

# Programming Psychology Experiments: Overview

Barbu Revencu & Maxime Cauté

Lecture 0 | 5 September 2025

# What will you get from this course?

Learn to **build psychology experiments** (Python & JavaScript):

- Instruct the computer to present what you want when you want it
- Record participant responses to a datafile

Learn the **basics of data analysis** (R):

- Clean up the collected data for tidy analysis
- Basic statistical analysis and plotting

Improve your **programming skills** through hands-on practical tutorials

# Why should you learn all this?

**Programming** experiments, **analyzing** data, and computational **modeling** are central to contemporary research in cognitive science (and beyond)

Understanding how computers work is **foundational to cognitive science**

Learning to **automate repetitive tasks** saves time and energy

**LLMs are still too unreliable** to automate coding itself—for now, you are better off using them *minimally* in the beginning and *collaboratively* later on, once you are in a good position to evaluate their outputs

# What is expected of you?

**Regular attendance:** Let us know in advance via [email](#) if you cannot attend the lectures for a good reason

**Working during and outside the lectures:** At the end of each lecture, we will ask you for a copy of your work folder for that session

**Grading:** PASS/FAIL

# The plan for the course

**Weeks 1–6:** Building experiments in Python (Python review, experiment libraries, presentation of audiovisual stimuli, recording responses, counterbalancing)

**Weeks 7–9:** Working with data in R (tidy data, ggplot, statistical tests)

**Weeks 10–12:** Online experiments (jsPsych), w/ Maxime Cauté

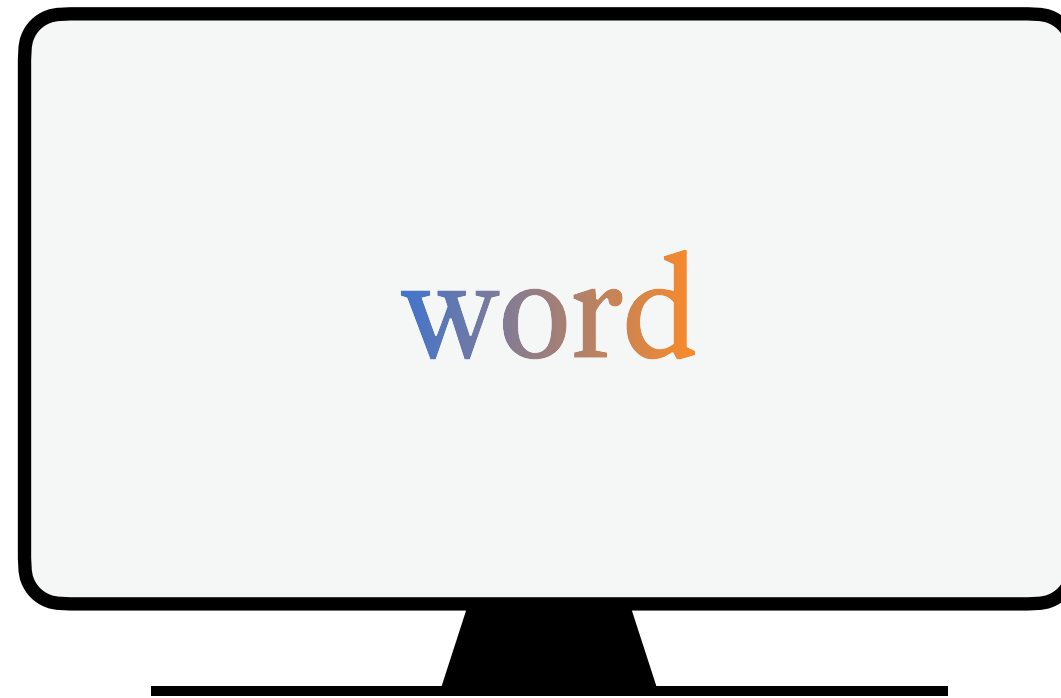
**Week 13:** Wrap-up

# Example: Stroop effect

*Name the color of the ink.*

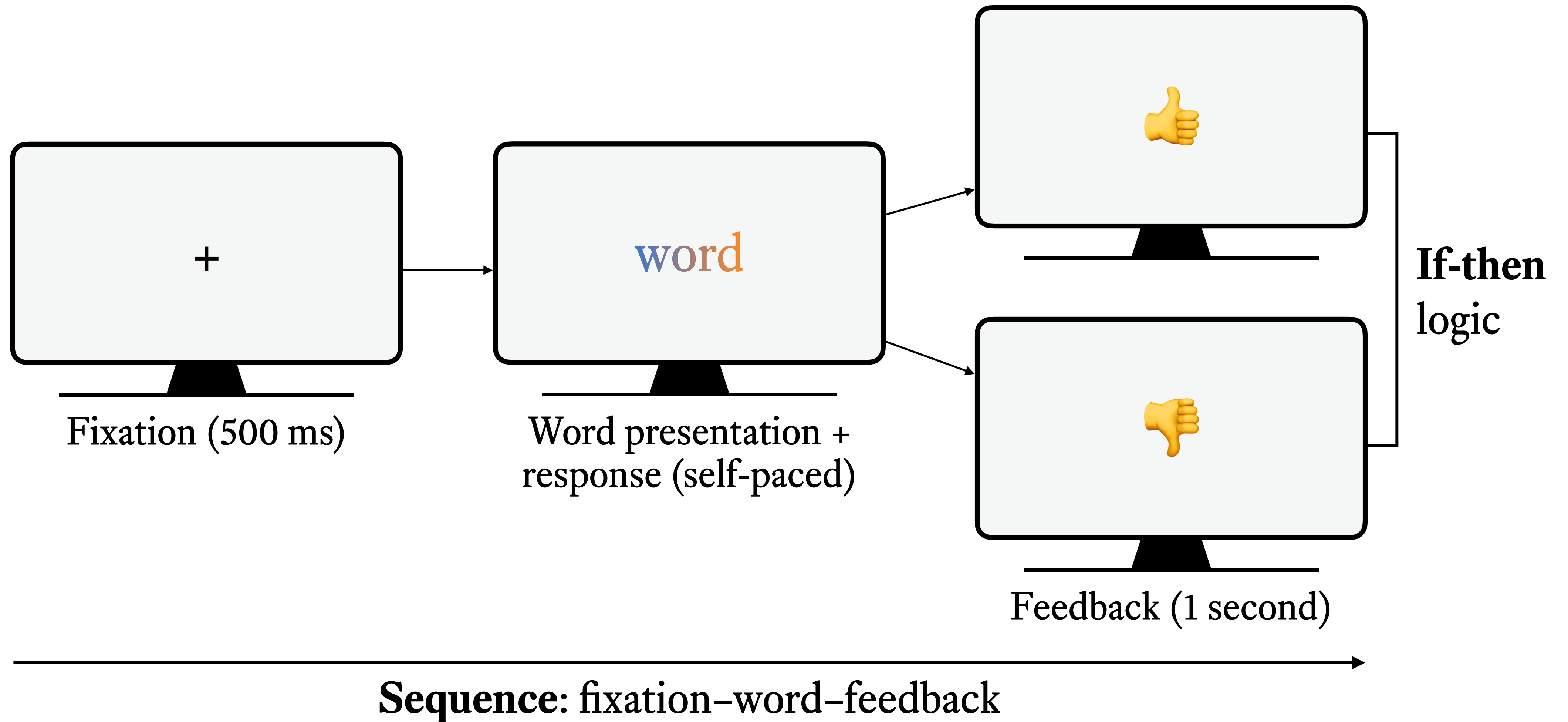
green

# Example: Stimulus structure



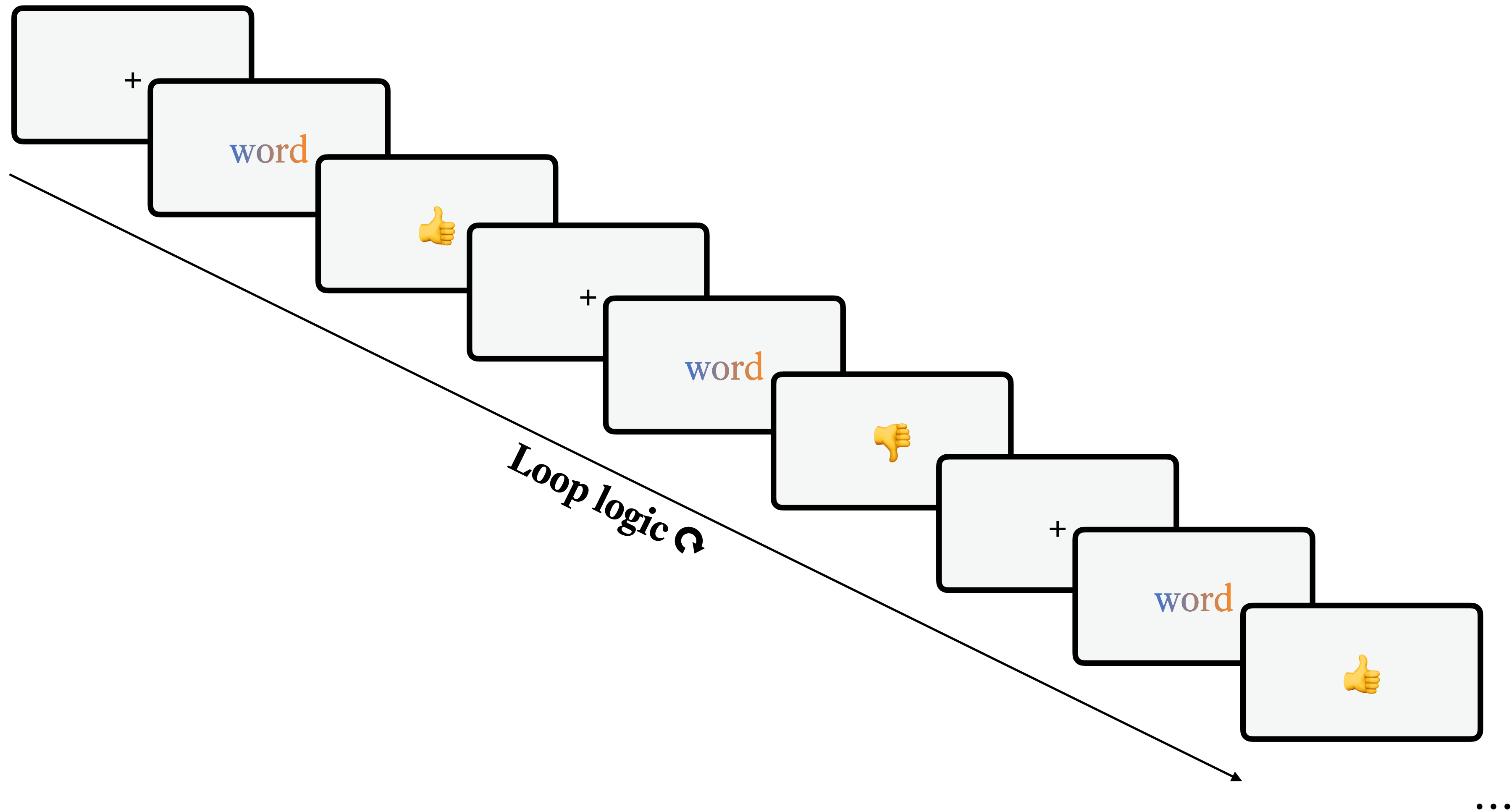
**2 variables:** word & ink color  
**2 constants:** position & size

# Example: Trial timeline

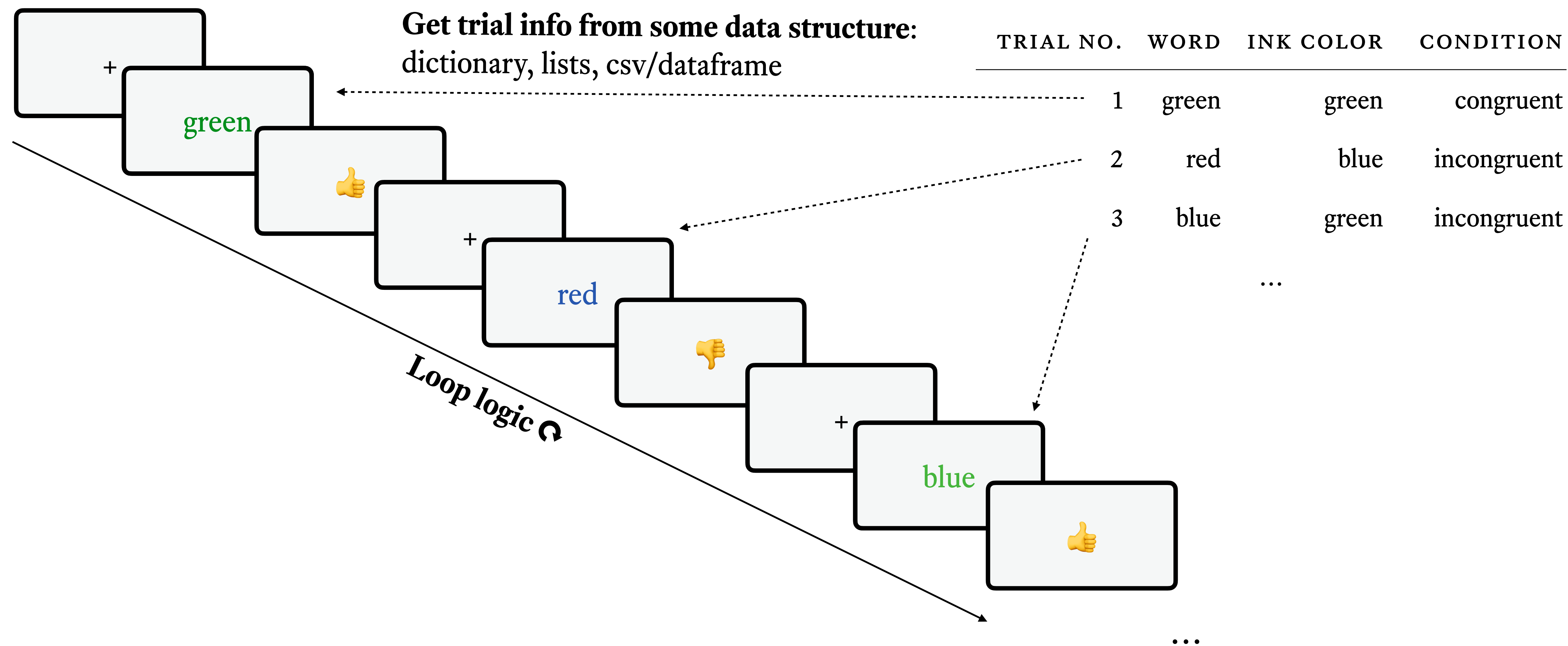




# Example: Experiment timeline



# Example: Experiment timeline



# Example: Plotting data

SUBJECT	TRIAL NO.	WORD	INK COLOR	CONDITION	RESPONSE TIME	CORRECT
1	1	green	green	congruent	732	1
1	2	red	blue	incongruent	951	0
1	3	blue	green	incongruent	812	1

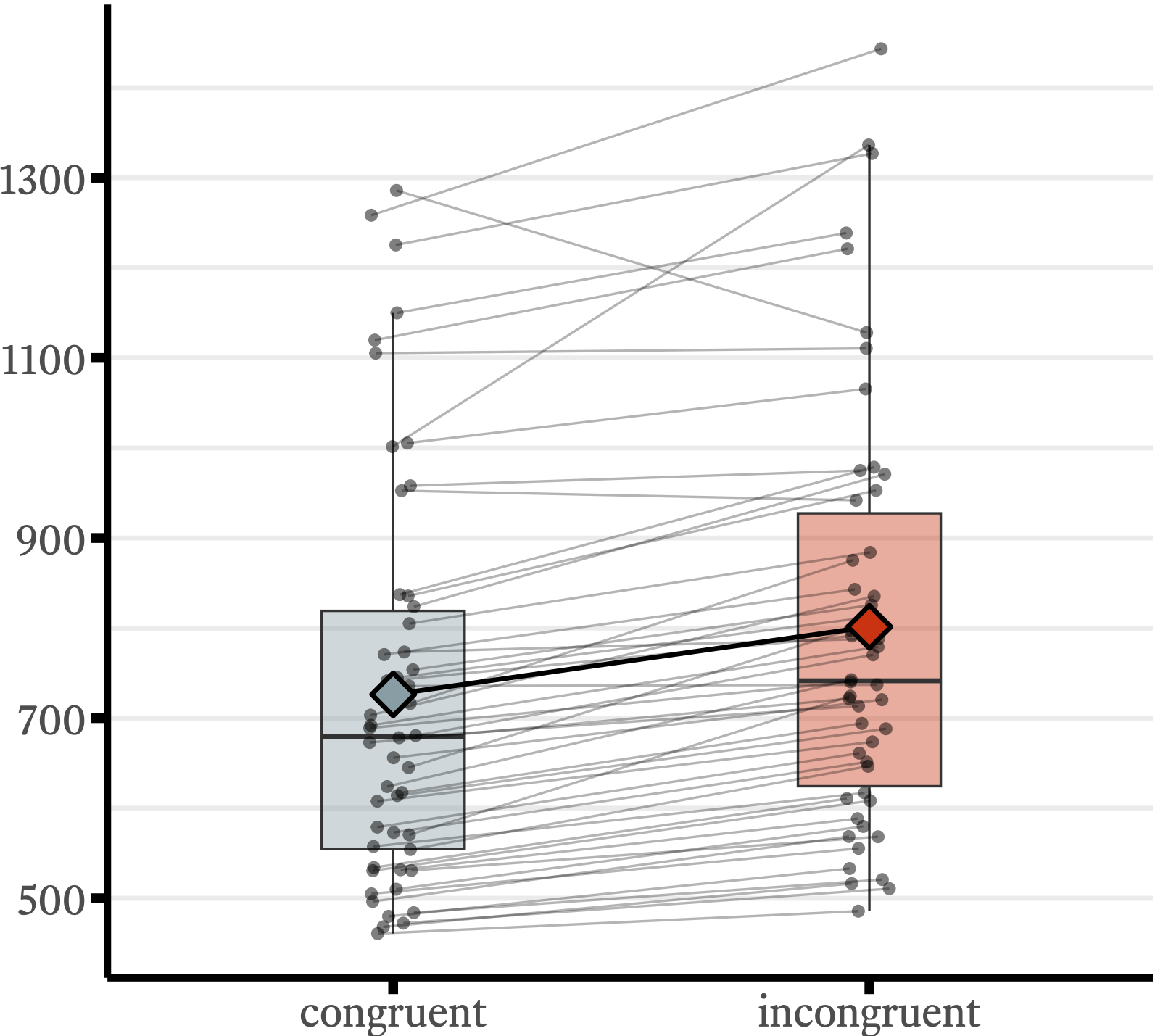
...

average by subject  
and condition

SUBJECT NO.	CONDITION	RESPONSE TIME	CORRECT
1	congruent	732	0.9
1	incongruent	800	0.8
2	congruent	812	1

...

Response Times by Condition (ms)



# Resources

**GitHub repository:** <https://github.com/barburevencu/PPE>

This will be updated with lecture slides and exercises as we go along

**Python cheatsheet:** <https://www.pythoncheatsheet.org/>

**Expyriment documentation:** <https://docs.expyriment.org/>

**R Tidyverse cheatsheet:** [https://media.datacamp.com/legacy/image/upload/v1676302697/Marketing/Blog/Tidyverse\\_Cheat\\_Sheet.pdf](https://media.datacamp.com/legacy/image/upload/v1676302697/Marketing/Blog/Tidyverse_Cheat_Sheet.pdf)

# Installation party

Basic Python quiz: <https://forms.gle/Lf6qD4rH1dB42kQW7>

Installation guide: <https://github.com/barburevencu/PPE/blob/main/Installation/installation-guide.md>

Installation tests: <https://github.com/barburevencu/PPE/blob/main/Installation/installation-test.md>