The Effect of Mint Gum and Mint Candy on Memory Recall

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Abstract

This study was conducted to examine the effect of chewing gum or sucking on a mint had on memory recall. Participants (N = 39) in our study were asked to listen to a list of 20 randomized words and recall as many as they could with nothing in their mouths. Half of our participants (N=20) were asked to chew gum that was mint flavored and the second half of our participants (N=19) were asked to suck on a mint. We gave them sixty seconds to just suck or chew on the mint or gum and then we read them a new list of twenty randomized words and asked them to recall as many of those words as possible.

Introduction

Students of all ages all over the world are trying to find different study techniques that are effective. Some try listening to music, studying in the same place each time, rereading, cramming, and some even go as far as listening to tapes while they sleep.

Throughout the years, the results of whether gum or mints have an impact on memory recall have varied. Wilkinson, Scholz, and Weeses (2002) used mimicking chewing movements versus participants actually chewing gum on memory recall and found the action of chewing even had an effect. Both the chewing gum and the action of chewing was better than when the participants had nothing. Two years later, Baker, Besance, Zellaby, and Appleton (2004) found that it was just the mint flavor that made a difference in memory recall. In the study, the participants were asked to chew and suck on the mint gum and were tested to see how many words they could retain each time. They found the same results when participants sucked on mint gum and when they chewed on the mint gum. We also noticed that Stephens and Tunney (2004) found that chewing gum and sucking on candy was beneficial to working memory, episodic memory, language based attention, and processing speed compared to a group that had nothing.

Then a couple of years later, Johnson and Miles (2008) tried to determine whether flavor had an impact on memory retention and concluded there was no difference between flavorless gum and mint flavor strips. Both flavorless gum and mint flavor strips were effective in learning and memory recall. However, Kodis, Hughes, and Jones (2011) noted that did not find a positive effect, they actually found that chewing gum had a negative impact on short-term memory recall by observing their participants ability to remember order and specific items that were left out of a list. In the same year, Wada, Hoshi, Iwaguchi, and Kida (2011) actually found that gum chewing improved recall for random digit-eight-digit numbers.

Because of the many different results, we are going to pursue the question, “Does chewing mint gum or sucking on a mint candy affect memory recall?” Our study is similar to Stephens and Tunney (2004) because we are measuring the difference between chewing gum and sucking on a mint candy.

However, we are only having participants do one of the two, whereas they had participants do both.

Moreover, we are also having every participant complete a round with nothing in his or her mouth. This is so we will be able to measure the impact that gum versus mint will have compared to nothing. We are having participants listen to a list of twenty words twice. One group will listen to words while sucking on a mint (LifeSavers Peppermint) and the other group will listen to the words while chewing on a piece of gum (Eclipse Peppermint).

We predict that our participants will recall more words while chewing a piece of mint gum or sucking a mint candy than our participants will when they have nothing in their mouths because we are using a similar strategy as Baker, Besance, Zellaby, and Appleton (2004)

Method

Participants

For our experiment, we had a total of 39 participants (14=Male; 25 -Female). We encouraged people that we knew to consider joining our study. We also advertised that this would be an extra credit opportunity for other psychology classes in hopes to gain more participants. The range of ages for our participants was 18 to 22 and the average age was 20. Ninety four percent of our subjects were White.

Materials

In our study, the materials we used consisted of two separate lists of twenty random nouns that we read aloud to the subjects. We obtained a list of forty nouns that each had between four and seven letters and then randomly assigned each noun to one of the two lists. The subjects will be given a piece of printer paper, and a number two pencil once it is their time to recall as many words as they can. We will also be using Eclipse Peppermint gum for the gum-group, and LifeSavers Peppermint mints for the mint group.

Procedure

We conducted our study in Room 147 in the Science Center at Hanover College. When participants arrived, we handed them a random folder and told them to sit wherever they would like. Participants signed an informed consent before the study began. We used a 2 (condition: treatment vs. control) by 2 (treatment type: gum vs. mint) by 2 (order of treatment: first vs. second) design. The first and third factors were a within subjects variable while the second factor was a between subjects variable.

Participants completed two recall tasks; one with either gum or mint in their mouth and one with nothing. For the first recall task, half of our participants had nothing in their mouths and the other half either had a mint to suck on or a piece of gum to chew. For the second recall task, the half of the participants that had nothing in their mouth for the first task was then given a mint or a piece of gum and the participants that had gum or mint in their mouth for the first task was then given nothing for the second task.

We did this to reduce the possibility of having order effects on our results. Each participant listened to the first set of twenty nouns and then sat in silence for sixty seconds while chewing on the gum, sucking on the mint, or having nothing in their mouth.

After the sixty seconds passed, they were instructed to get rid of the mint or gum and then were given sixty seconds to recall as many words as possible. After the minute was up, we asked them to write down as many words as they could recall from the second list. Once the experiment was completed and we collected the participants’ folders, we gave them a debriefing form, thanked them for their participation, and dismissed them.

Results

During analysis, we focused on whether chewing on a piece of gum or sucking on a mint had an impact on participants’ recall. We also studied whether having nothing in one’s mouth versus having something in one’s mouth was significant. We controlled for order effects by varying the order of the treatment. To test this hypothesis, we ran a 2 (Gum vs. Mint) by 2 (First vs. Second) by 2 (Something vs. Nothing) mixed ANOVA with repeated measures on the third factor. We found that there was no main effect for treatment [F(1,39)=1.72, p=.286]. There was also no main effect with order, [F(1,39)=45.7, p=.503]. There was also no main effect for mint vs. gum [F(1,39)=2.143, p=.152]. There was no interaction between treatment and mint vs gum [F(1,39)= 0.003, p=.889]. There was no interaction between order and mint vs gum [F(1,39)=0.919, p=.333]. However, there was no significant interaction between treatment and order [F(1,39)= 19.117, p=.001]. When participants received the gum or mint second, rather than first, they did slightly better but not significant when they had nothing rather than something, where p<.06. When people had gum first and nothing second, they had a significant decline in recall, p<.003. Participants who had mint first and nothing second also had a significant decline, p<.021. The three-way interaction between treatment, order, and mint vs. gum was F(1,39)=208, p<.001.

We hypothesized that chewing on a piece of gum would have an effect on one’s ability to recall the words. When doing prior research, we noticed a various amount of different tasks used to measure short-term memory. As a result, we concluded that different tasks could be the reasoning behind the varying of results among other studies (Kodis, Hughes, & Jones; Stephens & Tunney, 2004).

Our test was closely related to Stephens and Tunney (2004) in that we were testing gum but also a mint candy. However, we used a different task to measure memory recall. They used eight different neuropsychological tests in a sound-attenuated laboratory whereas we just used word recall.

With repeated measures we only found an effect when one had either mint or gum first. When participants had a gum or mint first, we found a significant difference between the first and second list of words: participants remembered fewer words when they had nothing in their mouth after they had something in their mouth. However, when participants were in the control condition first and were given the gum or mint second, they actually ended up doing better with nothing then they did with something. This shows that order had an impact on the effectiveness of having a piece of gum or a mint in their mouth when trying to recall words. Our results vanished once we switched the order of the conditions.

One future suggestion we had if we were to complete this study again would be to test a larger number of participants because while the results obtained was not hugely significant, the graph suggests that mints may be more effective than gum on memory recall.

Discussion

We hypothesized that chewing on a piece of gum would have an effect on one’s ability to recall the words. When doing prior research, we noticed a various amount of different tasks used to measure short-term memory. As a result, we concluded that different tasks could be the reasoning behind the varying of results among other studies (Kodis, Hughes, & Jones; Stephens & Tunney, 2004).

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References


