Usability Testing of a Website about Alcohol and Health: A Case Study

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Abstract

Many health online resources addressed to the general public lack usability and their content is frequently difficult to understand. This case study evaluates the usability and the effectiveness of information presentation of the “Alcol e Salute” website, using two methods: heuristic evaluation and user testing. The results of the usability testing analysis revealed several key weaknesses with respect both to navigation and information display. These results will be used to revise the website accordingly.

Keywords: Web usability; user testing; heuristic evaluation; health communication; alcohol reduction.

Introduction

For many people the internet has become the first source for health-related information (Hesse, Moser, & Rutten, 2010). According to a WHO eHealth cross-country survey of seven European countries, 71% of internet users had used the web for health purposes (Andressen et al., 2007). Since many people seek specific medical information on the internet, and this information influences subsequent health care decisions (Agarwal, Chaudhari, Hansberry, Tomei, & Prestigiacomo, 2013), the issues of source credibility and effective communication become important. Indeed, many studies have reported that patients have problems in finding and understanding health-related information, due to overwhelming information (Murero, D’Ancona & Karamaukian, 2001), low readability (Berland, et al., 2001), confusing interfaces and content organization (Williams, Nicholas, Huntington, & McLean, 2002; for a review, see Rice, 2006). In sum, many health online resources addressed to the general public lack usability and their content is frequently difficult to fully understand.

Web usability is usually defined as a quality attribute that assesses how easy user interfaces are to use (Nielsen 2009). It refers to the effectiveness, efficiency and satisfaction with which the users achieved specified goals while using the website (ISO CD 9241-11).

To better assess the usability of a website, it is often suggested to combine two different methods: heuristic evaluation and user testing (Tan, Liu, & Bishu, 2009).

Heuristic evaluation is an informal method in which usability specialists are asked to judge whether websites’ elements follow established usability principles, “heuristics” (Nielsen, 1994). However, the best way to understand whether real users are able to effectively interact with a website, user testing is probably the most important method to assess usability: letting users interact with the website, performing some specific tasks, and analyzing their behavior while interacting (Nielsen & Levy, 1994). Moreover, the user testing permits assessment not only of the usability of the system, but also of the comprehension of the website content.

The aim of the present study was to evaluate the usability and the effectiveness of information presentation of the “Alcol e Salute” website (www.itatvb.it), which is the official Italian translated and adapted version of the British “Down Your Drink” website (www.downyourdrink.org). This website has been developed as an interactive online intervention for educating the general public about alcohol problems and reducing hazardous drinking in people drinking more than the safe guidelines suggestions, but without severe alcohol related problems (Linke, McCambridge, Khadjesari, Wallace, & Murray, 2008). The website’s applicability in clinical practice is currently the subject of several European projects (e.g., EFAR Project, Struzzo et al., 2013).

Method

Heuristic evaluation

Two human factor experts conducted a preliminary heuristic evaluation of the “Alcol e Salute” website in order to identify usability problems to be studied in depth with user testing.

The heuristic evaluation identified the following key issues: • Website navigation; • Use of the “Alcohol Units counter”, a tool for calculating the amount of alcohol consumed in the last week; • Visual design and display of relevant information.

While it is not strictly accurate to include the last point as a usability issue, through the heuristic evaluation it was noticed that the main information (i.e., the notion of Alcohol Unit [AU], the daily/weekly AU threshold for low-risk drinking, and the AU contained in common alcoholic beverages) was presented in combination with other less relevant information and without any special emphasis. Since understanding this information is of clear importance for the drinking reduction program, participants’ understanding was also included in user testing.
User testing procedure

Eight participants (4 men, 4 women; age ranged from 29 to 66, mean age = 45.00, SD = 15.97) agreed to participate in the study on a voluntary basis. All participants reported to drink alcoholic beverages at least occasionally. The sample size was calculated from the widespread assumption that five participants are enough to reveal most usability problems (Nielsen, 1993; Virzi, 1992), adjusted following the suggestion to increase sample size when testing users of varying experience levels and abilities (Faulkner, 2003).

The user tests were performed individually in a lab setting using a standard personal computer with a web browser and Internet access, and took about half an hour. Participants were asked by an experimenter to interact with the “Alcol e Salute” website and to verbalize their thoughts as they completed the following tasks (think-aloud protocol):
1. Browse the website for 5’ without a specific task;
2. Complete the “How much alcohol am I drinking?” program section, in which participants:
   a. Were presented with the definition of Alcohol Units (AU);
   b. Had to use the Alcohol Units counter tool;
   c. Were presented with the thresholds for low-risk drinking.

In order to engage participants with the task, we asked participants to complete this section by playing the role of a person actually interested in the program’s content (Nielsen Norman Group, 2014). To ensure both task uniformity and privacy, participants received from the experimenter the list of alcohol drinks to be entered in the Alcohol Units counter tool.
3. Find target information, the “Assertive Communication” section.

Finally, participants were asked to compile the System Usability Scale (SUS; Brooke, 1996) and a questionnaire evaluating participants’ understanding of the main information presented in the “How much alcohol am I drinking?” section: what is an Alcohol Unit, the weekly AU threshold for low-risk drinking and how many standard drinks of beer, wine or spirits are allowable for low-risk drinking.

With the participants’ permission, each session was video and audio recorded.

Results

Website navigation

Navigation in the website turned out to have both positive and negative features: while participants had no problems in surfing the website sequentially using the “click here to continue” and “previous page” buttons, they found it difficult to use the navigation menus. Indeed, the website had three navigation menus (two horizontal and one vertical) with redundant content and unclear labeling. This difficulty in navigation also emerged when analyzing participants’ performances in Task 3 (finding target information): Only two participants (25%) completed the task within the 3 minute time limit.

Alcohol Units counter tool

Each participant was asked to enter the same amount of alcoholic drinks in the Alcohol Units counter tool. Correct use of the tool should have yielded a final score of 21.33 AU. Actual use by participants turned out to be problematic: One participant gave up after a few tries, all the others reached different results, and none reached the correct one (scores ranged from 17.76 to 99.54, mean score = 35.09, SD = 28.87, median score = 25.77). Video and verbal protocol analysis showed that the main problems were due to poor interface design (e.g., the output box was fillable and thus used as an input text box) and due to ambiguous labeling both in menu titles and in menu options (e.g., the “How many glasses?” [“Quanti bicchieri?”] menu was inconsistent with the possibility to insert cans and bottles in the “Which volume?” [“Che quantità?”] menu, see Figure 1).

![Figure 1: The Alcohol Units counter tool.](image)

Visual design and information display

During Task 2, participants were presented with information contained in the “How much alcohol am I drinking?” program section. The aim of this section is to educate people about alcohol content in drinks and safe drinking guidelines. At the end of the interaction with the website, however, only four out of eight participants remembered the meaning of “Alcohol Units” at least partially correctly. Only two participants correctly remembered the low-risk drinking threshold for their gender, two participants remembered a wrong threshold, and the others did not respond. The correct number of standard drinks of beer, wine or spirits allowable for low-risk drinking was remembered only by one participant, five participants reported wrong answers and two participants were unable to respond.

Overall usability

The website’s mean System Usability Score (SUS) resulted as 30.31 (SD = 17.85) on a 0 to 100 scale,
labeled as “poor” (Bangor, Kortun, & Miller, 2009). The perceived ease-of-use and interaction satisfaction were very low.

Discussion

The results of the usability testing analysis revealed several key weaknesses with respect both to navigation and information display. User testing indicated that navigation menu should be simplified and the consistency between labels and content improved. The Alcohol Units counter tool could be revised with a simpler one, using graphics instead of textual content. Perhaps the most important issue to emerge was the difficulty in understanding the content, which could be solved by improving both the attractiveness and visibility of relevant information. Better use could be made of graphics and color to increase readers’ attention and different fonts and placement could be used to highlight relevant information over the less important one (George, 2005). The “Alcol e Salute” website will be revised as a result of the usability testing, as planned in the EFAR Project (Struzzo et al., 2013).

Public health communication initiatives should adopt the most effective strategies for the promotion, protection and maintenance of health (Higgins, Sixsmith, Barry, & Domegan, 2011). Thus, usability evaluation, and in particular user testing, could be especially useful when designing websites dedicated to educate the general public, such in the case of public health websites.

User testing is a quick and cheap method to receive feedback from a user perspective, revealing the strengths and weaknesses of a website. Since their usefulness, tests with real users should be conducted at every stage of a website building project lifecycle, in order to find the factors that need to be improved before the final design.

References


ISO CD 9241-11 Ergonomic requirements for office work with visual display terminals – Part 11: Guidance on usability.


