



Evidence Summary

Age and Context Sensitivity Associated with Reduced Success in Finding Health Information Online

A Review of:

Agree, E. M., King, A. C., Castro, C. M., Wiley, A., & Borzekowski, D. L. G. (2015). "It's got to be on this page": Age and cognitive style in a study of online health information seeking. *Journal of Medical Internet Research*, 17(3), e79. <http://dx.doi.org/10.2196/jmir.3352>

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Abstract

Objective – To determine the extent to which age and cognitive style influence an individual's ability to successfully locate health information online.

Design – Quantitative study employing scales and regression analysis.

Setting – A school of public health and a school of medicine at two universities in the United States of America.

Subjects – 346 men and women 35 years or older.

Methods – Participants for the Online Health Study (OHS) were recruited from the

community at both study sites using stratified sampling and screened with a web-based tool to ensure they had the necessary level of digital literacy to complete the study tasks. Once enrolled, participants completed the Rapid Estimate of Adult Literacy in Medicine (REALM) to measure their health literacy and the Witkin Group Embedded Figures Test (GEFT) to determine their cognitive style (labelled by researchers as context sensitive or context independent). Participants were asked to search online for answers to six specific questions on heart-healthy diets, flu vaccinations, alternative medicine and memory, genetic testing, assistive medical technology, and skin cancer, with 15 minutes of search time allowed for each question. Participants reported their answers after each search, which were later assigned scores for

accuracy and for specificity. When combined, these two scores were used as a measure of success. Researchers used STATA 11 statistical software to run logistic regression, ordinal logistic regression, and generalized linear models on the data in order to predict which variables were associated with success on the search tasks.

Main Results – Only 323 of the 346 participants completed all study tasks, and their data formed the basis of the analysis. On average, participants correctly answered 4.1 out of 6 questions. Participants provided the most accurate and successful answers for the question on heart-healthy foods, and the least accurate answers on the question about seasonal flu shots. They were the least successful in answering the question about herbal supplements for memory. Across all models, older participants were less likely to be successful in locating the answers to the questions than younger participants, even controlling for the other variables measured in the study. In particular, older participants had the most difficulty with the question on medical technology, which required the use of mapping. Overall, the models suggest that higher levels of education, greater daily Internet use, and higher health literacy were associated with greater success on the search tasks, the extent to which varied from question to question. The exception in the case of education was the question relating to herbal supplements and memory, as participants with higher levels of education were more likely to score poorly in their responses. Participants whose cognitive style was found to be context sensitive were less likely to find the information needed in their online searches than those who were context independent, particularly on the questions relating to a heart-healthy diet, skin cancer, and medical technology.

Conclusion – The study suggests that age, cognitive style, level of health literacy, daily Internet use, and prior education are all important variables in determining whether an individual can successfully take advantage of the increasing amount of health information available on the Internet. Specific approaches

to web design could be used to improve the success rate of those who are context sensitive, and greater support and direction to reputable online health sources from medical and information professionals could assist those who are less health literate.

Commentary

For those working to address disparities in health literacy, the results of the Online Health Study suggests that there is a tough road ahead. Even among a non-representative sample characterized by familiarity with the Internet, high levels of health literacy, and in many cases a college education, only 9% of the study participants were able to correctly answer all 6 health related questions (p. 10). Older adults struggled more than their younger counterparts, even when their computer skills were not in question. While the study acknowledges the potential role of librarians in supporting health literacy, they may face the same struggles with having adequate time, resources, and training to do so as the authors note for medical professionals (Luo & Park, 2013). Studies such as this demonstrate that this work, while challenging, is necessary for public health.

While cognitive styles and their relationship to search behaviour have been studied extensively, their specific impact on electronic health literacy appears to be relatively unexplored. The decision to use the terms “context sensitive” and “context independent” to describe participants’ cognitive styles throughout the article is curious. The GEFT test itself specifically measures the concepts of field independence and field dependence (Witkin, 1971), and those are the terms used in the studies cited by the researchers to support their discussion of cognitive styles. Employing this more common terminology would be helpful to readers wishing to explore the concepts further in the literature, and not contribute to the already confusing array of potentially synonymous terms used to describe cognitive (or learning or intellectual) styles. There is ongoing debate among scholars about how field independence-dependence should be best addressed, or whether it needs

to be addressed at all, in the design of online resources and learning environments (Evans, Richardson, & Waring 2013), which may not be clear from the limited literature review provided.

The literature review also references only a fraction of the extensive research that has taken place on older adults' use of the Internet. Variables such as income, health status, race/ethnicity, and access to broadband Internet have been shown to impact Internet use among this population, but their influence was not investigated in this study (e.g., Choi, 2011; Flynn, Smith, & Freese, 2006; Smith, 2014). Further detail on the regression analysis conducted on the included variables should have been reported, such as the goodness of fit of the models or the *p*-values (Lang & Altman, 2013). It would also have been helpful to know if the computer labs where participants completed their exercises at each institution were comparable in terms of available equipment and systems.

The findings of this study may be of interest to information professionals who work with the public on questions of consumer health, as well as those involved in the development or selection of online tools addressing this need. Those interested in cognitive styles and the design of online resources will wish to explore the literature further to find the evidence needed to support their decision making.

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