

APPLYING THE MATERIAL APPROPRIATE PROCESSING FRAMEWORK TO LEARNING THROUGH
VIDEO AND TEXT

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Abstract

This study applies a material appropriate processing (MAP) perspective to the study of embedded questions in expository audiovisual and text presentations. The MAP approach postulates that expository material naturally elicits more processing of details than relationships; therefore, encoding strategies that elicit processing not spontaneously elicited by the material will particularly benefit memory. I predicted that participants viewing a video or reading a passage with no embedded questions should remember more detail than relational information, and embedding relational questions should significantly enhance recall of relational information.

Previous literature on embedded questions has demonstrated that questions embedded throughout text typically enhance memory for targeted information and sometimes for similar types of nontargeted information. Consequently, I anticipated that detail questions might enhance recall of targeted details but not of nontargeted ones. I also explored the effect of pacing on recall. Some researchers have found that quickly changing camera angles comprehension; others contend that varying angles increases engagement. I investigated pacing effects by presenting the video with either varying camera angles or a single angle. Embedding detail or relational questions in a video lecture shown from single or multiple camera angles increased memory for the targeted information. Recall of the some types of nontargeted information also showed some enhancement.

Introduction

Questions embedded throughout a text typically enhance memory for the targeted information and sometimes for similar types of nontargeted information (Hamilton, 1985; van den Broek, Tzeng, & Risdén, 2001). The current study extended the study of embedded questioning in expository prose to audiovisual presentations and utilized a material appropriate processing perspective (Einstein, McDaniel, Owen, & Coté, 1990), which postulates that expository material naturally elicits more processing of details than relationships so encoding strategies that elicit processing not spontaneously elicited by the material (i.e., relational strategies) will particularly benefit memory. Thus, we predicted that participants viewing a video with no additional encoding strategies (i.e., no embedded questions) should remember more detail than relational information, and embedding relational questions should significantly enhance recall of relational information. Detail questions might enhance recall of targeted details but not of nontargeted ones. A final issue was if the pacing of the video affected recall. Some researchers have found that quickly changing camera angles reduces viewers' comprehension (McCollum & Bryant, 2003), while others contend that varying angles increases viewer engagement (Smith & Gevins, 2004). The current study investigated pacing effects using two versions of the audiovisual presentation – one with varying camera angles and one with a single angle.

Method

All participants viewed a 10-minute videotaped lecture on *déjà vu* under one of six conditions formed by the combination of pacing (single angle, multiple angles) and encoding (no embedded questions, detail questions, relational questions). The single angle presentation showed the lecture from a constant frontal view; the multiple angles presentation showed the

same lecture from angles that changed every 6.29 sec. The embedded question versions presented one printed question at 10 points during the lecture; 30 seconds were allowed for the answering of each of the 10 embedded questions. After the video, a brief survey, and a 3 minute distractor task, participants were allotted 5 minutes to write down all the information they remembered from the video. Then they received a 20-item short answer test containing 5 items each on detail information targeted by the detail embedded questions, details not previously targeted, relational information targeted by relational embedded questions, and relational information not previously targeted.

Results

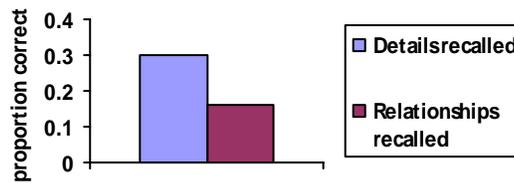
Recall under single versus multiple camera angles was not significantly different for free recall or for cued recall. As predicted, participants recalled significantly more detail information than relational information. The data from the free recall findings showed that the detail embedded question group recalled more targeted detail information than the control and relational embedded question groups and more nontargeted details than the relational embedded question group. The control, relational, and detail questions groups did not differ significantly in recall of targeted relational information or nontargeted relational information.

The data from the cued recall findings show that the detail embedded question group recalled significantly more targeted detail information than both the relational and control groups. Similarly, the relational embedded question group recalled significantly more targeted relationships than the control group; the relational embedded question group also recalled more targeted relationships than the detail embedded question group, but the difference was not significant. There were no significant differences between the control, detail, and relational

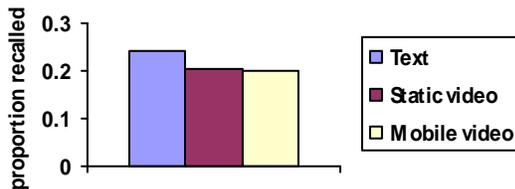
questions groups for the recall of nontargeted detail information or nontargeted relational information.

Also, the data reveal that the text group recalled significantly more propositions correctly for the cued recall exercise than both video groups. The embedded questions significantly enhanced overall cued recall rates in comparison to the control (no questions) group, and the information targeted by the embedded questions was recalled significantly more than nontargeted information.

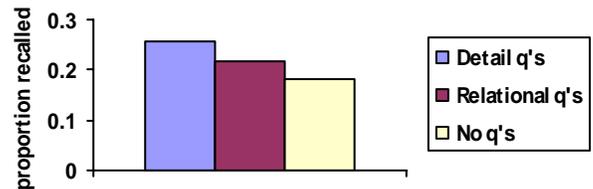
Overall Cued Recall: Details vs. Relationships



Effect of presentation format on overall cued recall

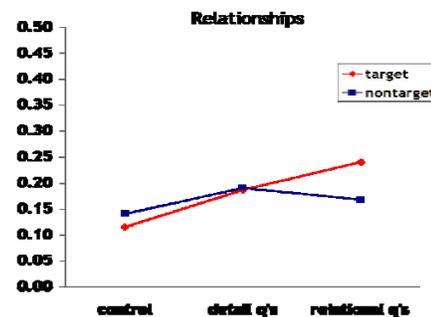
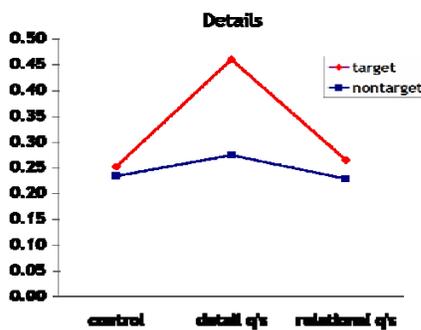


Effect of embedded questions on overall cued recall

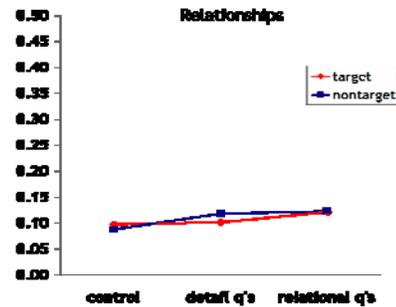
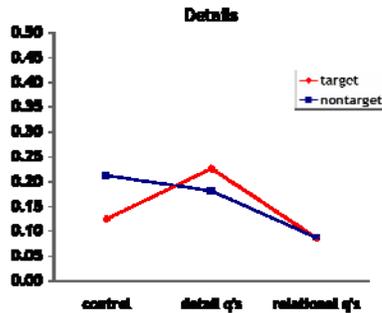


Interaction Effects for Recall of Details and Relationships as a Function of Type of Information and Embedded Question Condition

Cued Recall



Free Recall



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