this redesign was established in order to solve Skype's original issue of consistency--the system uses the "+" symbol across many different icons that accomplish different tasks. The redesign replaces the original additional call feature symbol (+) with an icon containing the symbol (...), which is a more intuitive representation of more or additional features.

5. Error prevention

   There are no messages or indicators that appear specifically for the purpose of error prevention. The redesign focuses on preventing errors by getting users to accomplish the right task the first time through. In other words, the design provides "bumpers" to ensure users know what they are doing at all times.

6. Recognition rather than recall

   The design above does not hide any levels of actions taken to access the additional call features. In other words, each action taken to access the additional features are linked visually to avoid memory load.

7. Flexibility and efficiency of use

The design is meant to support both novices and expert users. Novices find assistance from the captions that appear when they hover over icons, whereas experts can rely simply on placement and icon images when navigating through the additional call feature. The design is also more efficient because it anchors the commonly searched for feature of screen sharing to the bottom of the video call, alongside the microphone and camera mute and end call buttons.

8. Aesthetic and minimalist design

   The redesign simplifies the process of accessing additional call features and only provides relevant, non-interrupting dialogues to assist users in identifying the purpose of specific icons.

9. Help users recognize, diagnose, and recover from errors

   The process of accessing additional call features does not require error messages because no specific feature is being activated in this redesign.

10. Help and documentation

    The only help provided for accessing additional call features are the captions that appear when users are navigating through icons.

Target #2 Redesign:
1. Visibility of system status

   The design presented keeps users informed about where they are in the process of adding new contacts. The design does not hide away previous states. Instead, the design provides overlays that extend from the icon that activates them to ensure users are able to instantly note where they are in the present state compared to previous states.

2. Match between system and the real world

   The design utilizes icons and wording familiar to the user and ensures there is no inconsistent use of specific icons or wording that may confuse users. The design also ensures that each new window or overlay activated is clearly labeled with titles and prompt captions that use real-world terms so users are aware of what they are doing.

3. User control and freedom

   In the process of adding a new contact, users are only interacting with one overlay window, so undoing any of the actions requires simply exiting out of the overlay window via the button in the upper right corner of the overlay. Additionally, after a user has clicked the add contact button, the icon will almost instantaneously be replaced with a icon and button that

holds the functionality of cancelling the sent request. From here, users may undo their action of adding a contact by simply clicking the cancel request button.

4. Consistency and standards

   This design gets rid of any ambiguous icons that users may mistaken for other functionalities. In this case, the redesign removed the icon corresponding to the functionality of starting a new and empty conversation because its icon was simply the "+" symbol, which is commonly mistaken as a representation for adding contacts. As a result, the redesign focuses on providing a button for adding contacts that uses images and symbols that are familiar to users when it comes to adding friends or contacts.

5. Error prevention

   Users may simply and easily navigate away from the window in the event that they have found that they have navigated to an overlay they do not want. After users have identified the individual they would like to add, users are also asked to input a request message before finalizing their add request. This provides a level of error prevention, because users are presented with an additional layer before finally completing the action. The user also has the ability to cancel the add request after it is sent because the button icon and functionality changes to enable cancellation.

6. Recognition rather than recall

   Users are not required to memorize any information because the design utilizes overlays as opposed to new windows, titles, and action prompts to ensure users are able to trace where they are and what they need to do while navigating through the process of adding contacts.

7. Flexibility and efficiency of use

   Other than the prompt caption provided in the Add New Contact overlay window, there is not much assistance when navigating through the process of adding a new contact. Instead, the design relies on the assumption that users are familiar with icons that represent the functionality of adding a contact or a friend.

8. Aesthetic and minimalist design

   The design avoids providing excessive dialogues and irrelevant information to keep the process of adding a new contact short and concise.

9. Help users recognize, diagnose, and recover from errors

If users have typed name, Skype name, email, or phone number that does not correspond to a Skype user, the search result will simply indicate "No Results Found," but it does not offer a solution because it assumes users will know to return to the search bar.

10. Help and documentation

The only instances of help in this process of adding a new contact are the caption prompt above the search bar, indicating "Search by name, Skype username, email, or phone number" and the instructions for sending a request message when adding a new contact.

Target #3 Redesign:
1. Visibility of system status

When users make changes to their profile privacy settings, check marks appear indicating their preferred selection.

2. Match between system and the real world

The design uses commonly understood terms to assist users in navigating through their privacy settings.

3. User control and freedom

The design provides users with an easy way to see what action has taken place (the checkmark indicators) and allows users to undo their selection, simply by clicking on the checkbox once again. The design also allows for custom privacy settings so that users may adjust privacy according to specific contacts.

4. Consistency and standards

Skype's original format had privacy toggle below the profile picture on users' profiles. In the original design, users would access the toggle hoping it would make their profile private; however, it only made their profile private. The redesign ensures clear indicators of privacy settings for profile item.

Checkboxes are probably not the ideal method for selecting privacy settings because they indicate the potential for multiple selections.

5. Error prevention

After adjusting their privacy settings, users have the ability to see their profile from different points of view, such as specific contacts or the

public. The design also requires users to confirm and save their settings by clicking the "Save Changes" button in the upper left part of the screen.

6. Recognition rather than recall

The design has two methods for accessing the user profile--using the toolbar or clicking on their personal name and image located on the homepage above the contacts list. The design requires users to understand what the toolbar item "Account" encapsulates or familiarity regarding profile access via the user's information on the Skype homepage.

7. Flexibility and efficiency of use

There are no real accelerators for the process of accessing the user profile.

The edit profile privacy settings button is located in the upper right corner of the page to make it easily visible.

Once editing profile privacy settings is activated, users can quickly and easily use a checkbox format to make the process quick and easy.

8. Aesthetic and minimalist design

There is no irrelevant information provided to ensure users do not get distracted or become overloaded while editing their profile settings.

9. Help users recognize, diagnose, and recover from errors

This design does not call for any error messages.

10. Help and documentation

There is no help and documentation provided for this design.

Kenzo's Notes

Target #1 Redesign:
1. Visibility of system status
   ● The user is always aware that the call is going on from the video screen that is present when they are talking to their conversation partner since the video provides live feed of their partner.
   ● The screen has a call duration timer at the top left of the screen which indicates how long the call has been going on for.

2. Match between system and the real world
   - The system uses the widely used labels "Contacts", "Recent"
   - Icons such as the home button, microphone and end call buttons which are all present across many other similar applications.

3. User control and freedom
   - All of the in-call buttons commit actions that are unable to be undone except for screen sharing. However it is probably better to do it this way since users are aware of the actions they commit and typically don't need to undo the function. The user can call their partner again to get to all the options and the original state of the interface.

4. Consistency and standards
   - Words and icons have consistent meanings in the app and when applied outside of the app

5. Error prevention
   - There were no error promoting elements in the interface in the first place and our redesign does not either.

6. Recognition rather than recall
   - All of the icons used in the interface are widely used across other similar actions so users will be able to recognize them and select the correct ones. All buttons are also readily available on the interface without having to do much navigation.

7. Flexibility and efficiency of use
   - Accelerators are not present in this interface.

8. Aesthetic and minimalist design
   - The interface only contains relevant information and keeps a simplistic, minimalist design since the idea in this window is for users to focus on the video of each other or their screenshare when they turn the function on.

9. Help users recognize, diagnose, and recover from errors
   - There are no error messages present in this redesign.
   - If the user selects an icon without meaning to, they can restart the video call

10. Help and documentation

● Users can go to the Help section in the toolbar for assistance.

Target #2 Redesign:
1. Visibility of system status
   ● The user is aware that they are able to add a new contact because the Add New Contact window pops up

2. Match between system and the real world
   ● The interface uses common icons such as the speech bubble for sending a message and a person icon with a plus to add as a contact.

3. User control and freedom
   ● The user is able to get out of this interface by clicking the "X" at the top left corner.

4. Consistency and standards
   ● Words and icons have consistent meanings within the app and when applied outside of the app

5. Error prevention
   ● The old "+" symbol on the old interface caused a lot of confusion and errors. Replacing the symbol with an add contact button instead solved the problem.

6. Recognition rather than recall
   ● Users are able to recognize common icons and buttons because they have seen them somewhere before

7. Flexibility and efficiency of use
   ● Users can add a new contact by navigating through the toolbar instead of pressing the add contact button.

8. Aesthetic and minimalist design
   ● Only necessary information is present in this interface. The design has very little clutter and only asks for necessary information to find the contact.

9. Help users recognize, diagnose, and recover from errors
   ● Users can exit out of this interface any time if they would like, by pressing the "X" button in the top right.

10. Help and documentation
    ● Users can go to the Help section in the toolbar for assistance.

Target #3 Redesign:
1. Visibility of system status
    ● The user is aware that they are editing their profile because there are many associated options the user can choose from once they get to the edit privacy settings interface.

2. Match between system and the real world
    ● The system uses button designs, check boxes and blue text similar across other applications.

3. User control and freedom
    ● The user is able to preview their changes at different settings and is also able to exit out by clicking on "Save Changes" whenever they like.

4. Consistency and standards
    ● Words and icons are consistent throughout the interface.

5. Error prevention
    ● There were no error promoting elements in the interface in the original design and our redesign does not.

6. Recognition rather than recall
    ● Users can recognize they can edit things by seeing the checkboxes and blue text which is consistent across other software interfaces.

7. Flexibility and efficiency of use
    ● Users can get to this menu by navigating through the toolbar. However there are no other alternative ways of getting here.

8. Aesthetic and minimalist design

   The design contains only what is necessary and reduces any clutter. The neatly organized settings list also makes it easier to navigate and edit through.

9. Help users recognize, diagnose, and recover from errors

- Users are not as easily able to recover from errors. The interface should include a "Cancel" button on top of the "Save Changes" button

10. Help and documentation
- Users can go to the Help section in the toolbar for assistance.