

# Evaluating the suitability of hearing aid manufacturer websites for older adults

Lyndsey Blakeley, Jenna MacGregor, Sarah McQuaid, Michelle Zou  
 Supervisor: Dr. Rachel Caissie

## Introduction

- People with chronic health conditions, and especially stigmatizing health conditions such as hearing loss, are more likely to search the internet for health information (Laplante-Lévesque et al., 2012).
- Older adults are the fastest growing age group of internet users. Previous research has shown that this population requires different website design characteristics due to declines in cognition, vision, hearing and motor skills (e.g., static menus for people with tremors, option to adjust font size for people with poor vision, etc.). There are published guidelines for the design and organization of websites to maximize usability by this population (Grahame et al., 2004; National Institute on Aging, 2009).
- Many older adults have low health literacy. As such, it has been recommended that health-related websites use a reading level of grade 6 or lower (Laplante-Lévesque et al., 2012; Becker, 2004; Caposecco et al., 2014).
- Research has shown an inverse relationship between clutter and website usability, with less clutter being more beneficial for older adults. However, there are no published guidelines for clutter measures.
- There is insufficient research examining the suitability of hearing aid manufacturer websites for older adults. This is important to investigate considering that manufacturers have a "consumer section" on their website and that most hearing aid users are older adults.

### Evaluation Procedure:

- Websites were evaluated using the personal laptops of 4 student raters.
- Each website was evaluated independently by 2 raters.
- The presence or absence of several usability and navigation items was determined. Each item was given a score of 0 (never present), 1 (sometimes present), 2 (always present). Any discrepancies were discussed and agreed upon by both raters.
- The Flesch Kincaid Grade Level was calculated using Microsoft Word's "show reading level" option. SMOG was calculated using an online calculator found at wordscount.info
- For both reading level measures:
  - Health-related information: The first 100 words were taken from the "What is hearing loss?" or related section of the website.
  - Product-related information: The first 100 words were taken from the "Products" section of the website.

## Results

- Percentage scores derived from the usability and navigation measures showed that manufacturer websites B, D, and H had moderate usability, and manufacturer websites A, C, E, F, G, and I had low usability, as modeled by Lynch et al., (2013).
- The Flesh-Kincaid Grade Level ranged from 7.2 to 11.0 for health-related information and from 6.8 to 12.0 for product-related information.
- Grade level for the SMOG index ranged from 9.5 to 14.1 for health information and from 11.2 to 20.7 for product information.
- Clutter measures on the homepage showed an average of 32 links (range 16-53), 12.2 images (range 4-25), and 402.7 words (range 108-1029). Manufacturers B, E, G, and H showed less than average clutter on all 3 measures, while manufacturers A and D showed more than average clutter on all 3 measures.

## Purpose

The purpose of this study was to evaluate the consumer section of the websites of nine hearing aid manufacturers with respect to website usability for older adults.

## Methodology

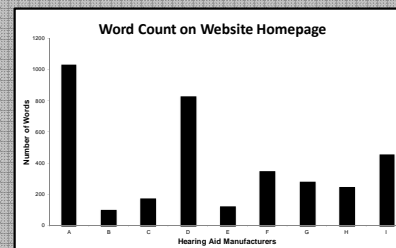
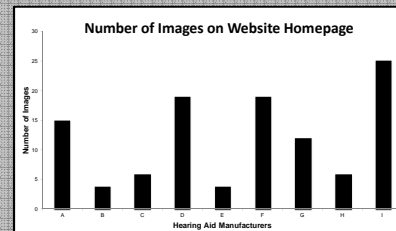
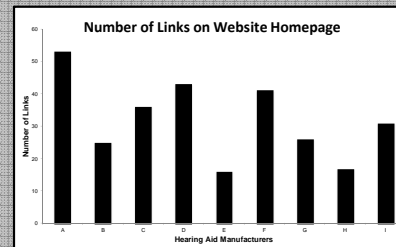
### Website Evaluation:

- The consumer section of the websites of 9 major hearing aid manufacturers were evaluated between May-August 2015.
- Canada was selected as the country of origin

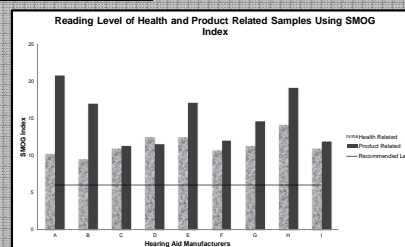
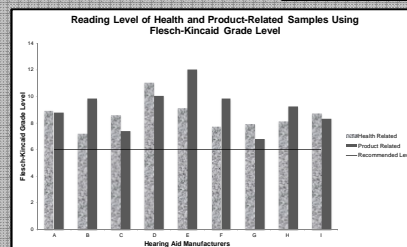
### Evaluation Tools:

- Previous research was used to determine which aspects should be evaluated to assess usability for older adults (Lynch et al., 2013; Becker, 2004; Cuddihy et al., 2012).
- A modified version of the evaluation tool found in Lynch et al. (2013) was used to evaluate the usability and navigation elements of design.
- Similar to Laplante-Lévesque et al. (2012), reading level was calculated using both Flesch Kincaid Grade Level and SMOG (Simple Measure of Gobbledygook).
- Clutter was assessed by counting the number of links, images and words present on the homepage.

### Measures of Clutter



### Measures of Reading Level



Criteria	Manufacturers								
	A	B	C	D	E	F	G	H	I
Adjustable font size	0	0	0	2	0	0	1	0	0
No italics	1	2	2	2	2	2	2	2	2
Left justification	1	2	2	2	2	2	1	1	2
Heading text larger than body text	2	2	1	2	2	1	1	2	2
Internal search bar	2	2	2	2	2	2	2	2	2
Underlined text is hyperlinked	2	2	2	2	2	2	2	2	2
Links change with hovering	2	1	1	1	1	1	1	2	1
Static menu	2	1	0	0	0	1	1	2	1
Links different size than text	1	1	1	0	0	0	1	1	1
Links different colour than text	1	2	1	2	1	1	1	1	1
Closed captioning of videos	0	2	0	0	0	0	0	n/a	0
Phone Number	2	2	0	2	2	0	0	2	2
<b>Total</b>	<b>16</b>	<b>19</b>	<b>12</b>	<b>17</b>	<b>14</b>	<b>12</b>	<b>13</b>	<b>17</b>	<b>16</b>
<b>Percentage</b>	<b>67</b>	<b>79</b>	<b>50</b>	<b>71</b>	<b>58</b>	<b>50</b>	<b>54</b>	<b>77</b>	<b>67</b>
<b>Usability index</b>	<b>Low</b>	<b>Mod</b>	<b>Low</b>	<b>Mod</b>	<b>Low</b>	<b>Low</b>	<b>Low</b>	<b>Mod</b>	<b>Low</b>

Table 1: Presence of websites characteristics desirable for older adults, with no or never present= 0, sometimes present= 1, and yes or always present= 2. Usability index is based on Lynch et al.'s (2013) classification.

## Discussion

- Based on Lynch et al.'s (2013) classification system, none of the 9 hearing aid manufacturers showed a high usability index score. The majority of manufacturers showed a low usability index score, with only a few showing moderate usability.
- Both the Flesh-Kincaid Grade Level and SMOG showed that all websites were above the recommended reading level of Grade 6 for health-related and product-related information.
- The product-related reading level scores tended to be higher than the health-related reading levels, for both the Flesh-Kincaid and SMOG reading level measures.
- Manufacturers varied in the amount of clutter present on the homepage; 4 manufacturers consistently showed low clutter on each measure, while 2 manufacturers consistently showed high clutter.
- The results suggests that the majority of hearing aid manufacturer websites do not meet usability recommendations for older adults.
- It is suggested that hearing aid manufacturer websites improve the usability and navigation features, lower the reading level, and consider the amounts of clutter on their websites to better serve the population of older adults.
- Increased usability of manufacturer websites may give older adults more autonomy in their hearing health decisions.
- Clinicians should be aware of the limitations that currently exist in hearing aid manufacturer websites and how that may negatively impact older adults' ability to access information online.

## Note of Appreciation

We want to thank Dr. Rachel Caissie for her continued input, guidance, and encouragement throughout this project.