The Stroop Effect
An Empirical Research Activity and an Example of an Experiment

Aims of this Activity: To carry out an experiment after formulating a hypothesis. This task will also lead to an analysis of results and a simple report.

Background Information

The Stroop Effect refers to the phenomenon that we experience when we receive two pieces of inconsistent information simultaneously. In this experiment, you and your partner will take turns to read out the **colour of the ink** on two cards.

Control Condition: MATCHING CARDS
On the first card, the colour of the ink and the word in which it is printed will match. For instance, the word **pink** will be printed in **pink ink**.

Experimental Condition: NON-MATCHING CARDS
On the second card, the colour of the ink and the meaning of the word in which it is printed will be different. For example, the word **red** might be printed in **green ink**.

Researchers believe that this phenomenon occurs because the inconsistent information being received **interferes** with your brain's processing. Some psychologists believe that this requires us to employ **selective attention**. While the task of reading the words is **automatic** (for literate people), naming colours requires more attention than reading the words. The perceiver must therefore **inhibit the automatic reading response** and **resolve the interference** between competing information.

More Reading on the Stroop Effect
Very Well Mind • Neuroscience for Kids • Science Direct

Writing Hypotheses
Base hypothesis 1 on this question: Which condition is likely to lead to faster times?
Base hypothesis 2 on this question: Will these times improve with practice?

Write hypotheses to answer each question. The phrasing below might help you to get started:

Hypothesis 1:
in the non-matching cards condition • gain faster times •
in the matching cards condition • participants will •
It is hypothesized that… • than

Hypothesis 2:
in both conditions | **The hypothesis is that**… |
in the non-matching cards condition | in the matching cards condition |
increase their speed with practice | participants will

PROCEDURE

Matching Cards – Participant 1
<u>Remember that your task is to state the **COLOUR** of each word, not read the word.</u>
Working with a partner as your time-keeper, read aloud the **colours** from the matching cards. Say "stop" as you complete each of 5 trials. Your partner should write down your times for each trial.

Non-Matching Cards – Participant 1
Carry out five trials with the non-matching cards. The time-keeper should note all the times in the table below.

Matching Cards – Participant 2
The time-keeper should now become the participant and carry out the task exactly as outlined above. Complete 5 trials.

Non-Matching Cards – Participant 2
Complete 5 trials.

INDIVIDUAL GROUP RESULTS

	Participant 1			Participant 2	
Trial	Matching (Seconds)	Non-Matching (Seconds)	Trial	Matching (Seconds)	Non-Matching (Seconds)
1			1		
2			2		
3			3		
4			4		
5			5		
MEAN			**MEAN**		

After the whole class has completed all trials and calculated the **means** for each participant, we shall collate everyone's results and work out the final results below.

CLASS RESULTS

	Matching Condition	Inconsistent Condition
Mean		
Median		
Range		

- The **mean** is the average of all trials in each condition. It is called a "measure of central tendency" and it provides us with a single score that we can compare for each condition.
- The **median** is the middle score in each condition. It is another "measure of central tendency". It is less likely to be influenced by unexpected extreme scores.
- The **range** is the difference between the fastest and slowest time in each condition.

The Stroop Effect - Preparatory Work Before Writing Your Report

This is roughly what your final report will look like (but in A3 size). Highlight the main sections.

First Report for Psychology

Write an appropriate heading for your report here. →

INTRODUCTION

Write a brief summary of the background to the experiment here. Base your description on your handout or read up on it here.

Write a brief statement to show the AIM of your experiment.

State your hypothesis as clearly as possible. Use the future tense and begin with "The hypothesis is that…" or "It is hypothesized that…"

METHOD

PARTICIPANTS How were they chosen? Provide the number, age, gender and other important characteristics.

MATERIALS Describe all the objects that are required for the experiment in such a way that someone else could carry out this task.

PROCEDURE Describe the process that was followed in such a way that someone else could replicate it. A step by step account is acceptable.

RESULTS

Table 1: Time Taken in Two Conditions: Matching versus Non-Matching

	Matching	Non-Matching
Mean		
Median		
Mode		

Write a description of the most important results in the table in the space below.

DISCUSSION

State whether or not your hypothesis was supported by your results. Refer in your description to the IV and the DV.

Identify the control condition and the experimental condition in this experiment. What factors might have influenced the results? Can you identify any confounding variables?

Suggest some possible improvements in the instructions, sampling procedure or procedure that might improve the design and eliminate any problems that you have identified.

Write a brief conclusion in which you interpret the results (explain what you think they mean) and suggest directions for future research.

To prepare to write this report, write notes on the following questions/topics:

Background information: Very Well Mind • Neuroscience for Kids • Science Direct
Which key terms will you need to define and explain?

Aim

Hypothesis

Independent Variable | Dependent Variable

Participants

Are the data **qualitative** or **quantitative**?

State what the **control** and what the **experimental conditions** were in this experiment.

What **flaws** can you identify in our procedure? What problems might these flaws have caused? How could they be avoided in a subsequent experiment?

Were there any **unintended factors** that might have influenced the results?

What would you **conclude** from the results? How would you **interpret** them? Can you suggest possible ideas for future study? How else could you study the effects of interference on **attention**?