Does Content Affect Whether Users Remember That Web Pages Were Hyperlinked?

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Objective: We determined whether memory for hyperlinks improved when they represented relations between the contents of the Web pages. **Background:** J. S. Farris (2003) found that memory for hyperlinks improved when they represented relations between the contents of the Web pages. However, Farris's (2003) participants could have used their knowledge of site content to answer questions about relations that were instantiated via the site's content and its hyperlinks. **Method:** In Experiment 1, users navigated a Web site and then answered questions about relations that were instantiated only via content, only via hyperlinks, and via content and hyperlinks. Unlike Farris (2003), we split the latter into two sets. One asked whether certain content elements were related, and the other asked whether certain Web pages were hyperlinked. Experiment 2 replicated Experiment 1 with one modification: The questions that were asked about relations instantiated via content and hyperlinks were changed so that each question's wrong answer was also related to the question's target. **Results:** Memory for hyperlinks improved when they represented relations instantiated within the content of the Web pages. This was true when (a) questions about content and hyperlinks were separated (Experiment 1) and (b) each question's wrong answer was also related to the question's target (Experiment 2). **Conclusion:** The accuracy of users' mental representations of local architecture depended on whether hyperlinks were related to the site's content. **Application:** Designers who want users to remember hyperlinks should associate those hyperlinks with content that reflects the relation between the contents on the Web pages.

INTRODUCTION

Many claim that users develop mental representations of Web sites that they have visited (Cockburn & Jones, 1996; Dillon, McKnight, & Richardson, 1993; Dillon, Richardson, & McKnight, 1990; Farris, 2003; Farris, Jones, & Elgin, 2002; Gray, 1990; McDonald & Stevenson, 1998; McKnight, Dillon, & Richardson, 1991; Modjeska & Marsh, 1997; Otter & Johnson, 2000; Stanton & Baber, 1992; Stanton, Taylor, & Tweedie, 1992; van Hooijdonk, Maes, & Ummelen, 2006). However, only a few studies have examined the nature of those mental representations (Farris, 2003; Farris et al., 2002; Gray, 1990; Modjeska & Marsh, 1997; Otter & Johnson, 2000). Those studies have examined users' mental representations of Web site architecture – that is, how Web pages were hyperlinked (Farris, 2003; Farris et al., 2002; Gray, 1990; Modjeska & Marsh, 1997; Otter & Johnson, 2000).

Remembering Global Architecture

Most studies examined users' mental representations of a Web site's global architecture – that is, all of the site's pages and hyperlinks (Farris et al., 2002; Gray, 1990; Modjeska & Marsh, 1997; Otter & Johnson, 2000). To do so, they had their participants explore a Web site and then draw pictures that represented the site's Web pages and all of the hyperlinks that connected those pages (Farris et al., 2002; Gray, 1990; Modjeska & Marsh, 1997; Otter & Johnson, 2000).

Those drawings suggested that users do not remember a visited Web site's global architecture very well (Farris et al., 2002; Gray, 1990; Modjeska & Marsh, 1997; Otter & Johnson, 2000).

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For example, participants drew hierarchies that did not match the Web site's hierarchical architecture (Farris et al., 2002; Modjeska & Marsh, 1997). Furthermore, many participants drew strongly hierarchical architectures when the Web site was a network – that is, a nonhierarchy (Farris et al., 2002). Collectively, these studies suggested that users do not develop accurate mental representations of a visited Web site's global architecture.

Remembering Local Architecture

Using a different procedure, Farris (2003) studied users' mental representations of a Web site's local architecture – that is, hyperlinks between specific Web pages. In addition, he examined whether users' goals affected those representations.

In that study, participants explored a Web site about a fictitious television show. Individual Web pages described information about events in the lives of particular characters who could be related in three ways. First, certain characters were related only via the show's plot. For example, Samuel and Natalie were ex-lovers, but their Web pages were not hyperlinked. Second, certain characters were related only via a hyperlink between their Web pages. For example, Samuel's page was hyperlinked to Mason's page even though those characters were not related via the story's plot. Lastly, characters were related in both of these ways. For example, Samuel and Caroline were coworkers and their Web pages were hyperlinked.

Users explored this site in order to accomplish one of two goals. Half imagined that they were story writers. They browsed the site in order to determine which character's removal would least impact the show's plot. Thus, they focused on conceptual relations between characters. According to Farris (2003), that focus should cause story writers to represent the site's content rather than its architecture. The remainder imagined that they were Webmasters. They browsed the site in order to determine which page's removal would break the fewest hyperlinks. Thus, they focused on hyperlinks between Web pages. According to Farris (2003), that focus should cause Webmasters to represent the site's architecture rather than its content.

After exploring the site, participants answered several questions. Some questions asked about site content – for example, "Ashley and (1) Garrett or (2) Brandon are coworkers." Others asked about site architecture – for example, "Kyle and (1) Jessica or (2) Paul Web pages are linked." The remainder asked about site content and/or architecture – for example, "Emma and (1) Jessica or (2) Ashley are enemies and/or Web pages are linked."

Farris's (2003) results indicated that all users accurately represent certain aspects of a Web site's local architecture. For example, story writers (54%) and Webmasters (58%) remembered, at levels significantly above chance (50%), that certain characters' Web pages were hyperlinked. Such performance was noteworthy, given that those characters were related only via hyperlinks.

In addition, Farris's (2003) results suggested that the accuracy of users' mental representations of local architecture may depend on whether hyperlinks are related to the site's content. Specifically, both groups remembered whether certain characters were related via the show's plot and/or their characters' Web pages were hyperlinked (story writers: 90%; Webmasters: 77%) better than they remembered that (a) otherwise unrelated characters' Web pages were hyperlinked (story writers: 54%; Webmasters: 58%) or (b) otherwise unrelated characters were related via the show's plot (story writers: 83%; Webmasters: 69%). If participants used their knowledge of site architecture to answer questions about whether certain characters were related via the show's plot and/or via hyperlinked Web pages, then one could conclude that users' mental representations of the site's local architecture were enhanced when hyperlinks were related to the site's content.

However, that conclusion may be premature. After all, those questions asked whether certain characters were related via the show's plot *and/or* their characters' Web pages were hyperlinked. Consequently, participants could have exclusively used their knowledge of site content to answer those questions.

Unfortunately, Farris's (2003) experiment did not discern whether participants used their knowledge of site content or of architecture to answer questions about whether certain characters were related via the show's plot and/or via hyperlinked Web pages. Experiment 1 begins to do so.

EXPERIMENT 1: OBJECTIVE

This experiment's primary goal was to determine whether participants used their knowledge of site content or architecture to answer questions

about whether certain characters were related via the show's plot and/or those characters' Web pages were hyperlinked. To do so, Farris's (2003) original questions were split into two sets. One set asked whether certain characters were related via the show's plot. The other asked whether certain Web pages were hyperlinked.

If participants answer the new hyperlink-related questions about characters who were related via content and hyperlinks better than questions about characters who were related only via hyperlinks, then that will suggest that users' mental representations of local architecture were enhanced when hyperlinks were related to site content. On the other hand, if that does not happen, then that will suggest that users did not remember hyperlinks well, even when they were related to the site's content.

EXPERIMENT 1: METHOD

Participants

Sixty-three undergraduates (45 women, 18 men) between 18 and 40 years old (M = 19.29, SD = 3.49) participated in order to fulfill course credit. They reported using computers for a mean of 7.46 years (SD = 2.78) and the Web for 5.89 years (SD = 1.96). In addition, they reported using computers (offline) for 10.28 hr per week (SD = 8.85) and the Web for 21.32 hr per week (SD = 24.10).

Apparatus

All experimental materials were presented on Dell Optiplex computers equipped with Pentium 4 processors and 17-inch (43-cm) monitors. These computers ran Windows XP.

The experimental Web site was identical to the one used by Farris (2003). As noted earlier, the site presented information about a fictitious soap opera called *Creston.* Individual Web pages displayed information about current events in the lives of particular characters (Figure 1). Characters were related in three ways: (a) via the soap opera's plot, (b) via hyperlinks between the characters' Web pages, and (c) via the show's plot and hyperlinks between the characters' pages.

Given the nature of these relations, the Web site had a network structure (Mohageg, 1992). This type of organization was necessary because alternative organizations (e.g., hierarchical) would not correctly represent the richly interconnected relations between characters. Furthermore, a network

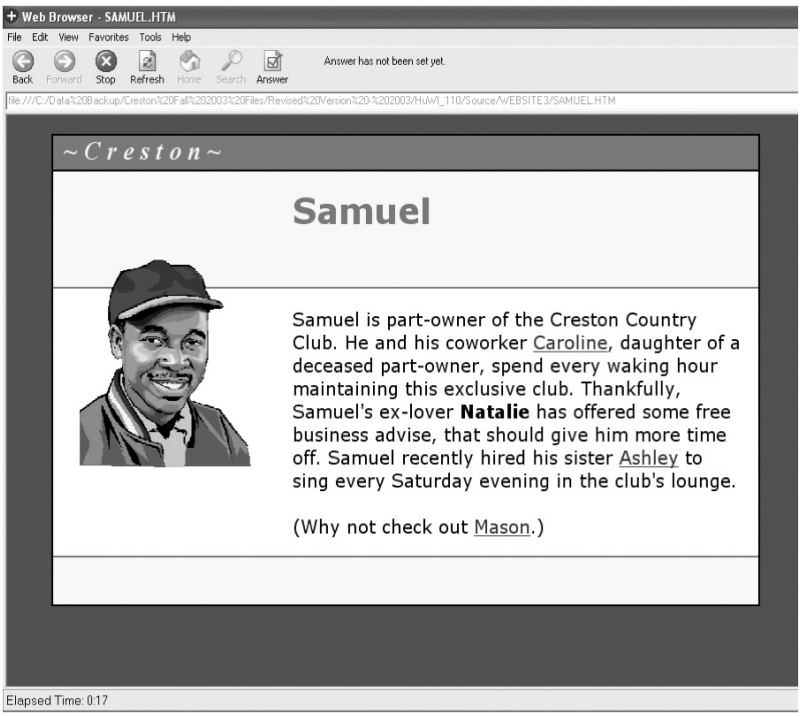

Figure 1. An example Web page from the *Creston* Web site.

structure was necessary to decouple content and hyperlinks. Specifically, relations instantiated via only hyperlinks cannot exist in a hierarchy, wherein Web pages within certain categories are grouped together because of the conceptual relations between them.

The questions were identical to those used by Farris (2003), with one exception. Specifically, participants answered 32 rather than 24 questions after navigating the Web site. As in Farris's (2003) study, 8 of these asked about characters that were related only via the show's plot, and 8 asked about hyperlinks between otherwise unrelated characters' Web pages. Unlike Farris (2003), however, we converted the original 8 questions that asked about characters that were related via plot and hyperlinks into two sets of 8 questions. Eight of these new questions asked about whether those characters were related via plot, and the other 8 asked whether those characters' Web pages were hyperlinked.

Procedure

Participants were run individually or 2 at a time. Testing lasted approximately 30 to 45 min.

Participants were randomly assigned to imagine that they were either story writers or Webmasters for *Creston.* Story writers were told that a character needed to be removed from the soap opera. It was their job to determine which character's removal would sever the fewest relationships with other characters. Accordingly, participants in this condition focused primarily on content. Webmasters were told that a Web page needed to be removed from the site. It was their job to decide which page's removal would break the fewest hyperlinks. Thus, participants in this condition focused primarily on hyperlinks.

These tasks were chosen because they afforded a replication of Farris (2003). Please note, though, that their general nature is common. Specifically, placed in the Morrison, Pirolli, and Card (2001) taxonomies, the purpose of these tasks would be "compare/choose," and their method would be "collect." Compare/choose (51%) and collect (71%) tasks were the most frequently reported types in their respective taxonomies. Consequently, our results should apply to a large proportion of user behaviors.

Once they understood their roles, participants explored the Web site for 20 min. While viewing a particular character's page, participants could click an icon to signify that the character or page (depending on their role) was the one that needed to be removed. In addition, they could change their selections as many times as they wanted. If participants made their selections before 20 min had elapsed, then they were told to continue navigating the site in order to check that their answers were correct.

After exploring the site, participants answered the four sets of questions. Please note that these question types were intermixed and presented randomly to the participants.

EXPERIMENT 1: RESULTS AND DISCUSSION

Did Participants Adopt Their Roles?

If participants adopted their assigned roles, then the two groups should have interacted with the Web site differently. Specifically, story writers should have mostly read content. In contrast, Webmasters should have mostly navigated between Web pages in order to determine which were hyperlinked. Thus, story writers should have viewed fewer Web pages than Webmasters.

This was confirmed by formal analysis. Specifically, a t test revealed that story writers viewed fewer Web pages ($M = 128.13$, $SE = 10.48$) than did Webmasters ($M = 178.45$, $SE = 13.71$), $t(61) = -2.93$, $p = .005$. Accordingly, it appears that participants adopted their assigned roles.

Did Participants' Roles Influence Performance?

Farris (2003) argued that participants' roles should influence their performance. Specifically, he argued that story writers should remember more about content than Webmasters. Furthermore, he argued that story writers should remember less about hyperlinks than Webmasters.

Farris's (2003) experiment partially supported his predictions. As expected, story writers (83%) remembered significantly more about content than did Webmasters (69%). Contrary to his expectations, however, story writers (54%) did not remember significantly less about hyperlinks than did Webmasters (58%).

To determine whether this pattern of results was replicated, we conducted a 2 (role: story writer vs. Webmaster) × 2 (relation: only via plot vs. only via hyperlinks) ANCOVA. The covariate was the number of Web pages viewed by each participant,

which accounted for the fact that story writers and Webmasters had different experiences with the Web site. That is, story writers viewed fewer Web pages than did Webmasters. Such statistical control can help reduce potential bias (Stevens, 2002), although the practice is not without critics (Pedhazur, 1997). Please note that in this and every subsequent analysis, employing ANCOVA did not produce differences that were not also evident in a comparable ANOVA.

The ANCOVA revealed a statistically significant relation main effect, $F(1, 60) = 21.39$, $p < .001$, $\eta^2 = .26$, as well as a significant Role × Relation interaction, $F(1, 60) = 5.51$, $p = .02$, $\eta^2 = .08$. The role main effect was not statistically significant, $F(1, 60) = 0.32$, $p = .57$, $\eta^2 = .005$.

Follow-up analyses investigated the nature of the Role × Relation interaction. Those tests analyzed unadjusted scores. They revealed that story writers ($M = 80.08$, $SE = 2.56$) remembered significantly more about whether characters were related via plot than did Webmasters ($M = 70.97$, $SE = 2.74$), $t(61) = 2.43$, $p = .018$. In contrast, a t test indicated that story writers ($M = 50.00$, $SE = 3.17$) did not remember significantly less about hyperlinks than did Webmasters ($M = 55.64$, $SE = 2.64$), $t(61) = –1.36$, $p = .18$. Thus, the present results replicated those of Farris (2003).

Was Performance Better Than Chance?

It was prudent to test whether participants remembered the different kinds of relations at levels significantly above chance. To do so, we computed one-sample t tests with chance performance set at 50%. Separate t tests were computed for the story writer and Webmaster conditions.

Questions about characters related via plot. The t test for the story writer condition ($M = 80.08$, $SE = 2.56$) was statistically significant, $t(31) = 11.73$, $p < .001$. Likewise, the t test for the Webmaster condition ($M = 70.97$, $SE = 2.74$) was statistically significant, $t(30) = 7.64$, $p < .001$. Therefore, users remembered whether characters were related via *Creston*'s plot at levels above chance.

Questions about characters related via hyperlinks. The t test for the story writer condition ($M = 50.00$, $SE = 3.17$) was not statistically significant, $t(31) < 0.001$, $p = 1.00$. In contrast, the t test for the Webmaster condition ($M = 55.64$, $SE = 2.64$) was statistically significant, $t(30) = 2.13$, $p = .04$. Therefore, users remembered hyperlinks at levels significantly above chance only when they focused on them.

Questions about characters related via plot and hyperlinks. As noted earlier, questions about these relations were split into two sets. One set asked whether certain characters were related via the show's plot, and the other asked whether certain Web pages were hyperlinked. The t tests revealed that story writers ($M = 87.11$, $SE = 2.14$), $t(31) = 17.37$, $p < .001$, and Webmasters ($M = 84.27$, $SE = 2.78$), $t(30) = 12.34$, $p < .001$, remembered whether these characters were related via the *Creston* plot at levels significantly above chance. Likewise, t tests revealed that story writers ($M = 77.73$, $SE = 3.26$), $t(31) = 8.51$, $p < .001$, and Webmasters ($M = 76.61$, $SE = 3.80$), $t(30) = 7.02$, $p < .001$, remembered whether these Web pages were hyperlinked at levels significantly above chance. Thus, users remembered both content and hyperlinks at levels above chance when relations were instantiated in both of those ways.

Did Context Improve Memory of Local Architecture?

Farris's (2003) results suggested that users' mental representations of local architecture may have been more accurate when hyperlinks were related to the site's content. If so, then participants in the present study should have answered hyperlink-related questions about characters who were related via content and hyperlinks better than questions about characters who were related only via hyperlinks.

To test that possibility, we conducted a 2 (role: story writer vs. Webmaster) × 2 (question type: hyperlink question when related via content and hyperlinks vs. hyperlink question when related only via hyperlinks) ANCOVA. As before, the covariate was the number of Web pages viewed by each participant.

The ANCOVA's only significant source of variation was the relation main effect, $F(1, 60) = 18.50$, $p < .001$, $\eta^2 = .24$. Participants answered hyperlink questions about relations instantiated via content and hyperlinks ($M = 77.17$, $SE = 2.49$) significantly better than hyperlink questions about relations instantiated only via hyperlinks ($M = 52.82$, $SE = 2.07$). Consequently, the results of Experiment 1 suggest that users' mental representations of local architecture may be more accurate when hyperlinks are related to the site's content.

There is, however, an alternative explanation. When the original questions from Farris (2003) were modified, the correct answer was always paired with a character that was completely unrelated to the target character.

For example, an original question read "Samuel and (1) Caroline or (2) Garrett are coworkers and/or Web pages are linked." For Experiment 1, this question was converted into two separate questions, each asking about a different kind of relation between the characters. For example, one question said "Samuel and (1) Caroline or (2) Garrett are coworkers," whereas another said "Samuel and (1) Caroline or (2) Garrett Web pages are linked." In both cases, however, the distracter character was someone completely unrelated to Samuel. Specifically, Garrett was not related to Samuel via either the story's plot or hyperlinks. Thus, these modified questions could be answered correctly simply by indicating which of the two characters was somehow related to Samuel. Accordingly, further research was necessary to rule out the possibility that participants answered these modified questions based on a general understanding that characters were or were not related.

EXPERIMENT 2: OBJECTIVE

This study examined whether participants in Experiment 1 used knowledge about hyperlinks to answer questions about hyperlinks between characters that were related via content and hyperlinks. To do so, we again modified the questions about these characters. Specifically, the incorrect answers were changed to characters that were related to the target character via the show's content.

If performance in Experiment 1 reflected participants' knowledge about hyperlinks between these characters' Web pages, then this modification should not affect performance. On the other hand, if performance in Experiment 1 reflected participants' general knowledge about whether characters were related, then this modification should degrade performance.

EXPERIMENT 2: METHOD

Participants

Eighty undergraduates (50 women, 30 men) between 17 and 36 years old (M = 19.05, SD = 2.33) participated in order to fulfill course credit. They reported using computers for a mean of 7.35 years (SD = 2.92) and the Web for 6.79 years (SD = 3.83). In addition, they reported using computers (offline) for 11.34 hr per week (SD = 12.15) and the Web for 24.98 hr per week (SD = 26.76).

Apparatus and Procedure

This experiment's materials and procedures were identical to those employed in Experiment 1, with one exception. In Experiment 1, two sets of questions asked about relations that were instantiated via both plot and hyperlinks. One set asked about whether characters were related via plot, whereas a separate set asked about whether those characters' Web pages were hyperlinked. In both cases, however, the incorrect answer was a character that was completely unrelated to the target character.

In Experiment 2, these two sets of questions were modified. To do so, the incorrect answers were replaced with characters that were related to the target character. For example, a question said "Samuel and (1) Caroline or (2) Natalie Web pages are linked." In this case, the incorrect answer, Natalie, was related to Samuel as part of the show's plot. Therefore, these modified questions prevented participants from simply responding based on a general impression about which characters were related somehow.

EXPERIMENT 2: RESULTS

Did Participants Adopt Their Roles?

As in Experiment 1, story writers viewed fewer Web pages (M = 149.45, SE = 9.16) than did Webmasters (M = 167.20, SE = 15.83). Unlike for Experiment 1, however, this difference was not statistically significant, $t(78) = -0.97$, $p = .34$. Thus, it is unclear whether participants in Experiment 2 truly adopted their assigned roles.

Please note that Experiment 2 can serve its purpose despite this outcome. This manipulation was included to be consistent with Experiment 1. It was not, however, related to the primary purpose of this study. Accordingly, we carried out some of the analyses that were planned for Experiment 2. In each case, the data were collapsed across the story writer and Webmaster conditions.

Was Performance Better Than Chance?

Questions about characters related via plot. A t test revealed that participants remembered (M = 75.47, SE = 2.22) whether these characters were

related as part of *Creston*'s plot at levels above chance, $t(79) = 11.49$, $p < .001$. This result was consistent with Experiment 1.

Questions about characters related via hyperlinks. A *t* test revealed that participants did not remember ($M = 52.03$, $SE = 1.76$) whether these characters' Web pages were hyperlinked at levels significantly above chance, $t(79) = 1.16$, $p = .25$. This suggests that participants did not remember hyperlinks very well when those hyperlinks were not also instantiated via content. This outcome was consistent with findings for story writers in Experiment 1.

Questions about characters related via plot and hyperlinks. A *t* test revealed that participants remembered ($M = 88.59$, $SE = 1.58$) whether these characters were related as part of *Creston*'s plot at levels above chance, $t(79) = 24.50$, $p < .001$. In addition, another *t* test revealed that participants remembered ($M = 63.75$, $SE = 2.02$) whether these characters' Web pages were hyperlinked at levels above chance, $t(79) = 6.80$, $p < .001$. This outcome was consistent with Experiment 1.

Did Context Improve Memory of Local Architecture?

The results of Experiment 1 supported the possibility that users' mental representations of local architecture may be more accurate when hyperlinks are related to the site's content. However, given the nature of the questions used in Experiment 1, it was also possible that performance simply reflected users' general knowledge that certain characters were related. If so, then participants in the present study should not have answered hyperlink-related questions about characters who were related via content and hyperlinks better than questions about characters who were related only via hyperlinks.

To test that possibility, we conducted an ANCOVA. The independent variable was question type (hyperlink question when related via content and hyperlinks vs. hyperlink question when related only via hyperlinks). As in Experiment 1, the covariate was the number of Web pages viewed by each participant.

The ANCOVA revealed a significant relation main effect, $F(1, 78) = 8.07$, $p = .006$, $\eta^2 = .09$. Participants answered hyperlink questions about relations instantiated via content and hyperlinks ($M = 63.75$, $SE = 2.04$) significantly better than hyperlink questions about relations instantiated only via hyperlinks ($M = 52.03$, $SE = 1.72$).

This outcome is consistent with Experiment 1. Thus, it appears that performance in Experiment 1 did not solely reflect participants' knowledge that characters were related somehow. Instead, the present results suggest that users' mental representations of local architecture were more accurate when hyperlinks were related to the site's content.

Please note, however, that participants in Experiment 2 ($M = 63.75$, $SE = 2.02$) answered hyperlink-related questions about relations that were instantiated via content and hyperlinks less well than the participants in Experiment 1 did ($M = 77.18$, $SE = 2.47$). This suggests that performance in Experiment 1 partly reflected participants' general knowledge that certain characters were related. However, firm conclusions should not be drawn until this difference is replicated with samples collected under comparable conditions.

GENERAL DISCUSSION

Few studies have examined the nature of the mental representations that are formed as users explore Web sites (Farris, 2003; Farris et al., 2002; Gray, 1990; Modjeska & Marsh, 1997; Otter & Johnson, 2000). Of those, only Farris (2003) examined users' mental representations of the site's local architecture—that is, whether certain Web pages were hyperlinked.

Farris (2003) found that users remembered that certain Web pages were hyperlinked even when the content of those pages was not related. Furthermore, he found that users' memory for hyperlinks improved when those hyperlinks represented relations between the contents of those Web pages. Consequently, Farris's (2003) results suggested that the accuracy of users' mental representations of local architecture depends on whether hyperlinks are related to the site's content.

One could argue, however, that Farris's (2003) participants could have used their knowledge of site content to answer questions about relations that were instantiated via the site's content and its hyperlinks. Experiments 1 and 2 tested that possibility by splitting Farris's (2003) questions about relations instantiated via the site's content and its hyperlinks into two sets. One set asked whether certain content elements were related. The other asked whether certain Web pages were hyperlinked.

In both experiments, users' memory for hyperlinks improved when those hyperlinks represented relations between the contents of those Web pages. This was true even though questions about content and hyperlinks were separated (Experiment 1). Furthermore, this was true even though the questions were modified so that each question's wrong answer was also related to the question's target (Experiment 2). Thus, the results of Experiments 1 and 2 support the idea that the accuracy of users' mental representations of local architecture depends on whether hyperlinks are related to the site's content. Future research should determine whether these results replicate when users' tasks have different purposes and methods (Morrison et al., 2001).

In the meantime, the present results are interesting on multiple levels. On a theoretical level, the results of Experiments 1 and 2 appear to be consistent with what is known about information storage and retrieval.

In terms of storage, it is likely that relations instantiated via content and hyperlinks would lend themselves more to elaborative rehearsal (Baddeley, 1990; Craik & Lockhart, 1972) than would relations instantiated via only hyperlinks. After all, the former contains more semantic information than the latter, and this information should facilitate the development of more and better associations with existing knowledge. In terms of retrieval, it is likely that relations instantiated via content and hyperlinks would benefit more from spreading activation (Collins & Quillian, 1972) than would relations instantiated via only hyperlinks. After all, compared with the latter, the former should be better integrated into semantic memory and therefore provide more and faster routes for retrieval by spreading activation. Consequently, it is reasonable that users' mental representations of local architecture were enhanced when hyperlinks were related to the site's content.

On a practical level, the results of Experiments 1 and 2 suggest that designers who want users to remember hyperlinks between Web pages should create hyperlinks that reinforce the relation between the contents of those pages. That is, designers who want users to remember hyperlinks should associate those hyperlinks with content that reflects the relation between the contents on those Web pages.

For example, if the designer wants users to remember a hyperlink to "faculty supervisors" on a psychology clinic's Web page, then that hyperlink should be integrated into the Web page's content concerning clinic supervision. Better yet, the designer could provide two hyperlinks: one in the Web page's navigation menu and a redundant hyperlink that would be associated with the content that reflects the relation between the contents of those Web pages (Bernard, Hull, & Drake, 2001). Please note that such changes should not hinder visual search (Evans, 1998) and would align with users' preferences regarding hyperlink placement (Bernard & Hull, 2002; Bernard et al., 2001).

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