Get Your Lab Coat!

**COMPETENCIES TO MASTER**

* Can identify and explain the elements of scientific method
* Can define and explain fundamental psychological terms and concepts in the main areas of psychology
* Can identify and generate explanations that are consistent with facts
* Can evaluate data for consistency with explanations or hypotheses
* Can access and use information ethically and legally
* Can calculate averages, ratios, proportions and rates

## Overview

In this Project, you will conduct an experiment about memory and cognition that compares two memory techniques: rote memorization and eidetic memorization. You will then write a lab report on your findings.

***What did you learn while working on this project?***

## Directions

To prepare for the experiment, review the Project resources on memory and cognition. Based on your reading, develop a testable hypothesis about which of the two memory techniques you think is more effective. Include this hypothesis in your final Lab Report.

Next, perform the experiment by following the instructions in the Experiment document in Project resources. Then, analyze your data mathematically by answering the questions on the Results Sheet, also in Project resources.

Once you’ve finished, write your Lab Report on the experiment. Make sure you include all the sections and information described in the Lab Report Format document in Project resources. Supplement your explanation of findings with relevant and supportive images, videos or audio. Make sure to include a reference page and to cite any quotes, ideas, images, video or audio you used in the lab report using APA format. Be sure to attribute the sources of any media you use.

## Results Sheet

Use this resource to record your results as you perform the experiment.

Show your work for all calculations.

1. Record your results using the chart below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Participant** | **One – Rote** | **Two – Rote** | **Three – Eidetic** | **Four – Eidetic** |
| Correct number of words after one minute |  |  |  |  |
| Correct number of words after 24 hours |  |  |  |  |

1. Calculate the average (mean) number of correct words for each group for each time delay.

|  |  |  |
| --- | --- | --- |
| **Group** | **One – Rote** | **Two – Eidetic** |
| Average correct number of words after one minute |  |  |
| Average correct number of words after 24 hours |  |  |

1. Calculate the average (mean) number of correct words for each group, regardless of time delay.

|  |  |
| --- | --- |
| **Group One – Rote** | **Group Two – Eidetic** |
|  |  |

1. What is the ratio of correct responses of Group One to Group Two for each time condition?

|  |  |
| --- | --- |
|  | **Ratio** |
| Correct number of words after one minute |  |
| Correct number of words after 24 hours |  |

1. True or False: The ratio of correct responses of Group One to Group Two is the same for the two time conditions. Explain.

|  |
| --- |
|  |

1. Assuming the rate of correct words stays the same as in question 2, you will set-up a proportion for each group. Note you will have two calculations for each part.
   1. How many words would each group get correct if they had 271 words instead of 10 after one minute?
   2. How many words would each group get correct if they had 271 words instead of 10 after 24 hours?

|  |
| --- |
|  |

1. Using the answers from question 2, determine the following information (**Note**: for each of the below questions, you should complete ***two*** calculations, one for each group):
   1. How many words were forgotten by each group between 1 minute and 24 hours?
   2. What is the rate of forgetting between one minute and 24 hours in terms of words/hour for each group?
   3. Based on these rates, how many words would be forgotten after 40 hours?
   4. How many words would be remembered after 40 hours?

|  |
| --- |
|  |

Get Your Lab Coat! ­ Lab Report Format

Title: ​Try to summarize what your experiment is about in one phrase.

● Example: “Measuring the Temperature and Pressure of a Gas Within a Container”

Your Name: ​\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: ​\_\_ / \_\_ / \_\_

**Abstract​:** Write this last. This is a short summary of the entire lab report, including what

questions you were trying to answer, what you did and what you found.

**Introduction​:** Short paragraph that describes the purpose of the experiment.

● State which questions you were trying to answer.

● Describe background knowledge about the experiment.

**Hypothesis​:** A testable educated guess that attempts to explain a series of facts or a

phenomenon. A hypothesis is developed before an experiment is conducted.

● Example: A dog can be trained to salivate when a human rings a bell.

**Methods​:** Explain how you conducted the experiment. Include key information about your

sample size, the instructions you gave people, any measurements you took, etc.

**Data​:** What did you record when conducting your experiment? You may want to display this

information in a chart.

**Results​:** Analyze your data. How do the data answer the question you posed by conducting this

experiment? Was your hypothesis correct?

**Discussion​:** Put your results into context. Explain your results in terms of what is already

scientifically proven by other experiments and texts. What further questions might you

research in the future? You should also discuss any mistakes you made or limitations in the

experimental design and what impact those could have.

● What are the main contemporary perspectives of psychology? Where would this kind of

experiment fit?

● Explain the psychology of memory and why one memory technique was expected to

work more effectively than the other.

○ Was this experiment dealing with explicit or implicit memory? Which sub­type?

○ For each technique, which type of memory—sensory, short­term or

long­term—were your subjects using? Justify your answer.

○ Were the two techniques different in encoding, storage or retrieval?

● Were your results consistent with current theories? If not, explain.

● Define “independent variable” and “dependent variable” in your own words. What were

the independent and dependent variables in this experiment?

● Define “sample” and “population” in your own words. Do you think you can reliably

infer information about the population from your sample? Why or why not?

● Define “operational definition” in your own words. What was your operational

definition of “memory”?

● Define “scientific method” in your own words. How did your experiment use the

scientific method?

Resources​: Include citations for any background information or outside knowledge.

Note: ​In general, you should try to be concise when writing lab reports.

Experiment

**Introduction**:

In this experiment, you are going to test **rote** versus **eidetic** memorization techniques. Before you start, review the Project resources to make sure you understand the memory techniques and experimental design.

Find at least four participants and split them into two groups. The subjects in Group One will try to learn 10 random word pairings by rote memorization. The subjects in Group Two will try to learn the same 10 random word pairings by eidetic memorization.

Each participant will have his or her recall tested twice—first one minute after memorization, and then a second time after at least 24 hours. (Aim for consistency. Each participant’s “time since memorization” should be no more than an hour apart.)

Follow the instructions for each part of the experiment. The whole experiment will take about 30 minutes the first day and 10 minutes the next day.

**Part One: Memorization**

Instruct each participant to memorize the 10 randomly generated word pairings below for five minutes.

* Participants of Group One should use only rote memorization (**simple repetition**).
* Participants of Group Two should use only eidetic memorization (**using a vivid mental picture that associates the two words**).
* Participants should be informed of the following:
  + There will be a one-minute break between memorization and the first recall test.
  + During the recall test, they will need to produce the “Response” word when given the “Prompt” word.
  + The order of the word pairs in the recall tests is random.

After five minutes of memorization, take a one-minute break. Then, proceed to Part Two to test their recall. After at least 24 hours, proceed to Part Three to retest their recall.

|  |  |
| --- | --- |
| **Prompt** | **Response** |
| Plant | Limb |
| Conscience | Fork |
| Mole | Fair |
| Translation | Interview |
| Glance | Gardener |
| Attainment | Torch |
| Mess | Recruitment |
| Award | Care |
| Trophy | Relation |
| Car | Window |

**Part Two: Recall, One-Minute Delay**

Read the “Prompt” column aloud and ask your participants to give the “Response” word. Write their response in the “Response” column. If the participant does not know a word, they may pass. Read the words in order and do not go back to earlier words.

**Participant One**

Memory technique: Rote

Time of recall test:

Time since memorization: One minute

|  |  |
| --- | --- |
| **Prompt** | **Response** |
| Plant |  |
| Mess |  |
| Conscience |  |
| Car |  |
| Glance |  |
| Translation |  |
| Attainment |  |
| Award |  |
| Mole |  |
| Trophy |  |

**Participant Two**

Memory technique: Rote

Time of recall test:

Time since memorization: One minute

|  |  |
| --- | --- |
| **Prompt** | **Response** |
| Plant |  |
| Mess |  |
| Conscience |  |
| Car |  |
| Glance |  |
| Translation |  |
| Attainment |  |
| Award |  |
| Mole |  |
| Trophy |  |

**Participant Three**

Memory technique: Eidetic

Time of recall test:

Time since memorization: One minute

|  |  |
| --- | --- |
| **Prompt** | **Response** |
| Plant |  |
| Mess |  |
| Conscience |  |
| Car |  |
| Glance |  |
| Translation |  |
| Attainment |  |
| Award |  |
| Mole |  |
| Trophy |  |

**Participant Four**

Memory technique: Eidetic

Time of recall test:

Time since memorization: One minute

|  |  |
| --- | --- |
| **Prompt** | **Response** |
| Plant |  |
| Mess |  |
| Conscience |  |
| Car |  |
| Glance |  |
| Translation |  |
| Attainment |  |
| Award |  |
| Mole |  |
| Trophy |  |

**Part Three: Recall, 24-Hour Delay**

Complete this part after at least 24 hours have passed. You can wait longer than 24 hours, but all participants’ “time since memorization” should be approximately the same (within an hour).

Read the “Prompt” column aloud and ask your participants to give the “Response” word. Write their response in the “Response” column. If the participant does not know a word, they may pass. Read the words in order and do not go back to earlier words.

**Participant One**

Memory technique: Rote

Time of recall test:

Time since memorization:

|  |  |
| --- | --- |
| **Prompt** | **Response** |
| Plant |  |
| Mess |  |
| Conscience |  |
| Car |  |
| Glance |  |
| Translation |  |
| Attainment |  |
| Award |  |
| Mole |  |
| Trophy |  |

**Participant Two**

Memory technique: Rote

Time of recall test:

Time since memorization:

|  |  |
| --- | --- |
| **Prompt** | **Response** |
| Plant |  |
| Mess |  |
| Conscience |  |
| Car |  |
| Glance |  |
| Translation |  |
| Attainment |  |
| Award |  |
| Mole |  |
| Trophy |  |

**Participant Three**

Memory technique: Eidetic

Time of recall test:

Time since memorization:

|  |  |
| --- | --- |
| **Prompt** | **Response** |
| Plant |  |
| Mess |  |
| Conscience |  |
| Car |  |
| Glance |  |
| Translation |  |
| Attainment |  |
| Award |  |
| Mole |  |
| Trophy |  |

**Participant Four**

Memory technique: Eidetic

Time of recall test:

Time since memorization:

|  |  |
| --- | --- |
| **Prompt** | **Response** |
| Plant |  |
| Mess |  |
| Conscience |  |
| Car |  |
| Glance |  |
| Translation |  |
| Attainment |  |
| Award |  |
| Mole |  |
| Trophy |  |