The Effects of Domain Knowledge and Concept Map on Processing and Memory for Hypertension-related Text

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INTRODUCTION

Older adults with chronic illness often do not understand the information they need for self-care, in part because of inadequate health literacy and broader cognitive limits related to processing capacity (Chin et al., 2011). Although they may leverage internal resources (knowledge) and external resources (external aids) to help offset these limits and support comprehension, a concept map (CM) is an aid often used in the classroom to support learning, but is rarely used in patient education. Little is known about the effect of CMs on older adults' comprehension.

A matched accessible websites (e.g., NIH, AHA). Each passage contained text presented either with a CM (structured aid, which highlighted the organization of important text concepts), a matched graphic aids (controls) may further improve recall by scaffolding knowledge use during comprehension (e.g., making it easier to use knowledge structures to integrate concepts in the text; also see Morrow et al., 2012).

To investigate whether CMs improve comprehension because they are structured (depict relationships among concepts in the text), we also included an unstructured control graphic that simply listed the same concepts.

METHODS

Participants

52 Community-dwelling older adults participated (Mage=69.7, range=60-93 years; Meducation=15.3, range=12-18 years). They varied in knowledge about hypertension (Hypertension Knowledge Questionnaire or HTK; Chin et al., 2011; M=29.9, range=23-37). 52% were diagnosed with hypertension.

Materials and Design

Nine hypertension-related passages were created based on information from publically accessible websites (e.g., NIII, AHA). Each passage contained text presented either with a CM (structured aid, which highlighted the organization of important text concepts), a matched concept list (CL), unstructured aid, which contained the concepts identical to those in CM without the organization), or no aid (see Figure 1).

Procedure

Participants completed the HTK questionnaire. They then read three passages with CM, three with CL, and three without an aid, and eye-movements were tracked in order to measure online comprehension processes. They completed a cued recall test for passage information after all 9 passages were presented.

RESULTS

The higher-knowledge individuals spent more time viewing both the CM and the CL compared to the lower-knowledge counterparts, z=3.19, p<.001. Participants tended to spend a greater proportion of time inspecting the CM than the CL for both knowledge groups, z=6.50, p<.001 (see Figure 3).

CONCLUSIONS

Older adults with more health knowledge may benefit more from CMs than those with less knowledge.

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