



Exploring Interface Effect on Skimming Comprehension: Comparing Low-Clutter and No-Clutter Documentation Presentation Environments



Key Concepts

Information Foraging Theory

Derived from evolutionary ecology, this approach assumes people make strategic decisions when looking for information (Sandstrom, 1994).

Skimming for Meaning

Studies have shown people can remember things skimmed (Dyson & Haselgrove, 2000); though not flawlessly (Duggan & Payne, 2009).

Multimodality in Web-Based Interfaces

Reading online presents many challenges that can impact an individual's ability to comprehend (Coiro, 2003). Web pages are often cluttered. Rosenholtz, Li, Mansfield, and Jin (2005) define clutter as "the state in which excess items, or their representation or organization, lead to a degradation of performance at some task."

- We define **low-clutter** in this instance as web pages with minimal clutter and fewer multimodal options, but with the potential to embark on a reading path through the availability of hyperlinks.
- No-clutter** environments like a reader interface reduce multimodal distractions entirely.

Research Questions

RQ1: To what extent, if at all, does using a readability application improve skimming comprehension in a low-clutter online environment?

RQ2: What are the perceived benefits or effects of using a readability application to skim articles for meaning?

Method

Twelve participants skimmed for meaning two articles of comparable complexity in each of the two documentation presentation environments.

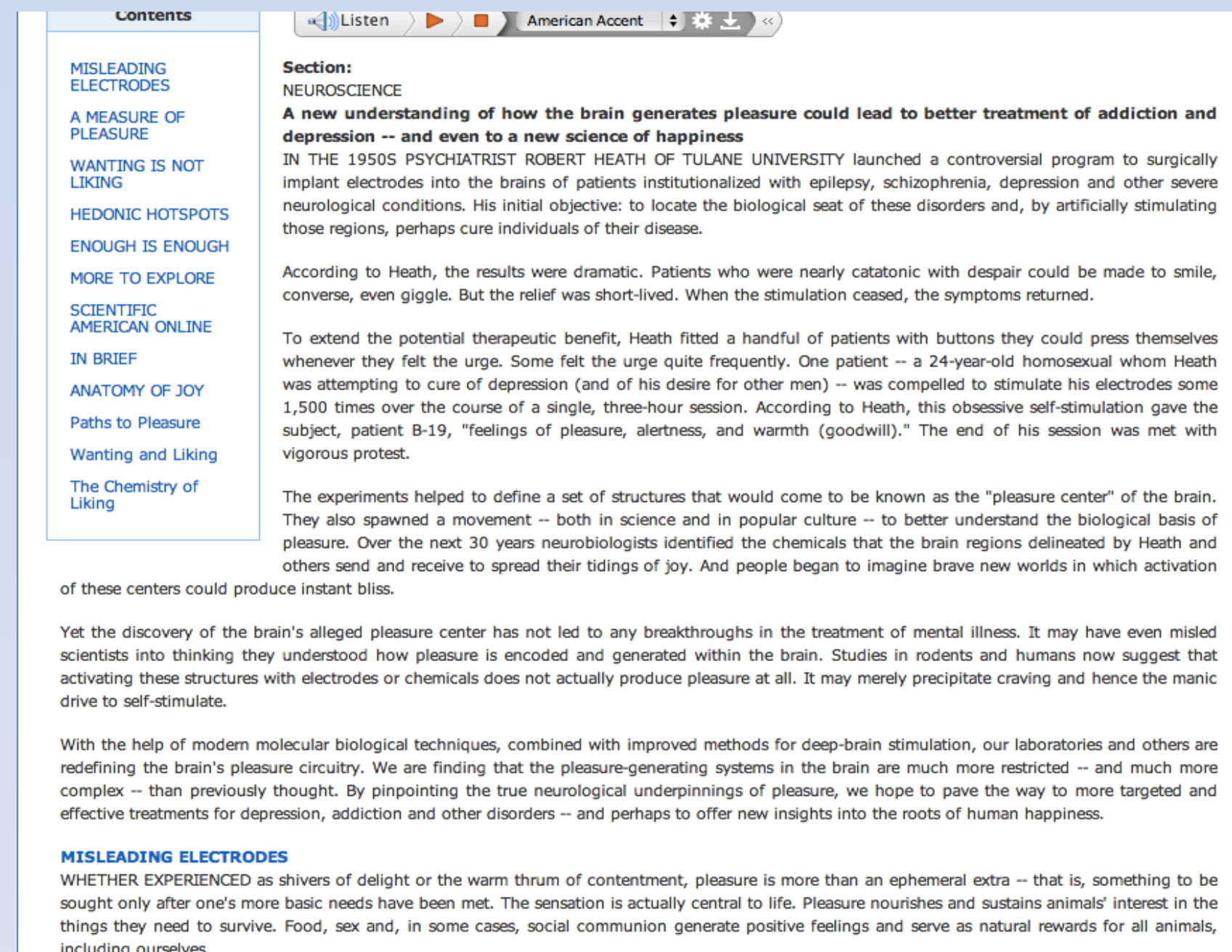
- The low-clutter environment selected was the HTML document interface provided by EBSCO, a journal database.
- The no-clutter, streamlined readability environment was the Safari Browser (Apple) Reader™ application

Afterward, respondents answered a series of true/false comprehension questions using Masson's (1982) method for assessing reading comprehension and took part in an exit interview.

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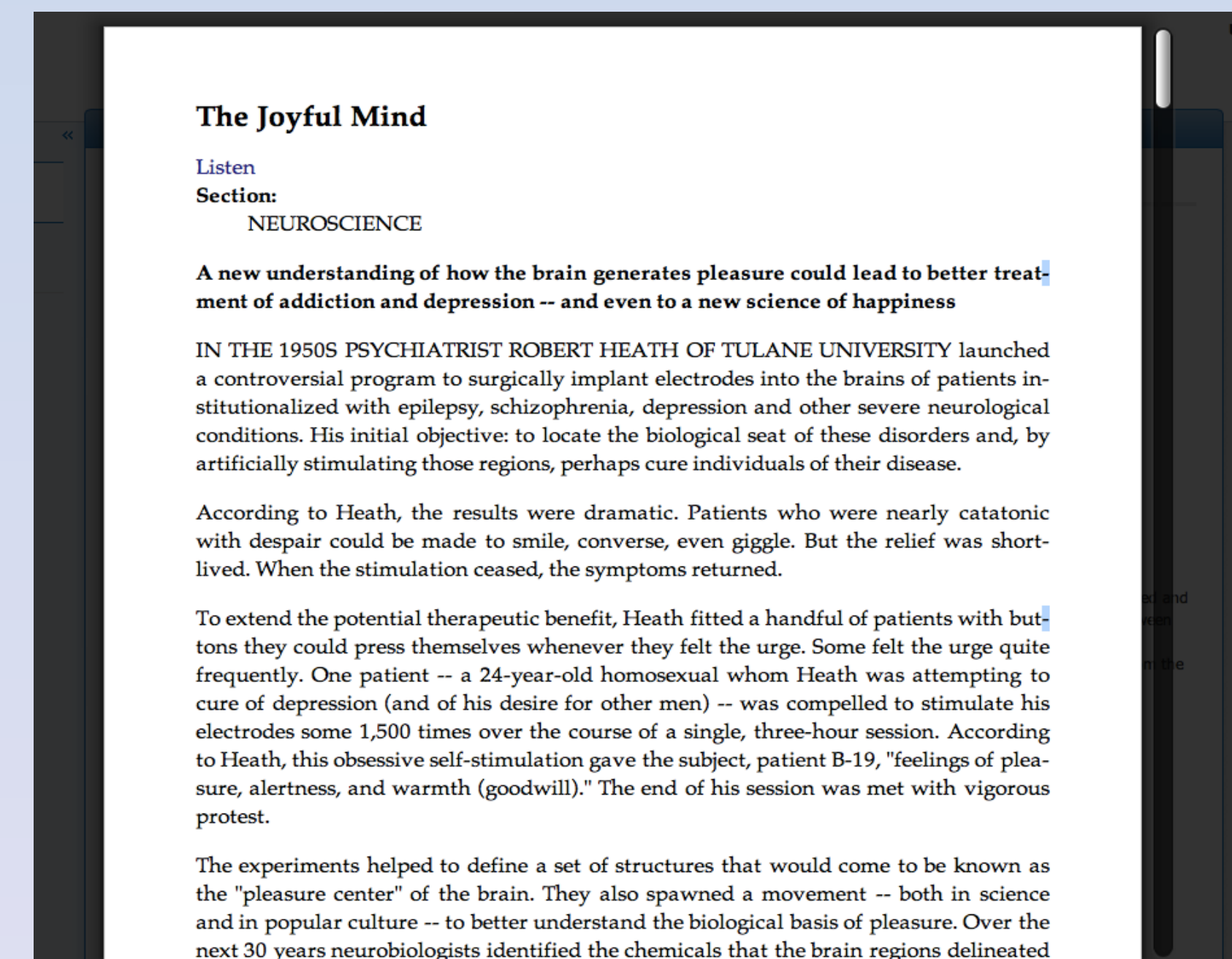
Documentation Presentation Environments

EBSCO: Low-Clutter



EBSCO HTML environment
 Font Size = 12 point
 Line Length = 110 words
 Font Type = sans serif
 Strength = **font type**
 Weakness = font size, line length

Reader: No-Clutter

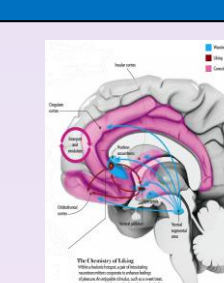


Apple's Safari Browser Reader™ application
 Font Size = 14 point
 Line Length = 66 words
 Font type = serif
 Strength = **Line length**
 Weakness = font size, font type

Articles Tested



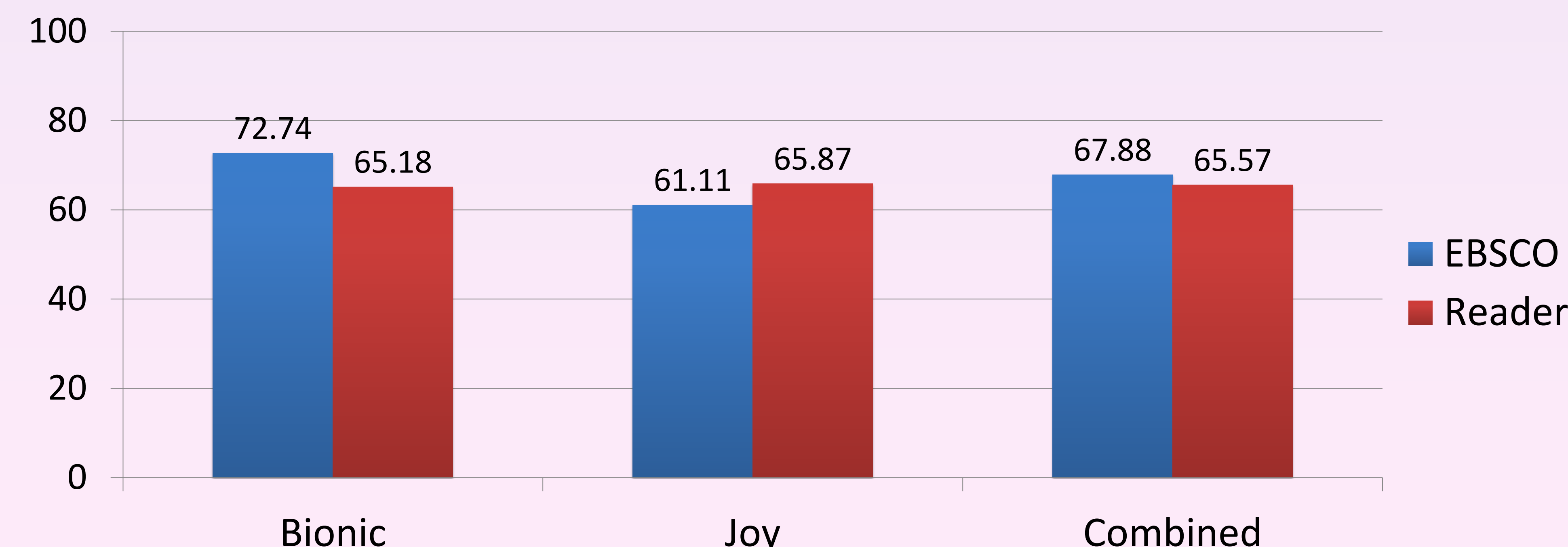
Cullen, D., & Smith, D. H. (2013). Bionic connection. *Scientific American*, 308(1), 52-57. (Bionic)



Kringelbach, M. L., & Berridge, K. C. (2012). The joyful mind. *Scientific American*, 307(2), 40-45. (Joy)

Results

Percent questions answered correctly about each article in each interface



Neither interface provided a strong advantage to skimming comprehension.

Participant Debriefing

All twelve of the participants liked the reader interface and six thought it improved their ability to skim for meaning.

Discussion & Conclusions

The low-clutter Reader™ interface with its shorter line length had no effect for meaning as compared to the EBSCO document presentation interface and therefore would not aid in information foraging.

- All participants reported preferring the Reader™ environment
- Participants reported reading rather than skimming when in the Reader™ environment
 - one participant revealed having a severe learning disability in reading -- this individual's score was greatly improved by the readability application

Future Research:

- Investigate readability applications and the effects on skimming comprehension in high-clutter environments
- Repeat experiment:
 - with another readability application and optimize the font size, font type, and line length
 - testing instead for *reading* comprehension
 - investigate uses for readability applications for reading and skimming in users with reading disabilities

Selected References

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