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Texting and its Effect on Memory Retention

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### Abstract

Students often use their phones to text in class. I was interested in looking at how this use of texting while learning new material would impair their ability to retain the information that they were learning. This could translate into how texting during a college lecture or seminar would affect the amount of material retained. I wanted to look specifically, how men and women compared. Participants in my study included undergraduate (N=20) students from St. Johns University and the College of Saint Benedict. I created a recording with 15 words on it that all participants were asked to listen to. My experimental group was also participating in a texting conversation with me while they were listening to the words. My control had no distractions while listening to the recordings. Both groups were then given 30 seconds to record on a sheet of paper as many words as they could remember.

*Keywords:* cell phones, memory

### Texting and its Effect on Memory Retention

Cell phones have increasingly become a main staple of communication in our society today, specifically smartphones. College students especially, spend hours each day using their cell phones. A common motivation for this behavior is the maintenance of social relations through texting, calling and social media use. Today, the most common telephone among college students is not the singular function “landline” but the multifunction, internet enabled, cellular phone (i.e., smartphone, mobile phone, and henceforth cell phone). Indeed, nearly 70% of young adults in the U.S. aged 18–29 live in wireless only households without a traditional landline phone (Lepp & Barkley, 2016). This means they have constant, direct access to a cellphone.

Likewise, 85% of the same demographic owns an internet enabled cell phone; furthermore, most cell phone owners claim to carry it everywhere and never turn it off (Lepp & Barkley, 2016). This means that students having unlimited access to their phones may inhibit their ability to listen and learn in class, as well as retain the information they are learning.

It is well documented that interacting with a mobile phone is associated with poorer performance on concurrently performed tasks because limited attentional resources must be shared between tasks. (Stothart, Mitchum, & Yehnert, 2015). Meaning we do not multitask as well as we claim to, or may think we are. There is good reason to suspect that waiting to respond to a call or text message may itself disrupt attention performance. First, work in prospective memory has found that simply remembering to perform some action in the future is sufficient to disrupt performance on an unrelated concurrent task (Smith, 2003). In some sense, noticing that one has received a call or text represents a new prospective memory demand; if one receives a message or call, most prefer to respond promptly. Second, a large body of work has found that task-irrelevant thoughts, even in cases when the individual appears to be attending to the task at

hand, disrupt performance on a wide range of tasks (Smallwood & Schooler, 2006; Schooler et al., 2011), including driving (Cowley, 2013; He, Becic, Lee, & McCarley, 2011; Lemercier et al., 2014). This could translate over into the classroom and disrupt learning significantly. Other researchers have demonstrated that divided attention impairs memory particularly when attention is divided during the initial learning and encoding of new information (Fernandes & Moscovitch, 2000). Meaning, that when students are learning new information from a lecture or lesson may be more likely to struggle with the repercussions of divided attention.

In the present experiment, I looked at how men and women differ along with the use of smartphones, specifically texting, effects memory and retention of material. Two groups were asked to listen to a recording of multiple words. One group exchanged text messages with the researcher while they listened to the recording. After hearing the recording, both groups were given 30 seconds to record as many words as they could recall. I predicted that those in the control group who learned the material without use or distraction of their smartphone would be able to recall more words than those who were using their phones to text while they were learning the material.

## **Methods**

### **Design**

I conducted a simple between groups experimental study in which I looked at how the use of smartphones, specifically texting, impairs one's ability to retain material learned. Two groups of undergraduate students listened to a recording of 15 words. Experimental group exchanged text messages with the researcher while listening to this recording, while the control group simply listened to the recording. Both groups were given 30 seconds to record as many words from the recording as they could recall.

### **Participants**

Forty participants, from a small liberal arts private catholic college in central Minnesota participated in this experimental study. Twenty men and twenty women ages 19-21 with a mean age of 19.85, were involved in this study. This was a single blind experiment, where the participants were blind to the condition in which they were randomly assigned. It was also a convince sample of participants.

### **Materials**

I randomly assigned each participant by block randomization to either my experimental condition of texting while listening to the recording or to my control condition where participants did not text while they were listening to the recording.

### **Procedure**

Using block randomization, I assigned participants either to the experimental condition of texting while learning the material or the control condition where participants just listened to the recording without texting or other distractions. My dependent variable of my study was the number of words participants could recall in 30 seconds after the recording had finished. I created a recording of 15 words that was used as the material, the participants had to learn. Total time of testing each participant was two minutes.

### **Results**

An independent samples t-test was used to determine the differences between the experimental group and the control group as well as the differences between men and women. The mean difference between the experimental and control groups was .513,  $t(38) = 1.461$ ,  $p < .152$ . The experimental group had a mean of 7.2000 (SD = 1.73509). The control group had a mean of 7.9500 (SD = 1.50350). The 95% confidence interval range was between .28927 to -1.78927. Cohen's  $d = 0.46$  meaning the effect size was small to medium. The mean differences

between men and women was 1.0500,  $t(38) = 2.103$ ,  $p < .042$ . Women had a mean of 7.0500 (SD = 1.76143). The men had a mean of 8.1000 (SD = 1.37267). The 95% confidence interval was -.03914 to -2.06086. Cohen's  $d = 0.66$  meaning there was a medium effect size.

### **Discussion**

Due to the amount of people who own cellphones and the large number of students who text very often on their phones I hypothesized that those who were in my experimental group would be able to recall fewer words than those in my control group who had no distraction while learning the material. This hypothesis was correct, the results of my study were statistically significant. I also hypothesized that due to many stereotypical beliefs, women would do better than men. This hypothesis was wrong.

Improvements could be made in the selection of participants as well as the number of participants. They were made up from a convenience sample. The number of participants was 40 total. If I were to get more participants I would better be able to generalize about the population and look at how men and women compare on this task.

The external validity was not strong in this study, I pulled most of the participants from a research methods psychology class focusing on cyber psychology, which means the students probably all had a good idea of how texting can affect the ability to complete tasks as well as if there are no distractions.

A future study could examine how listening to a passage instead of words would affect the level of retention and potentially comprehension of the material. This could better translate over into a classroom setting where there is constant lecture whether you are actively listening and engaged or not. I would also like to increase the number of participants to better be able to

generalize about the population of college students. I think it would also be interesting to look specifically how high school students and college students differ as far as memory retention with distractions.

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