

# "It Screamed At Me": Prototyping an Accessible SSL Warning Design

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## ABSTRACT

Low-vision individuals who do not use screen readers have issues interpreting and properly responding to SSL warnings. Through a pilot study, we identified the size of the text, the lack of metaphors, the page url, and individuals glazing over the text of the warnings as issues with the SSL warnings. To address the issues we use a browser extension to modify the design of the SSL warning without changing the functionality. The extension increased default size, replaced the error code with an extended existing visual metaphor, and added a contextual audio message. The results indicate that nearly all individuals regardless of their treatment decided to proceed with the task, and that the multi-modal approach with the audio possibly played a confounding role in the study. (Project code can be found here:

Chrome Extension: <https://github.com/stevencui729/Accessibility-team>

Mock Site Used for Study: <https://github.com/stevencui729/Accessibility-team-mock-site>)

## ACM Reference Format:

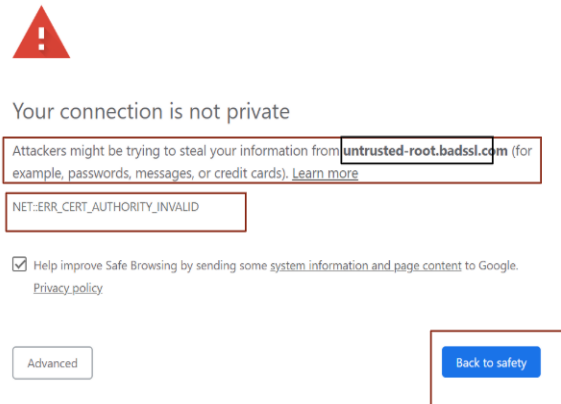
Steven Cui, AK Alilonu, Celine Kim, Christine Yan, Minyu Li, and Andrew Friedman. 2019. "It Screamed At Me": Prototyping an Accessible SSL Warning Design. In *Proceedings of Spring (Usable Security and Privacy)*. ACM, New York, NY, USA, 9 pages. <https://doi.org/10.1145/nnnnnnnn.nnnnnnn>

## 1 INTRODUCTION

SSL and TLS warnings are the warnings that appear on one's screen when there is something wrong with the certificate of the site the person is visiting. These warnings are widely seen as confusing for users, yet for low-vision individuals who use and don't use screen readers the warnings can be difficult and frustrating to decipher. Without being able to properly understand the warnings low-vision individuals are open to having their data and password stolen by hackers

through man-in-the-middle attacks. Our target population is low-vision individuals that choose not to use a screen-reader due to the difficulties in their usage. While not the focus of the paper, we still identify some possible issues and burdens with the screen reader in regards to SSL warnings to both understand the population, and those that choose to use screen readers. In the paper, we seek to identify the issues with the warnings for low-vision individuals, and develop better warnings to address said issues. Through an initial pilot study we found that the small text, lack of metaphors, and unclear language caused the issues for low-vision individuals. With our pilot study, we hoped to answer the question, can we identify some issues that users with low-vision face in regards to understanding SSL warnings? Using the issues identified in the screen reader and the pilot study we designed a new multi-modal warning implemented through a chrome extension. The new extension developed by our team (called ChangeWarning for purposes of this study) worked to implement these design changes to SSL warnings that was focused less on text and more on graphics and audio. With the extension, we hope to answer the question, Can we improve SSL warning designs for users with low vision by incorporating graphics, audio, and increasing the default size of important text and buttons? We hypothesized that the use of multi-modal warning that incorporates our design changes would make it easier for individuals with low vision to retain information from the warnings and make better-informed choices.

In future sections, we describe our modifications to the warning and how the modifications impacted the responses to the warning pages. We used a between-subjects design to test the impact of the changes on a group of 10 individuals from the University of Chicago. The individuals were randomly assigned to a treatment group, receiving a blurred browser or non-blurred browser. Then within those two groups, half of individuals were assigned to use the standard chrome warning or other half were assigned to use the modified warning.



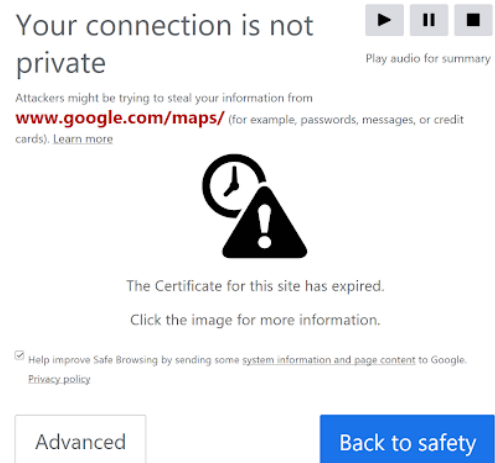
**Figure 1: The problem areas are highlighted in red squares. The main focuses points decided after the pilot study were the text, url, error code and the two bottom buttons.**

The results of the study showed that regardless of the control group most individuals choose to go back to safety, although the audio aspect did have a high level of recall among the participants. The high level of recalls suggests that there should be additional research into multimodal warnings for low-vision populations to produce more conclusive results.

## 2 RELATED WORKS

### 2.1 Lack of accessibility for people of low vision

In the intersecting area of usable security and accessibility, there is a wide breadth of existing issues to tackle. Currently, many best practices in presenting usable security context information presume visual display.[10] In fact, users with visual disabilities have been shown to be at higher risk for phishing attacks, as detection of such attacks often requires users to heed to visual indicators.[8] Due to this reliance on visual communication, those with vision problems who need to use tools such as screen readers and screen magnifiers are placed at a disadvantage when it comes to security. In fact, current research in the field has found even mundane tasks can both take a long time and appear confusing to those with visual impairments.[5] Current accessibility tools for assisting those with visual impairments have proven clumsy and ineffective. Screen readers are shown to be both slow and sometimes completely ineffective on modern websites due to placement of various graphics and ads that screen readers do not know how to handle. In addition, designing page layout

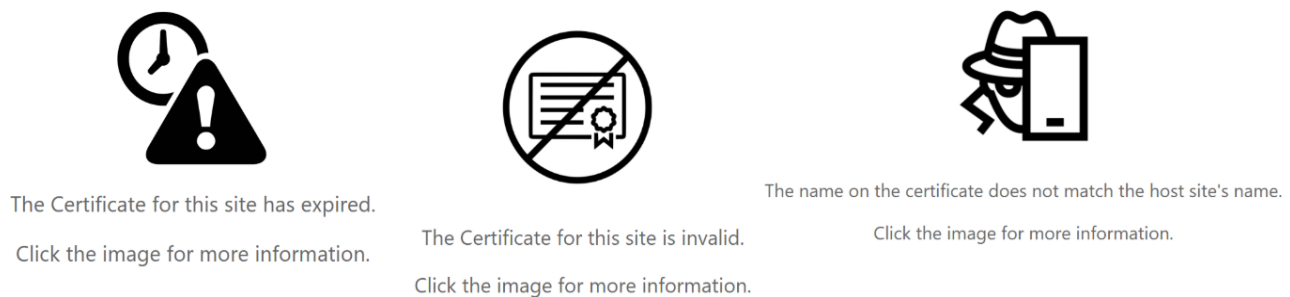


**Figure 2: An example of the warning under our browser extension.**

for accessibility is often not a consideration of webmasters and designers. [5][4][2] Oftentimes, it is even impossible for webmasters and designers to guarantee accessibility, as much of the content on the page may not be created by them.[7] Another issue with screen readers is that they are often tied to a specific platform, such as the OS. For example, the popular screen reader software JAWS is only available on Windows.[3] Because of this, a more general solution would be extremely helpful for many visually impaired. The difficulties of screen readers highlights many reasons why low vision people who have the option, may choose not to use screen readers. Therefore, we see benefit in creating a study targeting the large older demographic who suffer from low vision, but choose not to use screen readers. Though the target audience of our study is people of low vision who are not at the level of impairment absolutely needing screen readers, we understand the potential benefits of expanding the study to a multi-modal design that could alleviate the burdens of both low vision people who either use or not use screen readers.

### 2.2 Design changes to increase accessibility of warnings

Current usable security research has explored how to assist users in behaving in a security- and privacy-aware manner to avoid online threats; yet, most usable security research has focused on users with average sight abilities. "Habituation" refers to the issue of users ignoring or dismissing warning messages, and is cited to be one of the leading causes of users' failure to comply with security indicators. The problem of habituation is even more important for the visually impaired, since some might ignore warning messages simply because



**Figure 3: The following images were chosen to replace the error code as a visual metaphor.**

the font is too small or the message box blends with the background of the browser.[6] Taking account of habituation, we had a special focus on increasing default sizes and using greater color changes in font to improve saliency.

Previous research done in designing for the visually impaired. Common visual impairments can include: color blindness, tunnel vision, blurred vision, and blindness, all of which can affect the usability of core features including security features. In order to make more features accessible and usable for people with such visual impairments, we can consider the following: enlarging the text size, customizing color contrasts, using screen readers (blindness), subtitles or captions on videos, and alternate image text to describe images.[1] There have also been design suggestions in this field geared toward those with vision impairments, which include improving accessibility to important areas, providing confirmation and status messages, and developing functionality in accessibility tools for directly identifying important areas.[5] We took these into account when designing our new SSL error, and chose to incorporate elements such as enlarging the text size and providing default audio paired with the visual elements of the SSL error page.

There has also been work done in the field of designing effective privacy notices. In particular, delivering privacy notices through secondary modalities such as audio and haptic, as well as the channel through which warning messages are delivered can have great impact on the accessibility of such warnings.[9]As mentioned earlier, our study expands on current method of web accessibility by incorporating multi-modal methods increase the usability of SSL warning to low vision people.

### 3 PILOT STUDY

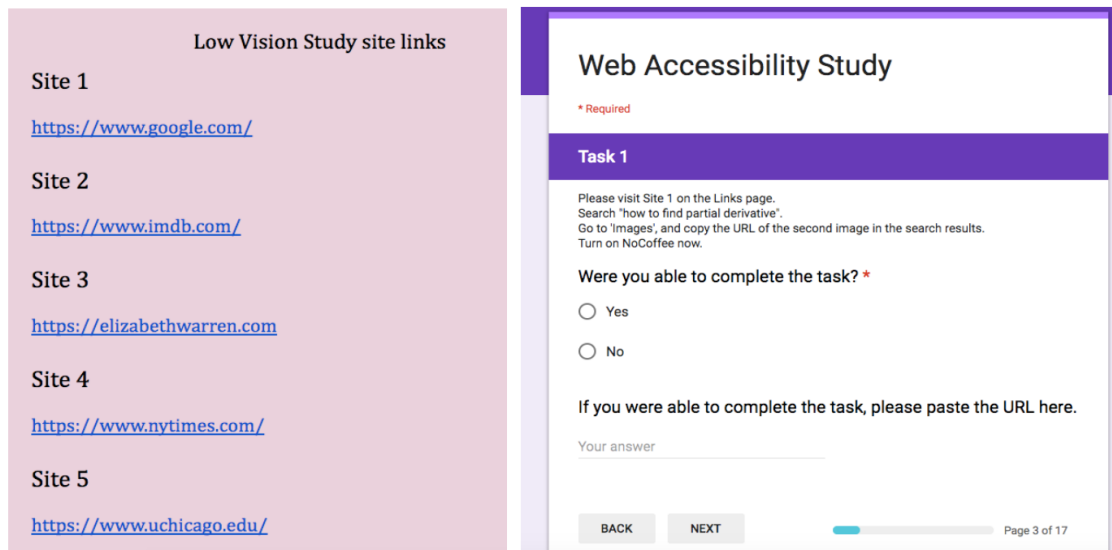
Before our initial study, we conducted a short pilot study. We iteratively built upon the design of our study with the results from our pilot study.

#### 3.1 Methodology

Our initial pilot study was the launching basis for our larger study. We recruited two people through know acquaintances to participate in our study. They were volunteers and knowingly participated in the study without compensation. Each participant will be deceived into believing that we are studying the usability of certain websites for people with low vision. Before beginning the test, we simulated low vision through a browser extension called NoCoffee, which blurs the browser window when turned on. The study was done on the same laptop. They were directed to a site of 5 links which they had to evaluate with the filter on. There were links to Google Forms at the end of each link for the participants to fill after going to the site. The five links used in the pilot study were to Symantec, Kaspersky, 360 Total Security, Norton, McAfee. The link to Norton contained the SSL warning. The link the Google forms for each link are presented under the link.

#### 3.2 Results and Conclusions

From this short study we were able to gain some valuable insights about the design of SSL warnings. Some key take-aways were that the participants were glazing over the text description of the warning, the URL of the problem site, and they were unable to easily discern text inside the buttons until they zoomed in 250%-300%. Also, they could not identify the error code because it was not a familiar word or phase and therefore harder to decipher when blurred.



**Figure 4: On the left is the links page that contains links to different websites that participant is expected to explore according to the instructions shown on the right. There are a total of 8 links and the task per link are not important for the study. They only provide the illusion of a different study for out deceptive phase.**

## 4 METHODOLOGY

### 4.1 Low Vision Extension

For our study, we implemented all our desired design changes into a browser extension, which we call ChangeWarning for the purposes of this study. The new warning has the same functionality as the old warning, meaning, the bottom buttons and clicking on the error code area will have the same functionality. However we made three notable changes reflective of our pilot study and related works. The problem areas we decided to focus on is shown in Figure 1. The new warning under our browser extension is shown in Figure 2.

Firstly, the new warning had increased default size for the font, images, and buttons. This was mainly done for the people with low vision who did not use the zoom in feature at all, or as much as we would like for the purposes of this study. In addition, we did not believe that have large font size and button size would be a con to low vision readers, so we decided to introduce larger elements that was of standard largeness for each warning. As mentioned earlier, users had to zoom in around 250% - 300% to increase the button size significantly, therefore the buttons are already around 300% on the new warning at a default. All design changes are still responsive to the zoom-in settings of the user, and can still increase or decrease in size according the user's preferences. In addition, we believed the URL displayed in the text description was vital information, so we made the text of the URL big, red and bold. In the older warning, the URL is only bold.

Secondly, we replaced the error code with an extended existing visual metaphor as shown in Figure 3. In the previous warning, the cursor does not change into a pointer to indicate that the error code region is clickable. There is also no indication that the click will provide more information. Because the results of the pilot study suggested that an unfamiliar string of words were hard to identify when blurred. We hoped a more graphic approach would clarify the error, and make it more accessible to low-vision users who want to be informed about the error. The sentence below states that the error code region is clickable and quickly describes the issue with the server's certificate.

Lastly, we included an audio system with a play, pause and rest button in the upper right corner of the warning. As seen in Figure 2 there are three grey buttons with the typical play, pause, and reset logo. Upon displaying the warning, the audio would read "The site is not secure." It would then read the second sentence of the error code region, which is the reason for the certificate error. The audio would end with "Click the blue button to return to safety." An example of a full quote is "The site is not secure and The Certificate for this site has expired. Click the blue button to return to safety". The audio was specific to each warning, and provided the multi-modal aspect of our design.

### 4.2 Participant recruitment

From May 29th to June 3rd 2019, we recruited 10 participants by posting on three different University of Chicago class

Facebook pages. In the Facebook post we specified that the participant does not need to be low vision to participate, the length of the study is 30 minutes and the compensation is \$6 per participant. We conducted all study sessions face-to-face. In summary, eight females and two males with an estimated age range of 18-21 volunteered to participate in the study, all of them are University of Chicago undergraduate students.

### 4.3 Procedure

Upon arriving at the room we booked for the study session, the participants are asked to sign a consent form in which they agree for us to collect and analyze the data for research purposes. After they sign the consent form an email that contains the survey link and the link to the links page is sent to the email address they provided when they signed up for the study. The survey will have mundane tasks and the site that participants need to complete the task. As shown in Figure 5, the participants must refer to the links page to obtain the actual links to the site. They all used their own laptops, and were instructed to leave the volume on. Depending on which group the participant is assigned to the links they receive will be different and the instructions on how to complete the task are different as well. For example, the participants who are assigned to Blur group are asked to install NoCoffee extension to simulate the blurry effect experienced by low vision users when browsing the internet while the participants who are assigned to NoBlur group are not. In addition, half the participants were also given the ChangeWarning extension. The participants were essentially randomly split into four similar-sized groups, No blur with extension, No blur without extension, blur with extension, and blur without extension. The sixth link in the "Low Vision Study site links" contained the SSL warning. Upon clicking, participants were either directed to the normal SSL warning, or the SSL warning under our extension. Rather than using only one type of SSL warning, we decided to expand on the generalizability and used the three errors regarding an expired certificate, an untrusted root, and a mismatch between the host name and the certificate signed name. All ten participants received an error on the 6th link, and the error they received was random.

### 4.4 Deceptive Phase

Participants will not be told initially that they are a part of a study on usability of SSL errors. Instead, they will be told that they are a part of study about evaluating the accessibility of general websites for low vision people. It is not until the debriefing after they finish the survey that we tell them the study was actually about evaluating the accessibility of SSL errors for conveying information to users with low

vision. We try to make sure that no harm is caused throughout the deceptive phase by explaining to the participants the true purpose of the study immediately afterwards. Also, we consider this study involves no more than minimal risk to participants because the tasks they are asked to do are simple web browsing tasks, under simulated disability. The simulated disability does not persist past the lab session. It would be impracticable to carry out the research without the use of incomplete disclosure because participants may be subject to desirability bias if they know that the study is about accessibility usability of security aspects such as SSL errors.

### 4.5 Closing Interview

After we debrief our participants by informing them of our research goals and the purpose of the study, we then proceed to a semi-structured interview where we ask them more questions regarding their impression of the design of the study and how they think we should improve our study and the design of the SSL warning itself. The questions on which we report are:

- *Choice question:* How did you respond when you saw this warning after you clicked the link to Google Maps? Did you choose to "Proceed" or "Back to safety"?
- *Seen-warning question:* Have you seen warnings like the one shown when you tried to visit the Google Maps link before? What do you think they mean?
- *Memory question:* What did the warning look like? Can you describe any icon/audio element you saw in the warning?
- *How-to-improve question:* How do you think the warning could be better?

## 5 RESULTS

The study ended up with a sample of 10 University of Chicago undergraduates, two men and eight women. Five of them were students we knew personally. After splitting subjects up into treatment groups based off of random assignment, we arrived at an equitable distribution into groups.

From looking at responses on the form, the number of participants who were able to complete each task correctly was slightly lower when looking at subjects who completed the tasks with blurred vision, compared to those whose vision was not blurred (see Table 2).

The row in gray represents the task where we had subjects attempt to visit Google Maps, then blocked them with an SSL warning. When asked about their prior experience with SSL warnings, subjects appeared to have a general sense that they were meant to communicate something negative about the website that the warning was blocking them from. While no participant mentioned web certificates and their relationship

extension	no extension	
2	3	blurred
3	2	not blurred

**Table 1: The table report the people who had extension with a blurred screen, without blurred, and the same for people without an extension.**

with SSL warnings, their intuition about what the warnings were trying to communicate was largely correct. Subjects said that the websites they were being warned about were “insecure” or otherwise “unsafe”, that they could put viruses onto their devices, or that online adversaries (“hackers”) could use these websites to get their data.

One incorrect guess came from subject E10, who suggested that SSL warnings were related to the Internet connection on her device. This misconception calls into question these warnings’ use of the term ‘connection’, which could reasonably be mistaken for a far more common type of connection that Internet users interact with far more often than they do with SSL warnings. When they reached task 6 and encountered the SSL warning, eight subjects evaded the warning, opting instead to find [www.google.com/maps](http://www.google.com/maps) themselves and complete the task, as four subjects did, or abandon the task altogether, as another four subjects did (see Table 4).

Two subjects clicked on the ‘Advanced’ button and proceeded past the warning, M5 and Y7. M5 explained that she regularly pirates movies, implying that she was familiar with these kinds of warnings and was unfazed by them. Y7 justified his behavior by claiming that he read the URL before he chose to proceed (see Table 4).

No subject recalled seeing the error code on Google Chrome’s SSL warning (see Table 5). Some subjects remembered the icon they saw on the warning, and four of the five users who were exposed to our extension recalled hearing the audio warning, although they did not always recount positive experiences with it. Most notably, when asked about the warning, subject N9 said, “It screamed at me!”

As far as what a better SSL warning would look like, the most common suggestions were that the warnings should contain for information: either a clearer explanation of the certificate system or a statistic on how likely it is that a website is dangerous given that something is wrong with its certificate. Subjects also stated that SSL warnings should grab their attention in a way that better signals the potential danger (see Table 7).

task	no blur	blur
1	3	2
2	4	2
3	5	4
4	3	5
5	5	5
<b>6</b>	<b>3</b>	<b>2</b>
7	5	5
8	5	1

**Table 2: The table reports participants who were able to complete task at each task with or without the blurred screen. The task with the error is highlighted in grey.**

## 6 LIMITATIONS

Now we will discuss the potential implications of the pilot study we conducted, as well as possibilities for future iterations of this study. However, while doing so, we must keep in mind the possible limitations that occurred within our study.

### 6.1 Recruitment pool

For this study, we recruited through snowball sampling and social media, posting on University of Chicago Facebook class pages. As such, our recruitment pool of 10 University Chicago undergraduate students is not at all reflective of the target demographic of our extension, older users with low vision who may not use screen readers due to their difficulty [2]. Thus our results are not generalizable to that demographic, and ideally any future iterations would focus on older users.

### 6.2 NoCoffee

Participants without low vision issues assigned to the blurred vision category were instructed to install NoCoffee, a Google extension that blurs the screen. NoCoffee does not blur the browser itself, only the screen within it, and as such the URL

	Completed task			Total	Did not complete task			Total	Total
Left URL	extension	no extension			extension	no extension			
	0	1	blurred		0	1	blurred		2
	2	1	not blurred		2	1	not blurred		6
Total	2	2		4	2	2		4	8
Proceeded past warning	extension	no extension			extension	no extension			
	0	1	blurred		0	0	blurred		1
	1	0	not blurred		0	0	not blurred		1
Total	1	1		2	0	0		0	2
Total	3	3		6	2	2		4	10

**Table 3: The table represents an overall summary of our data. The two groups are those who left the URL or proceeded past the warning. Of those two groups, the table reports if the participants completed or did not complete their task and their specific factors(blur, no blur, extension, no extension) of the study.**

	Completed task	Did not complete task	Total
Left URL	4	4	8
Proceeded past warning	2	0	2
Total	6	4	10

**Table 4: A divided portion of Table 3, this table reports the overall completion of task 6 (the one with a warning) after having left the URL or proceeding past the warning.**

	Error code	Audio	Icon	Total
Extension, blurred	--	2	0	2
No extension, blurred	0	--	2	2
Extension, not blurred	--	2	1	3
No extension, not blurred	0	--	0	0
Total	0	4	3	7

**Table 5: This table show the number of participants who noticed specific aspects of the warning under blur, no blur, with and without extension.**



	More explanation		Total	More attention-grabbing design		Total	Total
	extension	no extension		extension	no extension		
blurred	1	2		1	1		5
not blurred	1	0		1	0		2
Total	2	2	4	2	1	3	7

**Table 6: The table displays the feedback that participants from each group have for the SSL warnings. The main feedback opinions are split between “More attention grabbing” and “More explanation”.**

More explanation	More attention-grabbing design	Total
4	3	7

**Table 7: This table is a simplified version of the results of the feedback, giving and overall outlook on how the group was divided between the two opinions for future change.**

was not blurred for these participants. Additionally, we do not know how users with low vision issues might behave differently from users with a screen-blurring extension.

### 6.3 User Laptop vs. Central Study Laptop

Participants brought in their own laptops for the study, as we wanted to maintain as much ecological validity as possible. Particularly, we wanted to eliminate the possible confound of participants believing that “nothing bad will happen” while using researchers’ computers. One participant’s laptop was in Spanish (L5), and we did not take multilingual settings into consideration. Additionally, participants all had different volume levels set, and as such heard the audio recording at different volumes, since we had only instructed them to turn the sound on.

Due to our small sample size, we cannot make any claims of

statistical significance. However, one takeaway from our results: many participants who received our extension reported the unexpected nature of the audio, as well as the warning itself. Further investigation of the use of multi-modal warnings could be conducted. Crucially, though, prior to continuing research into multi-modal warnings, our experiment would need to be reproduced with participants from our target demographic in order to collect more information on how older users with low vision perceive and interact with SSL errors.

## 7 DISCUSSION/CONCLUSION

In our study, we found that while participants with the extension recalled hearing the audio, in general participants remembered little else about the SSL warnings they saw. Some participants found the audio to be startling or unexpected, which could have been due to the varying laptop volumes. It could be that the startling effect of the audio was a confound and influenced participants’ behavior upon encountering the error; however, further investigation would need to be conducted, with standardized volume levels.

More broadly, the unexpected nature of multi-modal warnings could be used to prompt users to proceed with caution in situations that users should be particularly wary (such as an untrusted host warning). But multi-modal warnings come with trade-offs for security that would need to be investigated as well, for both for users with low vision and those without. In particular, we focus on habituation and privacy concerns.



There is a possibility that users, once exposed to multi-modal warnings, will then become habituated to the level of urgency conveyed by perhaps an audio recording. Then, when encountering warnings without a secondary mode of communication, users may be less likely to take those warnings as seriously. Additionally, there may be the issue of users become habituated to multi-modal warnings as a whole, eventually tuning out recordings entirely. As such, future research might focus on minimizing such habituation issues, perhaps through varying modes of warnings.

Another concern specific to warnings with an audio mode is the necessity of having the sound on one's computer on in order for that function. This presents a host of issues, including the possibility of other users in the vicinity overhearing, or simply disruption within a public space. The usability of these audio warnings, particularly for users with low vision, should be tested. Additionally, alternative modes might be explored, such as potentially a warning that sends a notification to one's cell phone, causing it to vibrate.

For older users with low vision, who may not need or want to use a screen reader, multi-modal warnings may provide an effective strategy for conveying additional information in SSL notices. Additionally, moving forward, multi-modal notices could be utilized to better communicate other aspects of browser security to users low-vision. Possibilities include notifications for insecure connection (currently indicated by a lock icon in the URL bar). Due to our limited recruitment pool, we cannot conclusively make the claim that multi-modal notices will increase security for users with low vision, but we hope that the results and suggestions for future research we have presented here provides a step in that direction.

## 7.1 Contributions

Responsibilities were split equally among each member throughout the project. This allowed for balanced work flow and consistent, parallel progress across different aspects of the project.

## 7.2 Github Links

Chrome Extension: <https://github.com/stevencui729/Accessibility-team>

Mock Site Used for Study: <https://github.com/stevencui729/Accessibility-team-mock-site>

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# **Appendix**

## Usable Security and Privacy, Spring 2019

Please fill out and submit the following document to the course staff as a docx / doc / odt file. If a question does not apply, please write “not applicable.” If you are attaching a document in response to a specific question, write the file name of the relevant document as the response to the question that requests it. Please submit all documents as a single archive (zip, tar, etc.) by email to Blase and to your assigned TA.

### 1) Study title

A study on the Usability of SSL Errors for the Low-Vision Population

### 2) Names of investigators (i.e., students in your group)

Steven Cui, Minyu Li, Andrew Friedman, Celine Kim, AK Alilonu, Christine Yan

### 3) Study location. Explain where the research activities will take place (including recruitment, data collection, and/or data analysis.)

Both collection and analysis will take place in UChicago Campus (John Crerar Library)

### 4) Will any of your research procedures occur outside the United States?

☐ Yes

☒ No

### 5) Provide a brief, non-technical description of the purpose of the research, including the research question(s) you hope to answer.

The purpose of our research is to determine whether or not users with low vision struggle with SSL errors, and identify issues that make the experience more difficult for them. We would like to see if we can use this information to improve their experience. The question we hope to answer is: Can we identify and improve issues that users with low-vision experience in regard to SSL errors?

### 6) Which research procedures does this study involve? (Check all that apply)

☒ Surveys / Questionnaires

☒ Interviews / Focus groups

☐ Observational / Ethnographic research

☐ Secondary data analysis (analysis of data that already exists)

☐ Audio or video recording or photographs

☒ Deception / incomplete disclosure of research purpose or procedures

☐ Other

### 7) In non-technical language, describe the procedures subjects will be asked to complete or undergo. Explain step by step what subjects will be asked to do. If your study includes multiple variations of the procedures, please make clear the procedures included in the variations.

Subjects will be asked to perform a number of web browsing tasks, and at one point during the web browsing tasks, subjects will encounter an SSL error. Subjects in the control group will be asked to perform these tasks normally in the Chrome web browser, while subjects in the experiment group will be asked to perform these tasks while having their screen modified to emulate the effects of low vision. In later iterations of our study we hope to develop a possible solution to ameliorate the effects of low vision on SSL error encounters, and we will ask subjects to perform the same tasks with our solution to determine our solution's effectiveness.

*-----Participants and Recruitment-----*

**8) Approximately how many participants do you anticipate enrolling in this study (at all research locations / sites)?**

5-10 people per iteration of our study. We are hoping to iterate at least 2-3 rounds.

**9) Describe the criteria for enrollment -- will you be limiting your enrollment to a certain age range, gender, people with certain health conditions, etc.? Please also describe any factors that will exclude people from enrollment.**

We are recruiting people over 18 in the Hyde Park area, more specifically, on UChicago's campus. This group may mainly consist of students.

**10) Vulnerable populations -- check the boxes for ALL vulnerable populations from which you may enroll participants:**

- ☐ Childen
- ☐ Wards of the state
- ☐ Prisoners / detainees
- ☐ Adults not competent to consent
- ☒ Employees or students of the University of Chicago
- ☐ Non-English speakers
- ☐ Other vulnerable populations

**11) Who will be recruiting individuals for participation in this research project? Explain whether it will only be members of the University of Chicago research team, collaborating researchers at other institutions, or others (e.g., a survey firm hired by the research team) who will be doing the recruitment activities.**

Only members of the University of Chicago research team will be recruiting individuals for participation in this research project.

**12) Please check off all methods of recruitment that will be used:**

- ☒ Directly approaching participants (in-person recruitment)
- ☒ Email / listserv / electronic mailing list
- ☒ Flyers / posters or brochures
- ☐ Letters sent to potential participants
- ☐ Radio / television / video announcements
- ☐ Newspaper / magazine advertisements
- ☒ Website / social media posting such as Craigslist, Facebook, UChicago Marketplace, etc.
- ☐ Telephone scripts
- ☐ Amazon Mechanical Turk
- ☐ SONA system
- ☒ Snowball sampling
- ☐ Other

**13) Provide details on your recruitment methods, including names of any publications / websites in which you will post recruitment information.**

We will recruit on campus by posting flyers and posting on campus Facebook pages. We will also try to recruit through email listhosts if we find suitable ones to recruit from.

**14) Attach all recruitment script, flyers, social media postings, and other materials you plan to**

**use for recruitment purposes.**

**Flyer:** IRB-SBS Flyer Template.docx

**15) Will your study offer any compensation / incentive to research participants (including cash, gift cards, course credit, buying the participant a meal, etc.)**

We will offer participants compensation in the form of cash. We will be paying the minimum wage.

*----Risks-----*

**16) Describe the foreseeable risks associated with your study. Please include discussion of any non-physical risks, such as economic, psychological, social, and legal harms.**

Any foreseeable risks is that the participants may worry the warning is real and damaging a computer that is not their own, but everything will be debriefed shortly after the test to alleviate their worries. We believe there will be no other risks in this study.

**17) Describe the steps you will take to minimize risks to your participants (for example, using pseudonyms or a coding system, etc.)**

All our data will be secured and protected as described in the Data Collection and Protection section below. In addition, all deception about the warnings during the test will be explained immediately afterwards.

**18) If applicable to your study, what steps will you take if a participant becomes distressed during your study or reports intent to harm themselves or others?**

If we see any participants in great distress during the study, we will stop the study, and they are also allowed to opt out at any given moment. Any warning signs of harm or an unforeseen trigger reaction, we will notify emergency services.

*----Data Collection and Protection-----*

**19) In what format will the research data be collected and stored?**

- ☐ Paper
- ☒ Electronic
- ☐ Audiovisual / recording media
- ☐ Stored biological specimens
- ☐ Artifacts
- ☐ Other

**20) Explain where the research data will be stored while the study is active (e.g., UChicago Box, personal laptop, thumb drive, departmental computer server, office file cabinet, etc.)**

The research data will be stored on our personal laptops as well as UChicago GDrive.

**21) What security measures will be in place for each type of data to minimize the possibility of a data breach (password protection, encryption, locked file cabinet in a locked office, behind a firewall, etc.)**

Our UChicago GDrive accounts are password-protected with 2FA. In addition, we will encrypt the files containing the research data before uploading them to UChicago GDrive.

**22) Will you collect any identifiers from the research participants (including names, addresses, Social Security Numbers, email and phone contact information, etc.)?**

We will collect email contact information in case we need to conduct a follow-up survey.

**23) What identifying information about research participants will be linked to the data?**

- ☐ Data will be directly labeled with personal identifying information
- ☒ Data will be labeled with a code that the research team can link to personal identifying information through a crosswalk to the coding system
- ☐ Data will be labeled with a code but the research team will not have access to the crosswalk that connects codes to participant identifiers
- ☐ Data will not be labeled with any identifying information and a coding system will not be used
- ☐ Other

**24) If you will be using a coding system, who will have access to the crosswalk that links participant identifiers to the data, and where will you store the crosswalk?**

We will store the crosswalk that links participant identifiers to the data on two of our personal computers. It will be encrypted.

----Consent-----

**25) Check which type of consent process you plan to use with adult participants (select all that apply):**

- ☒ Written consent form signed by the participant
- ☐ Information sheet / consent script without participant's signature (if using a verbal consent process or online consent script)
- ☐ Request to alter consent (some elements of consent waived)
- ☐ Request to waive consent -- consent not being obtained
- ☐ Not applicable -- no adults will be enrolled as research participants

**26) Who will obtain consent from participants? Will the Principal Investigator, other members of the University of Chicago research team, collaborating researchers from other institutions, or another third party (such as a survey firm) obtain consent?**

Interviewing members of the research team will collect the data before the study is conducted.

**27) Describe the process that will be used to obtain consent, including how, when, and where consent will be discussed. If you might enroll any illiterate individuals, please explain how you will obtain consent from those individuals.**

There will be a brief introduction explaining what data is collected and how it will be stored. We will also ask if we are allowed to keep their email for a potential follow-up, and discard the email data from all our devices if they refuse. We will also need consent to anonymously mention their data in any resulting published work. They will also sign a form with all the terms and they will be given a copy of this form. If they have any disability that prevents this consent process, they will not be able to participate in the study.

----UChicago Affiliates-----

**28) (If enrolling UChicago students or employees) Explain how you will minimize the potential for employees and/or students of the University of Chicago to feel coerced to participate in the research.**

Our flyers and other recruitment papers will never specify that we require UChicago affiliates. We only mention broad requirements unrelated to being a UChicago affiliate, such as, being over 18

years of age.

- The content form also includes disclosures related to UChicago employees and students:
- “What if I am a University of Chicago student? You may choose not to participate or to stop your participation in this research at any time. This will not affect your class standing or grades at University of Chicago.”
  - "What if I am a University of Chicago employee? Your participation in this research is in no way a part of your university duties, and your refusal to participate will not in any way affect your employment with the university, or the benefits, privileges, or opportunities associated with your employment at University of Chicago."

----*Surveys*-----

**29) Describe all surveys / questionnaires to be used in this study.**

Participants will be asked if they had any usability issues while navigating websites and SSL errors, including difficulties that arose from having to work with a low-vision simulator and issues with extensions that were supposed to make it easier to use the browser. They may suggest improvements if they believe any can be made.

**30) How often will participants be asked to complete the surveys / questionnaires and approximately how long will it take to complete the surveys / questionnaires?**

Participants will be asked to complete the surveys only for follow-up assessments after the lab study, if we deem it necessary.

**31) Will you be using any survey software?**

☒ Yes

☐ No

**32) Attach the full text of any surveys / questionnaires you plan to use.**

Interview Script.docx

----*Interviews*-----

**33) Explain where interviews / focus groups will take place (include possible online venues such as Skype, online chat rooms, etc.). Describe any steps you will take to protect the participant's privacy during the interview / focus group. Keep in mind that participants have less expectation of privacy in focus group settings, so focus groups may not always be appropriate for discussion of very sensitive topics.**

We will interview participants after we debrief them.

**34) Describe the number of interviews / focus group sessions you anticipate for each participant and approximately how long you expect each to last.**

We anticipate having 1 interview/lab study session for each participant, and we anticipate this session to last 15-20 minutes.

**35) Attach the full text of any interview questions and focus group discussion guides that you plan to use.**

Interview Script.docx



*----Recording-----*

**36) Explain what types of data will be recorded or photographed. If you may be collecting sensitive data, will you use any procedures to de-identify / anonymize the recordings or photographs?**

We will be interviewing and collecting their data in a text format. We will also write down our observations during the test in a text format. No photographs or audio data will be collected. Our data and email identifier will be placed in separate locations and we will store the crosswalk that links participant identifiers to the data on two of our personal computers. It will be encrypted. The participants will be informed what data will be collected, and we will be asking for consent to identify their information with an email. If not consent is given, we will give them an anonymous name. The emails are only collected if we need a follow-up later on.

**37) Explain what will happen to the recordings / photographs at the end of your study. If you plan to place the materials in an archive, please explain which archive and whether that archive is open to the public.**

The only data that will be preserved will be the data featured and mentioned in the resulting paper. All personal identifiers to the data will be discarded and only the raw data with anonymous labels will remain (Participant 1, Participant 2, etc).

*----Deception-----*

**38) Describe what information will be withheld from participants or what misinformation will be provided to participants.**

Participants will not be told initially that they are a part of a study on usability of SSL errors. Instead, they will be told that they are a part of study about computer usability for people with low vision.

**39) Explain why this research involves no more than minimal risk to participants and why it would be impracticable to carry out the research without the use of deception/incomplete disclosure.**

This research involves no more than minimal risk to participants because the tasks they are asked to do are simple web browsing tasks, under simulated disability. The simulated disability does not persist past the lab session. It would be impracticable to carry out the research without the use of incomplete disclosure because participants may be subject to desirability bias if they know that the study is about accessibility usability of security aspects such as SSL errors.

**40) Describe the plans for debriefing participants after their participation. If you do not plan to debrief participants, explain why.**

We plan to debrief participants by informing them of our research goals and the purpose of the experiment, and then we plan to ask them for re-consent to providing us with their information.

**41) Attach the full text of any debriefing script/statement that you will use.**

Consent Form.docx

Debriefing Statement.docx

*----Additional attached documents-----*

**42) Attach the full text of consent forms. See the following model consent forms:**

(For MTurk studies)

[https://sbsirb.uchicago.edu/sites/sbsirb.uchicago.edu/files/uploads/Consent%20Example\\_Amazon%20MTurk%20study\\_2016-05-26\\_0.docx](https://sbsirb.uchicago.edu/sites/sbsirb.uchicago.edu/files/uploads/Consent%20Example_Amazon%20MTurk%20study_2016-05-26_0.docx)

(For other interviews and surveys)

<https://sbsirb.uchicago.edu/sites/sbsirb.uchicago.edu/files/uploads/Consent%20Template%20-%202016-10-06.doc>

(If you use deception, use the following debrief template)

<https://sbsirb.uchicago.edu/sites/sbsirb.uchicago.edu/files/uploads/Debriefing%20Statement%20-%20Template%20--%202014-05-27.doc>

( See also: <https://sbsirb.uchicago.edu/page/consent-form-templates-and-examples> )

**43) Attach any additional study materials not previously requested**

**UNIVERSITY OF CHICAGO  
CONSENT FORM FOR RESEARCH PARTICIPATION**

**Study Title:** A study on Computer Usability for People of Low Vision

**Student Researchers:** Steven Cui, Minyu Li, Andrew Friedman, Celine Kim, AK Alilonu, Christine Yan

We are students at the University of Chicago, in the Department of Computer Science. We are planning to conduct a research study, which we invite you to take part in. This form has important information about the reason for doing this study, what we will ask you to do if you decide to be in this study, and the way we would like to use information about you if you choose to be in the study.

**Why are you doing this study?**

You are being asked to participate in a research study about the computer usability related to accessibility for the people with low vision. At the end of the study, we will explain in greater detail what we hope to learn from this research

**What will I do if I choose to be in this study?**

You will be asked to perform a number of web browsing tasks under low vision simulation. Afterwards you will be asked questions asked if you any usability issues while navigating websites.

We may quote your remarks in presentations or articles resulting from this work. A pseudonym will be used to protect your identity, unless you specifically request that you be identified by your true name.

**What are the possible risks or discomforts?**

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life.

As with all research, there is a chance that confidentiality of the information we collect from you could be breached – we will take steps to minimize this risk, as discussed in more detail below in this form.

**What are the possible benefits for me or others?**

You are not likely to have any direct benefit from being in this research study. This study is designed to learn more about computer usability for low vision individuals. The study results may be used to help other people in the future.

**How will you protect the information you collect about me, and how will that information be shared?**

Results of this study may be used in publications and presentations. Your study data will be handled as confidentially as possible. If results of this study are published or presented, individual names and other personally identifiable information will not be used.

To minimize the risks to confidentiality, we will encrypt and store the crosswalk that links your participant identifiers (emails) to the data on a personal computers separate from the results. The stored data will only be uploaded online to University of Chicago GDrive accounts, which are

password-protected with 2FA. Additionally, all files containing the research data will be encrypted before being uploaded to UChicago GDrive.

We may share the data we collect from you for use in future research studies or with other researchers – if we share the data that we collect about you, we will remove any information that could identify you before we share it.

If we think that you intend to harm yourself or others, we will notify the appropriate people with this information.

### **Financial Information**

Participation in this study will involve no cost to you. Regardless of completing the study, you will be paid a prorated amount of \$12 per hour depending on the length of the study.

### **What are my rights as a research participant?**

Participation in this study is voluntary. You do not have to answer any question you do not want to answer. If at any time and for any reason, you would prefer not to participate in this study, please feel free not to. If at any time you would like to stop participating, please tell me. We can take a break, stop and continue at a later date, or stop altogether. You may withdraw from this study at any time, and you will not be penalized in any way for deciding to stop participation.

If you decide to withdraw from this study, the researchers will ask you if the information already collected from you can be used.

### **What if I am a University of Chicago student?**

You may choose not to participate or to stop your participation in this research at any time. This will not affect your class standing or grades at University of Chicago.

### **What if I am a University of Chicago employee?**

Your participation in this research is in no way a part of your university duties, and your refusal to participate will not in any way affect your employment with the university, or the benefits, privileges, or opportunities associated with your employment at University of Chicago.

### **Who can I contact if I have questions or concerns about this research study?**

If you have questions, you are free to ask them now. If you have questions later, you may contact the researchers through Andrew Friedman at [usablestudy@uchicago.edu](mailto:usablestudy@uchicago.edu) or (310) 916-8306.

If you have any questions about your rights as a participant in this research, you can contact the following office at the University of Chicago:

Social & Behavioral Sciences Institutional Review Board  
University of Chicago  
1155 E. 60th Street, Room 418  
Chicago, IL 60637  
Phone: (773) 834-7835  
Email: [sbs-irb@uchicago.edu](mailto:sbs-irb@uchicago.edu)

### **Consent**

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above and will receive a copy of this consent form.

**Consent for use of contact information to be contacted about participation in other studies**

Initial one of the following to indicate your choice:

\_\_\_\_\_ (initial) I agree to allow the researchers to use my contact information collected during this study to contact me about participating in future research studies.

\_\_\_\_\_ (initial) I do not agree to allow the researchers to use my contact information collected during this study to contact me about participating in future research studies.

\_\_\_\_\_  
Participant's Name (printed)

\_\_\_\_\_  
Participant's Signature

\_\_\_\_\_  
Date

### **Facebook Recruitment Post text**

Hey y'all! We're conducting a study about web accessibility for users with low vision for a class. The study takes 30 minutes and you will be paid \$6. We have slots Friday-Sunday in Reg Room 501. You do not need to have low vision to participate! Here's the link to sign up:  
<https://calendly.com/christineyan/accessibility-study>

### **Initial Email Text**

Hello!

Thanks so much for signing up for our Accessibility Study! Your slot is at [TIME] and will be in Reg Room 501. Please bring a laptop. Thanks again and see you soon!

Best,  
Accessibili-team

Hi,  
Here are the links you will need to complete your task.  
Survey: [paste link]  
Links page: [paste link]  
Best,  
Accessibili-team



## **Complete Survey (Pilot Study)**

### **INTERVIEW:**

1. So how was website evaluation?
  - a. (If they mention the browser warning: Yes, that was part of the experiment.)
2. Are you familiar with SSL error warnings?
  - a. (If they don't know what those are: SHOW EXAMPLE)
3. How did you respond when you saw this warning after you clicked the link to Norton's homepage?
  - a. Do you know what the warning was notifying you about?/ Did you understand what the warning was?
  - b. What is the risk of proceeding?
  - c. What are some of the things you looked at on this warning?
4. Do you think this would've been easier if the screen had not been blurred?
5. Did it help that you had <ACCESSIBILITY EXTENSIONS>?
6. So the point of this study was to test the effectiveness of Chrome extensions and laptop settings for navigating browser warnings? Do you think that this was a good design?
  - a. Is there anyway to improve this design of the warning to make it easier for you to have answered the above questions about the warning?

Example questions to ask to move along the conversation if they cannot think of any design changes they would like to see implemented.

- i. Was the font size okay?
- ii. Should the font be bolded?
- iii. Is there enough color contrast?
- iv. Should we be using more warning colors and images?
- v. Could you see the warning image?
- vi. Should we filter more information?

## Script and Instructions (Pilot Study)

Computer used: Dell Laptop

User: Accessibili-team

Pass: usec2019

### Instructions for Researchers:

Everything is mocked, so just open up Chrome and go to [stevenlui729.github.io/Accessibili-team](https://stevenlui729.github.io/Accessibili-team) to get to the page with the links. The expired certificate SSL error will be on the Norton site link.

Tip: you can reset the bad cert acceptance (if they go that route) by clearing browser history/cookies

### **RESEARCHER INSTRUCTIONS:**

*Hey there! So for this study, you're going to use our laptop to evaluate the homepages of websites that sell anti-virus software. The screen's going to be a little blurry. For each link, just look on the website's homepage for about a minute -- you don't have to go to any other pages on the website -- and then answer the survey questions for that website. If you run into any problems, just keep going. **We don't want to bias your user experience, so you may only call us in once you're sure you're done with the task, because then we're going to end the survey.** Once you give us the signal, we'll come in and ask you a few questions, and then we'll be done. Sounds good?*

*Do you have any questions before we begin?*

*Then here you go.*

## Fake Survey for ever link

### Security Software Survey

\* Required

Which company's website are you evaluating?

- ☐ Symantec
- ☐ Kaspersky
- ☐ 360 Total Security
- ☐ Norton
- ☐ McAfee

On a scale of 1 to 5, how secure would you feel if you used this company for virus protection? \*

- ☐ 1 - Completely insecure
- ☐ 2 - A little insecure
- ☐ 3 - Neutral
- ☐ 4 - A little secure
- ☐ 5 - Completely secure
- ☐ Other: \_\_\_\_\_

If you experienced any issues or confusion while navigating the site, please describe your experience below.

Your answer \_\_\_\_\_

SUBMIT

Never submit passwords through Google Forms.

## Antivirus Software Website Study Links

### Symantec

Site:

<https://www.symantec.com/>

Survey:

[https://docs.google.com/forms/d/e/1FAIpQLSf6d3EE62yoZLw97LLaSSz\\_9qR-B2BJ92eTxdFUQa2QMfoYZA/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSf6d3EE62yoZLw97LLaSSz_9qR-B2BJ92eTxdFUQa2QMfoYZA/viewform?usp=sf_link)

### Kaspersky

Site:

<https://www.kaspersky.com/>

Survey:

[https://docs.google.com/forms/d/e/1FAIpQLSf6d3EE62yoZLw97LLaSSz\\_9qR-B2BJ92eTxdFUQa2QMfoYZA/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSf6d3EE62yoZLw97LLaSSz_9qR-B2BJ92eTxdFUQa2QMfoYZA/viewform?usp=sf_link)

### 360 Total Security

Site:

<https://www.360totalsecurity.com/en/>

Survey:

[https://docs.google.com/forms/d/e/1FAIpQLSf6d3EE62yoZLw97LLaSSz\\_9qR-B2BJ92eTxdFUQa2QMfoYZA/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSf6d3EE62yoZLw97LLaSSz_9qR-B2BJ92eTxdFUQa2QMfoYZA/viewform?usp=sf_link)

Norton

Site:

<https://us.norton.com/norton-security-antivirus>

Survey:

[https://docs.google.com/forms/d/e/1FAIpQLSf6d3EE62yoZLw97LLaSSz\\_9qR-B2BJ92eTxdFUQa2QMfoYZA/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSf6d3EE62yoZLw97LLaSSz_9qR-B2BJ92eTxdFUQa2QMfoYZA/viewform?usp=sf_link)

McAfee

Site:

<https://www.mcafee.com/en-us/index.html>

Survey:

[https://docs.google.com/forms/d/e/1FAIpQLSf6d3EE62yoZLw97LLaSSz\\_9qR-B2BJ92eTxdFUQa2QMfoYZA/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSf6d3EE62yoZLw97LLaSSz_9qR-B2BJ92eTxdFUQa2QMfoYZA/viewform?usp=sf_link)

## Scripts

### **RESEARCHER INSTRUCTIONS:**

Hey there! For this study, we want to evaluate accessibility of a variety of tasks for users with low vision. Please use Chrome on your laptop with the sound on. We will email you a link to the study and the pages you need to access. [IF BLUR, CONTACTS] If you have contacts, please follow the instructions in the Google form to download the NoCoffee blurring extension. You are allowed to zoom in and other changes to read the screen better.

If you run into any problems with the tasks, feel free to skip ahead. We're gonna head out of the room and let you do the tasks, and when you've completed the study, please call us back into the room. Once you give us the signal, we'll come in and ask you a few questions, and then we'll be done. Sound good?

Do you have any questions before we begin?

Then here you go.

### **DEBRIEF (done on question 2):**

(when subject mentions SSL warning) "That was on purpose. This was actually a study about SSL warnings, which are those warnings you get when your browser thinks a website you're trying to visit is unsafe."

# Web Accessibility Study

Hi there!

Make sure you're filling this study out on your own device, in Google Chrome.  
For the study, you will be asked to perform 8 tasks without the aid of your glasses/contacts.  
If you do not use glasses/contacts or would prefer not to remove them, you may download this free Chrome extension, NoCoffee, at ([shorturl.at/ejvCO](https://shorturl.at/ejvCO)). Click on the extension icon and set the blur to 8 whenever you perform a task.

**\* Required**

**1. Will you be removing your glasses/contacts, or using NoCoffee? \***

*Mark only one oval.*

- ☐ I will remove my glasses/contacts to complete the tasks *Skip to question 2.*
- ☐ I will be using NoCoffee to complete the tasks. *Skip to question 4.*

*Skip to question 4.*

## Task 1

Please visit Site 1 on the Links page.  
Search "how to find partial derivative".  
Go to 'Images', and copy the URL of the second image in the search results.  
Remove your glasses/contacts now.

**2. Were you able to complete the task? \***

*Mark only one oval.*

- ☐ Yes
- ☐ No

**3. If you were able to complete the task, please paste the URL here.**

---

*Skip to question 6.*

## Task 1

Please visit Site 1 on the Links page.  
Search "how to find partial derivative".  
Go to 'Images', and copy the URL of the second image in the search results.  
Turn on NoCoffee now.

**4. Were you able to complete the task? \***

*Mark only one oval.*

- ☐ Yes
- ☐ No



5. If you were able to complete the task, please paste the URL here.
- 

*Skip to question 8.*

## Task 2

Please visit Site 2 on the Links page.

Click on 'Sign In'.

To the right side of the page, there is a section that says, 'Benefits of your free IMDb account'. How many benefits are listed in that section, in bold font?

Remove your glasses/contacts now.

6. Were you able to complete the task? \*

*Mark only one oval.*

☐ Yes

☐ No

7. If you were able to complete the task, how many benefits did you count?
- 

*Skip to question 10.*

## Task 2

Please visit Site 2 on the Links page.

Click on 'Sign In'.

To the right side of the page, there is a section that says, 'Benefits of your free IMDb account'. How many benefits are listed in that section, in bold font?

Turn on NoCoffee now.

8. Were you able to complete the task? \*

*Mark only one oval.*

☐ Yes

☐ No

9. If you were able to complete the task, how many benefits did you count?
- 

*Skip to question 12.*

## Task 3

Please visit Site 3 on the Links page.

Locate and click on the button that says 'Donate'.

The campaign website suggests 7 amounts you can contribute to Elizabeth Warren's presidential campaign. What is the third largest one?

Remove your glasses/contacts now.

**10. Were you able to complete the task? \***

Mark only one oval.

- ☐ Yes
- ☐ No

**11. If you were able to complete the task, what is the third largest amount you can contribute, in dollars?**

---

Skip to question 14.

## Task 3

Please visit Site 3 on the Links page.

Locate and click on the button that says 'Donate'.

The campaign website suggests 7 amounts you can contribute to Elizabeth Warren's presidential campaign. What is the third largest one?

Turn on NoCoffee now.

**12. Were you able to complete the task? \***

Mark only one oval.

- ☐ Yes
- ☐ No

**13. If you were able to complete the task, what is the third largest amount you can contribute, in dollars?**

---

Skip to question 16.

## Task 4

Please visit Site 4 on the Links page.

Locate and click on the button that says 'SUBSCRIBE'.

Scroll to the very bottom of the page.

There is a small button that says, 'LIVE CHAT', that allows you to speak with the staff of The New York Times directly. What color is it?

Remove your glasses/contacts now.

**14. Were you able to complete the task? \***

Mark only one oval.

- ☐ Yes
- ☐ No

**15. If you were able to complete the task, what color is the 'LIVE CHAT' button?**

---

Skip to question 18.

## Task 4

Please visit Site 4 on the Links page.

Locate and click on the button that says 'SUBSCRIBE'.

Scroll to the very bottom of the page.

There is a small button that says, 'LIVE CHAT', that allows you to speak with the staff of The New York Times directly. What color is it?

Turn on NoCoffee now.

**16. Were you able to complete the task? \***

*Mark only one oval.*

☐ Yes

☐ No

**17. If you were able to complete the task, what color is the 'LIVE CHAT' button?**

---

*Skip to question 20.*

## Task 5

Please visit Site 5 on the Links page.

Scroll to the very bottom of the page.

Close to the bottom of the page, there is a red box in the center of the page with text that reads 'THE UNIVERSITY OF CHICAGO CAMPAIGN'. Below that text is a phrase that reads: \_\_\_\_\_ & \_\_\_\_\_. What are the two words?

Remove your glasses/contacts now.

**18. Were you able to complete the task? \***

*Mark only one oval.*

☐ Yes

☐ No

**19. If you were able to complete the task, what are the words below 'THE UNIVERSITY OF CHICAGO CAMPAIGN'? You only need to write the two words, not the & symbol.**

---

*Skip to question 22.*

## Task 5

Please visit Site 5 on the Links page.

Scroll to the very bottom of the page.

Close to the bottom of the page, there is a red box in the center of the page with text that reads 'THE UNIVERSITY OF CHICAGO CAMPAIGN'. Below that text is a phrase that reads: \_\_\_\_\_ & \_\_\_\_\_. What are the two words?

Turn on NoCoffee now.

**20. Were you able to complete the task? \***

Mark only one oval.

- ☐ Yes
- ☐ No

**21. If you were able to complete the task, what are the words below 'THE UNIVERSITY OF CHICAGO CAMPAIGN'? You only need to write the two words, not the & symbol.**

---

*Skip to question 24.*

**Task 6**

Please visit Site 6 on the Links page.

Search "navy pier".

What is Navy Pier's rating on Google Maps, out of 5 stars?

Remove your glasses/contacts now.

**22. Were you able to complete the task? \***

Mark only one oval.

- ☐ Yes
- ☐ No

**23. If you were able to complete the task, what is Navy Pier's rating, out of 5 stars?**

---

*Skip to question 26.*

**Task 6**

Please visit Site 6 on the Links page.

Search "navy pier".

What is Navy Pier's rating on Google Maps, out of 5 stars?

Turn on NoCoffee now.

**24. Were you able to complete the task? \***

Mark only one oval.

- ☐ Yes
- ☐ No

**25. If you were able to complete the task, what is Navy Pier's rating, out of 5 stars?**

---

*Skip to question 28.*

**Task 7**

Please visit Site 7 on the Links page.

Locate and click on the button that says 'Create Event'.

Facebook lets you create two kinds of events. What kinds of events does it allow you to create?  
Remove your glasses/contacts now.

**26. Were you able to complete the task? \***

*Mark only one oval.*

- ☐ Yes  
☐ No

**27. If you were able to complete the task, what are the two kinds of events Facebook lets you create?**

---

*Skip to question 30.*

## Task 7

Please visit Site 7 on the Links page.  
Locate and click on the button that says 'Create Event'.  
Facebook lets you create two kinds of events. What kinds of events does it allow you to create?  
Turn on NoCoffee now.

**28. Were you able to complete the task? \***

*Mark only one oval.*

- ☐ Yes  
☐ No

**29. If you were able to complete the task, what are the two kinds of events Facebook lets you create?**

---

*Skip to question 32.*

## Task 8

Please visit Site 8 on the Links page.  
Scroll down to where it says 'Learn about integrations'. Click on the button.  
Scroll down to where it says 'Browse the Marketplace'. Click on the button.  
Under 'Recommended for you', click on the icon that is a circle with the letter 'Z' in white on the inside.  
Under 'Pricing and setup', how much does a Growth account cost per user/month?  
Remove your glasses/contacts now.

**30. Were you able to complete the task? \***

*Mark only one oval.*

- ☐ Yes  
☐ No

**31. If you were able to complete the task, how much does a ZenHub Growth account cost per user/month?**

---

## **This completes the study.**

Congratulations. You may now receive compensation after a brief interview with the researchers.

*Stop filling out this form.*

### **Task 8**

Please visit Site 8 on the Links page.

Scroll down to where it says 'Learn about integrations'. Click on the button.

Scroll down to where it says 'Browse the Marketplace'. Click on the button.

Under 'Recommended for you', click on the icon that is a circle with the letter 'Z' in white on the inside.

Under 'Pricing and setup', how much does a Growth account cost per user/month?

Turn on NoCoffee now.

**32. Were you able to complete the task? \***

*Mark only one oval.*

☐ Yes

☐ No

**33. If you were able to complete the task, how much does a ZenHub Growth account cost per user/month?**

---

## **This completes the study.**

Congratulations. You may now receive compensation after a brief interview with the researchers.

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**Participant ID (GENDER): EXTENSION STATUS, BLUR STATUS**

1. How was the study?
2. Debrief statement: This was a study about SSL errors.
3. Have you seen these errors before? What do you think they mean?
4. What did you do when you saw the warning?
5. What did the warning look like?
  - a. If extension: (Audio? Icon?)
  - b. If no extension: (Error code? Red icon?)
6. How do you think the warning could be better?