What We Know About Users with Limited Literacy Skills

Introduction

There's a growing body of literature related to the cognitive processing and online behavior of adults with limited literacy skills. In this section, we outline what we know about how literacy can affect a user's ability to read, process information on a screen of any size, and interact with technology.

The bottom line: Literacy skills can impact virtually every aspect of using the web.

Reading and cognitive processing challenges

Cognitively speaking, reading is a lot of work—it involves both decoding and understanding text. First, a user has to "decode" the text by assigning meaning to the words. Next, a user has to comprehend the text by stringing the words together to understand what the author is trying to communicate in a particular sentence or paragraph.

Users with limited literacy skills have more problems with short-term and working memory than users with higher literacy skills. They may struggle to decode challenging words and remember their meanings If a webpage has a large amount of content, users may not be able to remember it all. Furthermore, what they *do* remember may not be the most important information.

Users with limited literacy skills often describe themselves as reading well or very well. However, data from eye-tracking and usability studies paint a different picture.

Eye tracking measures where the eye is focused or the motion of the eye as a user looks at a webpage. This data shows what areas of a webpage are grabbing a user's attention and what areas the user is ignoring. It can help us understand both how users read and search for information online

According to these studies, users with limited literacy skills generally read more slowly, and reread words, sections, or elements on a website (like buttons or menus) in order to understand them And depending on the situation, limited-literacy users may:

- Skip words or sections, or start reading in the middle of a paragraph
- Try to read every word because they can't effectively scan and draw meaning from content—this is more common when users are reading something very important and they feel the stakes are high

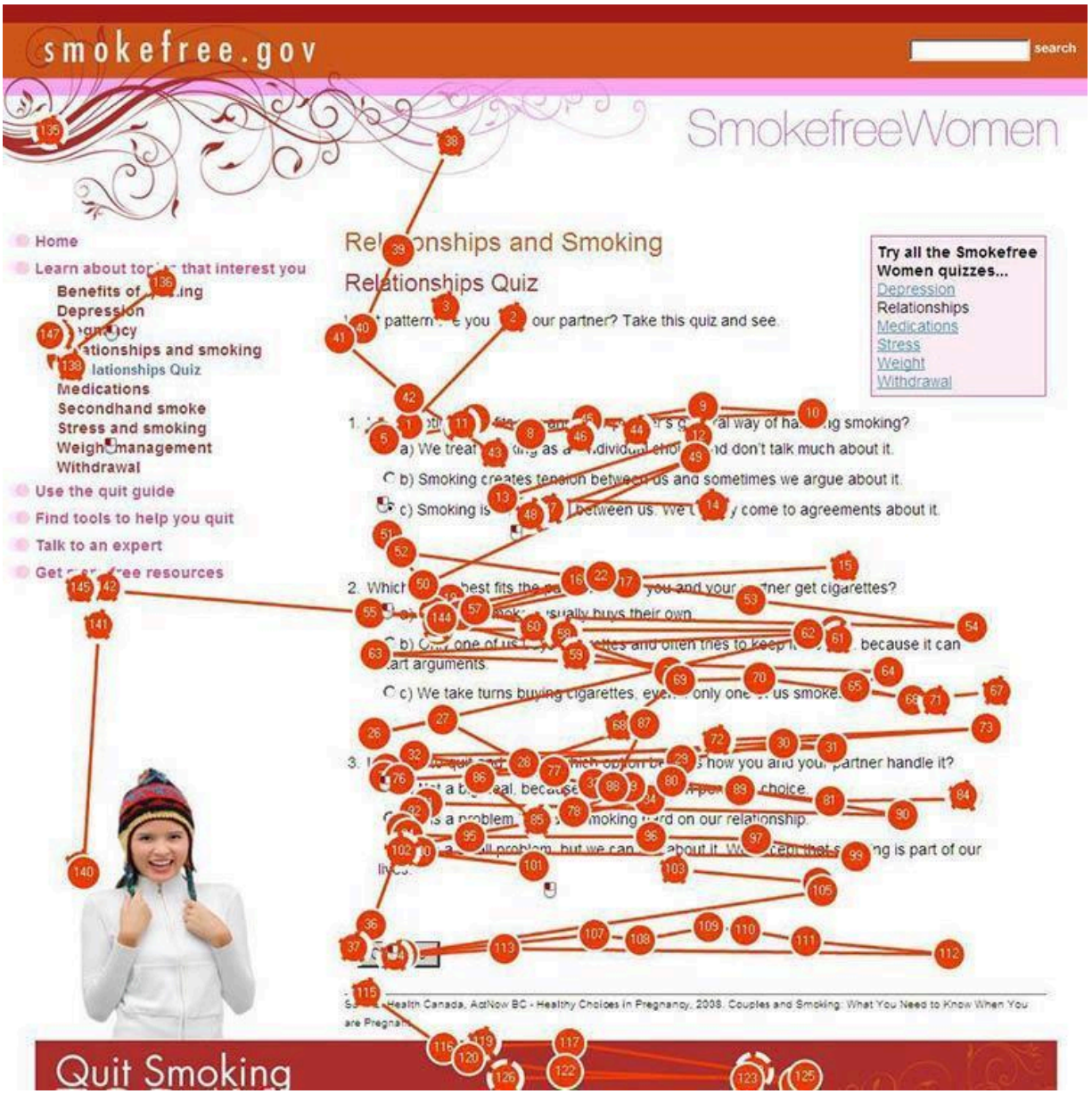
These strategies used by users with limited literacy skills reinforce the importance of creating simple content that won't overwhelm readers with too many words. Dense

"walls of words" can trigger limited-literacy readers to skip content altogether—or they may try to read every word on the page while struggling to understand what they're reading.

Additionally, online forms present a unique set of challenges for limited-literacy users. Users need to read the instructions and the form field labels, and then either spell the answers to questions or read and select from multiple-choice answers This is a lot to ask from users with limited literacy skills.

Figure 1.1

Gaze path of a reader who does not have limited literacy skills skimming a page.

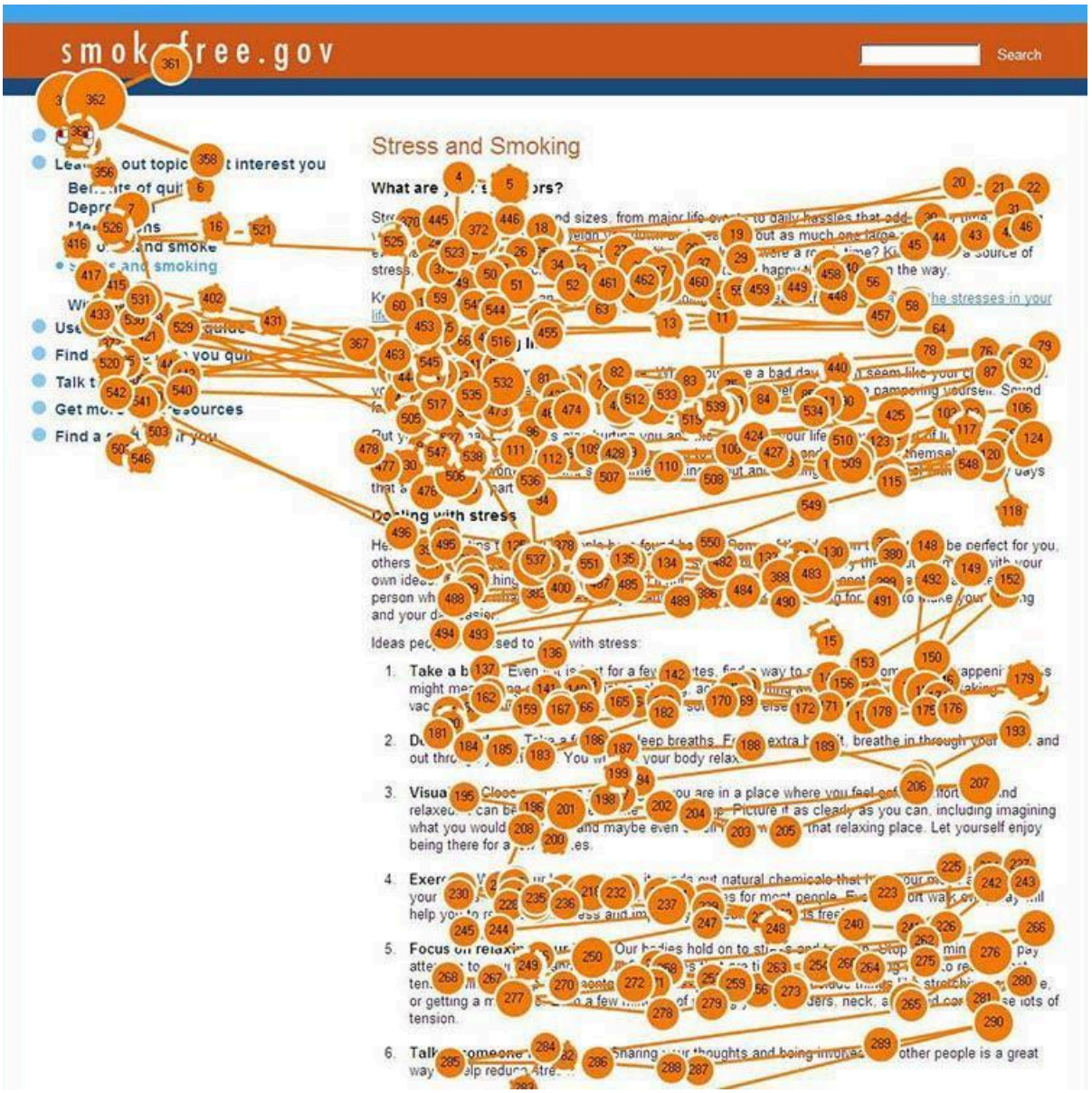


Source: Colter, A., & Summers, K. (2014). Eye Tracking with Unique Populations: Low Literacy Users. In J. Romano Bergstrom & A. J. Schall (Eds.), Eye Tracking in

User Experience Design (pp. 331–346). Waltham, MA: Morgan Kaufmann Publishers/Elsevier.

Figure 1.2

Gaze path of a user who has limited literacy skills reading (and re-reading) every word.



Source: Colter, A., & Summers, K. (2014). Eye Tracking with Unique Populations: Low Literacy Users. In J. Romano Bergstrom & A. J. Schall (Eds.), Eye Tracking in User Experience Design (pp. 331–346). Waltham, MA: Morgan Kaufmann Publishers/Elsevier.

Figure 1.3

Gaze path of a user with limited literacy skills reading only the text that looks easy to read.

Source: Colter, A., & Summers, K. (2014). Eye Tracking with Unique Populations: Low Literacy Users. In J. Romano Bergstrom & A. J. Schall (Eds.), Eye Tracking in User Experience Design (pp. 331–346). Waltham, MA: Morgan Kaufmann Publishers/Elsevier.

Understanding navigation

When navigating a website, users with limited literacy skills tend to:

- Get distracted by extra words and elements of a website (like links and icons)
- Navigate in a linear fashion and backtrack frequently
- Choose the first answer they find, without checking if it's correct—and have a hard time telling the difference between high- and low-quality information
- Have trouble recovering from mistakes

When reading, users with limited literacy skills focus on the center of the screen. Once they shift their focus from the navigation to the center of the screen, they're unlikely to look back to the navigation to solve a problem or change course if the content isn't meeting their needs.

Using search

Using a website search function can be challenging for people with limited literacy skills. Typing in a search term requires (somewhat) accurate spelling—and some search engines help with spelling better than others. Reading and comparing search results to identify the best option is a cognitively challenging task.

As a result, compared with users with advanced literacy skills, users with limited literacy skills:

- Spend more time on information search tasks
- Are more likely to give up if they can't find information quickly
- Have a hard time thinking of search terms
- Tend to only click 1 or 2 links in the search result
- Add terms to refine a search instead of changing their search strategy

The ways people with limited literacy skills tried to find information differ from user to user.

Example
In previous healthfinder.gov usability testing, the team observed 5 users while they searched for information in 5 completely different ways. Some used the left navigation menu, while others used the homepage buttons or the search bar.

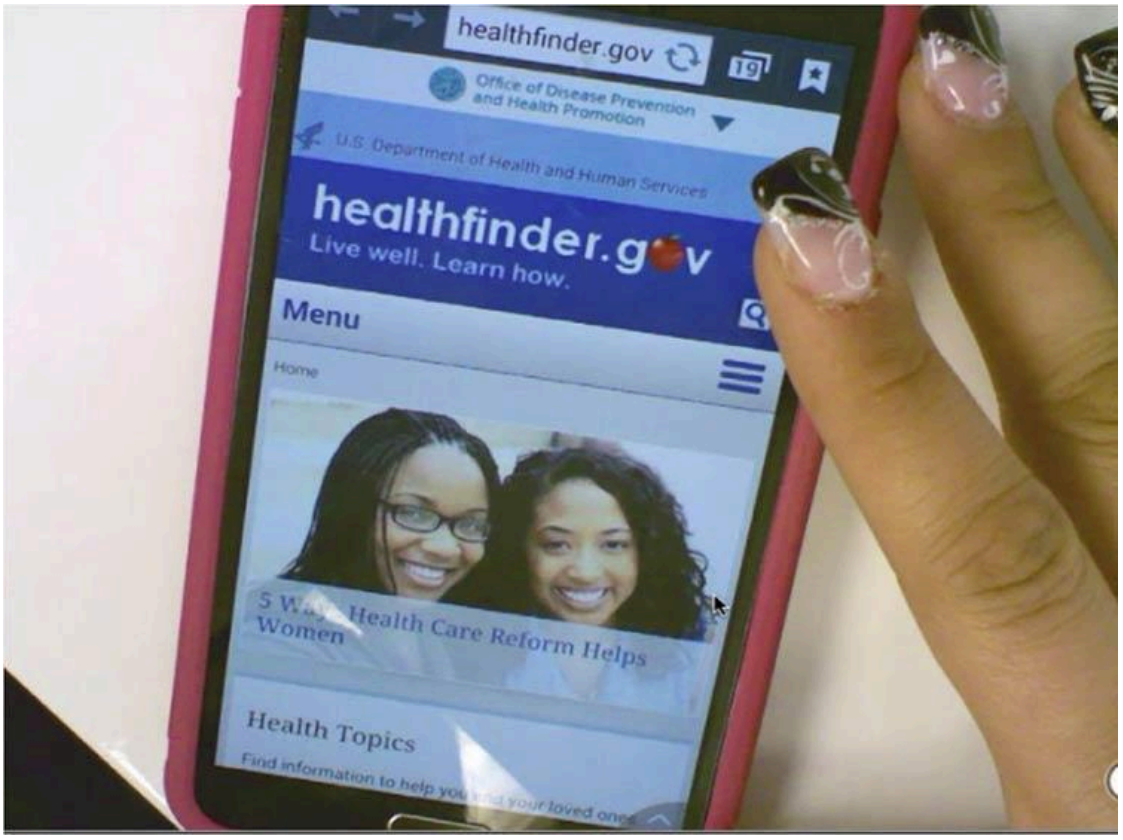
Mobile considerations

Users with limited literacy skills are likely to access the web on mobile devices—more than 90% own a mobile phone. We also know that users with lower incomes, users with less education, and minority users are especially likely to access the internet primarily from their mobile phones.

Research shows that people with limited literacy skills find it easier to learn how to use mobile devices than desktop computers.

Figure 1.4

When we tested healthfinder.gov on mobile in March 2015, users navigated through health topics much more easily on their mobile devices than on a desktop computer.



Source: healthfinder.gov mobile usability testing

Additionally, mobile screens can make reading easier for users with reading disabilities. For this population, both speed and comprehension may improve when reading on a mobile screen. Studies suggest this may be because of line length—lines on mobile devices are inherently short.

All of the best practices set forth in this guide enhance mobile usability. However, there are some specific considerations to take into account when designing online health information for mobile devices.

Challenges of mobile display

Because we know that so many users with limited literacy skills are accessing information on mobile devices, it's very important to consider the challenges presented by mobile display.

In spite of the fact that many users with limited literacy skills may ultimately find mobile easier to use than desktop computers, they still struggle with elements of navigation on mobile devices, like:

- Following hierarchical navigation
- Knowing where to look for information

- Using scroll bars within menus
- Using a single button (like the iPhone menu button) for a variety of different purposes depending on context
- Using a small keyboard to enter text

In a **hierarchical navigation**, users start with broader categories of information and then "drill down" into the structure to find more detailed information. This kind of navigation relies on users to understand the concept of drilling down through multiple groupings of information.

In general, mobile content can be twice as difficult for all users to digest. Part of this is because it's harder to understand complicated information when you're reading on a tiny screen, like an iPhone.

Additionally, mobile device users are constantly scrolling because they can't see all the information on the page at once. That means users are moving around the page to refer to other parts of the content instead of simply glancing at it as they might on a desktop screen. This can negatively affect users' understanding. The constant need for scrolling:

- Takes more time
- Diverts users' attention
- Introduces the problem of reorienting position on the page

Summary

It's critical that we understand and anticipate the online behavior of users with limited literacy skills—including what kind of devices they're using to view web content. Even users with high literacy skills may find reading and using the web more difficult when they are sick, stressed, or tired. Designing websites with these behaviors in mind will make the web a better place for all of us.