This lab exercise appeared in Section VIII: Memory, developed by **Leah Greene & Kristin Habashi Whitlock,** ***in Promoting psychological science: A Compendium of laboratory exercises for teachers of high school psychology (Miller, 2018). This exercise is provided here with permission from the editor.***

Lab Title: Do we confabulate because of schemas?

Section 1: Performance Expectations

What will the student be asked to do?

- Plan and/or carry out a scientific investigation
- Analyze data
- Engage in argument or communicate information

Main Idea/Concept Demonstrated or Taught by Lab:

Through this lab, students test if exposure to a themed list of terms will lead to confabulation in recall.

After concluding this lab, students should be able to:

- Examine the work of Henry Roedinger and Kathleen McDermott (1995)- Creating false memories: Remembering words not presented in lists. Retrieved from http://psych.wustl.edu/memory/Roddy%20article%20PDF%27s/Roediger%20&%20McDermott%20%281995%29_JEPLMC.pdf
- Consider times of confabulation in daily life
- Participate in the lab as either experimenter or subject
- Interpret collected data and communicate results

Key Terms and Psychologists Associated with Main Idea/Concept:

Roedinger and McDermott (1995), confabulation, schema, short term memory, independent variable, dependent variable, repeated measures, descriptive statistics, recall, recognition

Materials:

Copy instructions for the lab to distribute to each student. Google slides of terms.

What students should know for the lab:

Students should already be familiar with the concept of confabulation. Ideally, the students would have been exposed to Elizabeth Loftus's work on confabulation. The students should also be able to explain schema as an organizational set; in this lesson, schema refers to a list with a common theme.

Instructions:

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- Pass to each student, who is willing to participate, a lab worksheet.

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- Instructor begins the Google Slide presentation, located at https://docs.google.com/presentation/d/1eweWVksd1FxGJS8bAVy-5B05JshB4JxowcVNLIg8clE/edit#slide=id.ga226a309894d585_51, and will need to follow the verbal cues in the instruction and found in the notes section of the slides.
- Subjects will check their papers for confabulation.
- At the conclusion of the testing, the teacher (or students) collects the data for the classroom. The class then discusses the results of the experiment and its ecological validity. The teacher (or students) can also analyze the data with descriptive statistics to determine the mean, mode, or median trigrams recalled and graph the data.

Follow-up and Discussion

- When the testing is complete, and the assignments collected, calculate the results for each test and compare. As a class discuss the following questions:
  1. Does our data support our hypothesis? Explain.
  2. In general, what is the impact of interference on short term memory?
  3. How could the research be improved, if replicated?

Section 2: Crosscutting Concepts

Students will examine the cause and effect relationship between a list with a schematic theme and confabulation of terms in recall.

Section 3: Lab Report

Introduction to Psychological Science: Memory

Lab: Do we confabulate because of schemas?

Instructions for the Experimenter:

#1: Read the following to your subject:

"Confabulation is when a person fills in the gaps of their memory with ideas that are not truthful; however, it is not a purposeful lie. The aim of this experiment is to investigate if confabulation increases with a schema-based set of terms. We will use repeated measures; therefore, you all will be presented with two sets of terms. I will show you a slideshow presentation where you will see 12 words for 1-seconds each. After the first set of terms, you will have a short story to read. Then, you will select words from a list that you believe you saw in the presentation. We will then repeat the procedure one more time. If you would like to participate, please place your left hand on your desk. [The experimenter passes out the consent forms to those students]. *Ready? Please look toward the screen and go* [experimenter will begin the slide show].

#2: The experimenter begins the Google Slide show that is on automatic advance.

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#3: When the slide show stops, ask the participants to turn their consent papers over. "Y*ou will now write down words on your paper that you did NOT see in the original presentation from the list on the screen in the left column of your paper."*

#4: Repeat steps #2 and #3 again, except for the repeat of step 3, you will ask them the write in the *right column*.

#5: When the subjects have gone through both lists, the experimenter shows the original lists. Experimenter says, *"Please place a checkmark next to terms that were on the original lists and circle the terms that were not on the original lists. We will tally our results in a moment."*

#6: Record results (How many words did your subjects confabulate that were on the list, but actually were not?)

Control condition (list one): _____

Experimental condition (list two): _____

As a team, answer the following questions.

1. Does the data support the hypothesis? Explain.

2. What were some of the terms that were most likely to be confabulated in list two?

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3. What were the independent variable and dependent variable in the experiment?

4. What ethical considerations were present in the experiment?

5. How could the research be improved, if replicated?

6. Subjects used recognition as a means of remembering the terms from the presented lists. Predict what differences would exist if subjects were asked to use recall.

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Section 4: List 1 (Control condition without a theme)

Mad

White

Table

Hot

Nurse

Shoe

Apple

Water

Thread

Note

Hill

Queen

Section 5: List 2 (Experimental condition with a theme)

Butter

Food

Eat

Sandwich

Rye

Jam

Milk

Flour

Jelly

Dough

Crust

Slice

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Section 6: List 3 (Control condition recognition list)

Cloth

Thread

White

Mad

Apple

Table

Bike

Hot

Queen

Nurse

Cushion

Shoe

Water

Salad

Fear

Note

Hill

Boat

Section 7: List 4 (Experimental condition recognition list)

Butter

Dough

Lunch

Orange

Food

Eat

Bread

Sandwich

Bagel

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Rye

Jam

Salad

Flour

Milk

Jelly

Crust

Slice

Tuna

Section 8: List 3 (Control condition recognition list with confabulated terms highlighted)

Cloth

Thread

White

Mad

Apple

Table

Bike

Hot

Queen

Nurse

Cushion

Shoe

Water

Salad

Fear

Note

Hill

Boat

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Section 9: List 4 (Experimental condition recognition list with confabulated terms highlighted)

Butter

Dough

Lunch

Orange

Food

Eat

Bread

Sandwich

Bagel

Rye

Jam

Salad

Flour

Milk

Jelly

Crust

Slice

Tuna

Section 10: Subject worksheet

- I have been informed about the nature of the research.
- I understand that I have the right to withdraw from the research at any time, and that any information/data about me will remain confidential.
- My anonymity will be protected as my name will not be identifiable.
- The research will be conducted so that I will not be demeaned in any way.
- I will be debriefed at the end and have the opportunity to find out the results at a later date.

I give my informed consent to participating in this research.

Name: _____

Date: _____

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Leah Greene & Kristin Habashi Whitlock

Lab Title: How does rehearsal prevention impact short term memory?

Section 1: Performance Expectations

What will the student be asked to do?

- Plan and/or carry out a scientific investigation
- Analyze data
- Engage in argument or communicate information

Main Idea/Concept Demonstrated or Taught by Lab:

Through this lab, students examine the impact of interference activities on maintenance rehearsal and encoding information into short term memory. The exercise allows students to apply the Atkinson-Shiffrin multistore memory model and compare recall with and without rehearsal.

After concluding this lab, students should be able to:

- Explain the maintenance rehearsal
- Consider the impact of interference on encoding of information into short term memory
- Examine sources of interference in their own memory
- Participate in the lab as either experimenter or subject
- Interpret collected data and communicate results

Key Terms and Psychologists Associated with Main Idea/Concept:

Peterson and Peterson (1959, Atkinson and Shiffrin (1968), short term memory, interference activity, encoding, maintenance rehearsal

Materials:

Copy instructions for the lab to distribute to the experimenter in each trio of students. The students assigned to be the subjects will need paper and a writing utensil. Students will also need access to a timing device and a coin to flip for heads-tails.

What students should know for the lab:

Students should already be familiar with the Atkinson-Shiffrin memory model and the terms encoding, storage, and retrieval. A basic understanding of the experimental design is also needed.

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Instructions:

- Divide students into groups of three. Have students decide who will play the experimenter or subjects. Using a coin for heads-tails, randomly assign the subjects into the control condition and the experimental condition.
- Have the subjects sit back to back, so they cannot see each other.
- Pass out the instructions to the experimenters.
- Experimenters conduct one memory test. Both subjects will read, silently, the printed list of trigrams for 30-seconds. After 30-seconds passes, subjects flip over the list and begin counting backward from 99 by threes (the interference activity). After 3 seconds pass, the subject inthe control condition will begin to write out recalled trigrams. After 18-seconds of counting, the subject in the experimental condition will begin to write out recalled trigrams. Have subjects stop recalling after 30-seconds of writing trigrams.
- The experimenter collects both subjects' paper and totals the correct number of trigrams recalled. The team then compares the subjects' performance, discusses the results, and comments on the impact of interference activities. Students will also brain storm the ecological validity of the experiment and its potential connection to an academic setting.
- At the conclusion of the testing, the teacher (or students) collects the data for the classroom. The class then discusses the results of the experiment and its ecological validity. The teacher (or students) can also analyze the data with descriptive statistics to determine the mean, mode, or median trigrams recalled and graph the data.

Follow-up and Discussion

- When the testing is complete, and the assignments collected, calculate the results for each test and compare. As a class discuss the following questions:
  1. Does our data support our hypothesis? Explain.
  2. In general, what is the impact of interference on short term memory?
  4. How could the research be improved, if replicated?

Section 2: Crosscutting Concepts

Students will examine the cause and effect relationship between an interference activity and recall.

Section 3: Lab Report

Introduction to Psychological Science: Memory

Lab: How does rehearsal prevention impact short term memory?

In your trio, decide who will play the role of experimenter or subjects. Flip a coin to assign subjects to the control or experimental condition.

Experimenter:

_____

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Control Subject:

_____

Experimental Subject:

_____

Instructions for the Experimenter:

#1: Read the following to your subject:

"Maintenance rehearsal is a means for encoding information into the short-term memory store. Today my hypothesis is that length of time maintenance rehearsal is prevented is negatively correlated to number of trigrams recalled. We will randomly assign you to the control and experimental condition with a coin toss. You will each read the same list of trigrams and silently try to memorize them for 30-seconds. When I say time, you will turn your paper over to the bank side and you will begin counting backward from 99 by threes, such as 99, 96, 93, 90, 87. I will touch your arm when you can begin writing down the remembered trigrams. I will touch your arm again when it is time to put your pencil down. Are you willing to participate in the experiment? [Flip coin to determine conditions. Then hand paper to participants upside down.] *Ready? Please turn your paper over."*

#2: Begin timer for 30-seconds. Participants silently read the trigrams.

#3: After 30 seconds, say, *"Please turn your paper over and begin counting backward from 99 by threes. Do so out loud, but quietly."* After 3-seconds, tap the control participant on the arm for them to begin writing down the trigrams. After 18-seconds, tap the experimental participant on the arm for them to begin writing down the trigrams. Stop each participant after 30-seconds of recall.

#4: Read the following to your subject, *"Thank you for participating in this psychological experiment. Now we will check to see if you recall the trigrams correctly. Please place a check next to correctly recalled letter combinations. Ready?"*

Trigram list:

KRP

ZTH

DLW

BSI

CYQ

NFS

GJL

TND

OCJ

RLV

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#5: Record results (How many did your subject get correct?)

Control condition: _____

Experimental condition: _____

As a team, answer the following questions.

1. Does your data support the hypothesis? Explain.

2. In general, how does an interference activity impede recall?

3. How could the research be improved, if replicated?

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4. To what extent is this information ecologically valid? Explain.

Section 4: Trigrams for Control Condition

KRP

ZTH

DLW

BSI

CYQ

NFS

GJL

TND

OCJ

RLV

Section 5: Trigrams for Experimental Condition

KRP

ZTH

DLW

BSI

CYQ

NFS

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GJL

TND

OCJ

RLV

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