



Context-Dependent Memory and Chewing Gum

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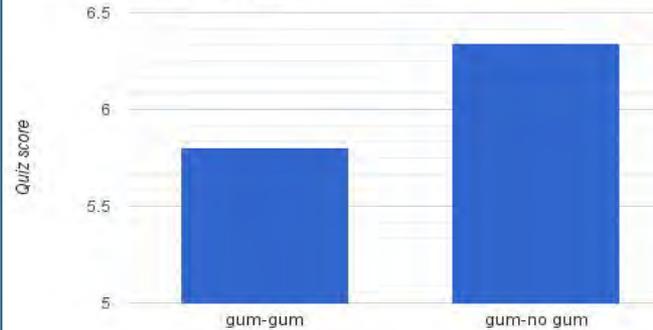
INTRODUCTION

- How can memory be improved? One important notion to consider when researching memory is the state dependent memory phenomenon (described as memory retrieval being most efficient when individuals are in the same state of consciousness as they were when the memory was formed). For example, should students chew gum while taking an exam if they chewed gum while studying? State dependency and memory have produced contrasting results, with some findings supporting the notion (Johnson & Miles, 2007) and others unable to replicate it (Baker, Bezance, Zellaby, & Aggleton, 2004).
- Many school exams will ask questions that test recognition and free recall memory. Recognition memory is being able to recognize places, events, people, or objects you have previously seen before. Free recall memory is being able to write or say information that was previously asked to learn.
- The current research sought to produce results that support the state dependent memory theory. We hypothesized that students who chewed gum during the learning and during the recall would perform better on the recall quiz than would students who chewed gum during the learning but not during the recall.

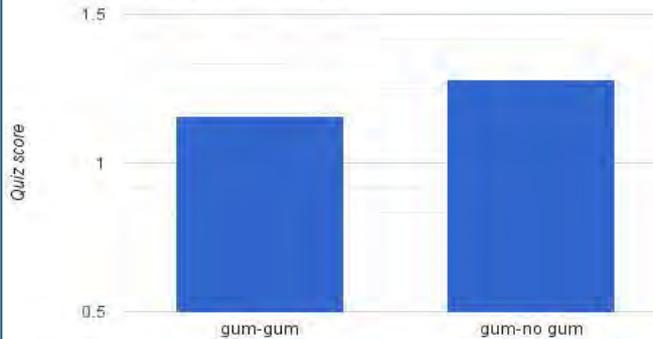
METHODS

- Sixty undergraduate students participated. Course credit and/or extra credit was offered in return for participation.
- Participants were randomly assigned to one of two conditions, which refer to whether they were asked to chew gum (or not) at the time of learning than at the time of recall.
- Participants completed a questionnaire assessing age, ethnicity, gender, and year in school. They also watched a short video as a learning task. In the five minute video, Nathalie Nahai lectures about the Big Five personality traits.
- Then, they completed a five item multiple choice quiz with two open ended questions about the lecture created by the current investigators.
- A sample multiple choice item includes "The Big Five Personality trait Conscientiousness includes which of the following?" A sample open ended item includes "Please describe some traits a person may exhibit if she/he scored high on openness (according to video)?"

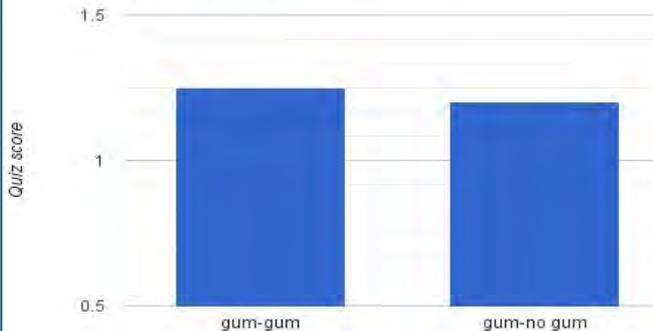
Overall score



Recognition Memory



Free-Recall Score



RESULTS

- A one way (gum vs. no gum) ANOVA was conducted on the quiz items.
- The overall results indicated no significant differences $F(5, 56) = 1.15, p > .05$. Participants did not show improved recall after chewing gum before and after learning ($M = 5.8$ $SD = 2.7$) versus those who chewed gum during the learning phase only ($M = 6.34$ $SD = 2.07$).
- The recognition memory results indicated no significant differences $F(2, 59) = 0.50, p > .05$. Participants did not show improved recognition recall after chewing gum before and after learning ($M = 1.2$ $SD = 0.54$) versus those who chewed gum during the learning phase only ($M = 1.2$ $SD = 0.42$).
- The free recall memory results indicated no significant differences $F(2, 59) = 0.50, p > .05$. Participants did not show improved free recall after chewing gum before and after learning ($M = 1.3$ $SD = 1.06$) versus those who chewed gum during the learning phase only ($M = 1.2$ $SD = 0.88$).

CONCLUSIONS

- We hypothesized that students who chewed gum during the learning and during the recall (gum-gum) would perform better on the recall quiz than students who chewed gum during the learning but not during the recall (gum-no gum). Our hypothesis was not supported by the current study. These findings are consistent with the former literature. The study conducted by Johnson and Miles (2007) were also unable to reproduce the chewing gum effect found in Baker and colleagues' (2004) study.
- There was no significant evidence to indicate that chewing gum during the learning and during the recall (gum-gum) made a difference in the recall scores.
- The results of this study are important because they can help students know what works or does not work for successful encoding of their class material.