



# **A brief introduction to running artificial language learning experiments online**

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# Why run experiments online?


- Pandemics!
- Faster
- Larger samples
- More diverse populations (less WEIRD)
- Access to specific populations

# Why is it scary to run online (vs. lab) experiments?

- (For some of us): It's new
- Involves more components to take care of
- (Could) involve more coding
- Less control:
  - Who are the participants?
  - In what environment do they participate in the study?

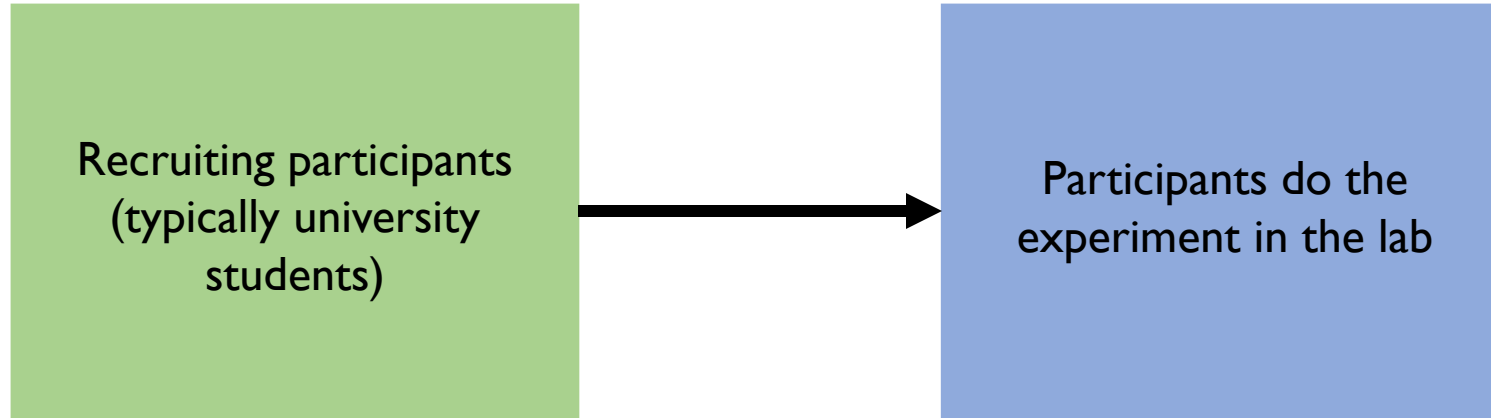
# Running experiments in the lab

# Running experiments in the lab



Recruiting participants  
(typically university  
students)

# Running experiments in the lab



# Running experiments in the lab



# Running experiments in the lab

Various ways to recruit participants to come into the lab (SONA, advertising on campus...)





# Running experiments in the lab

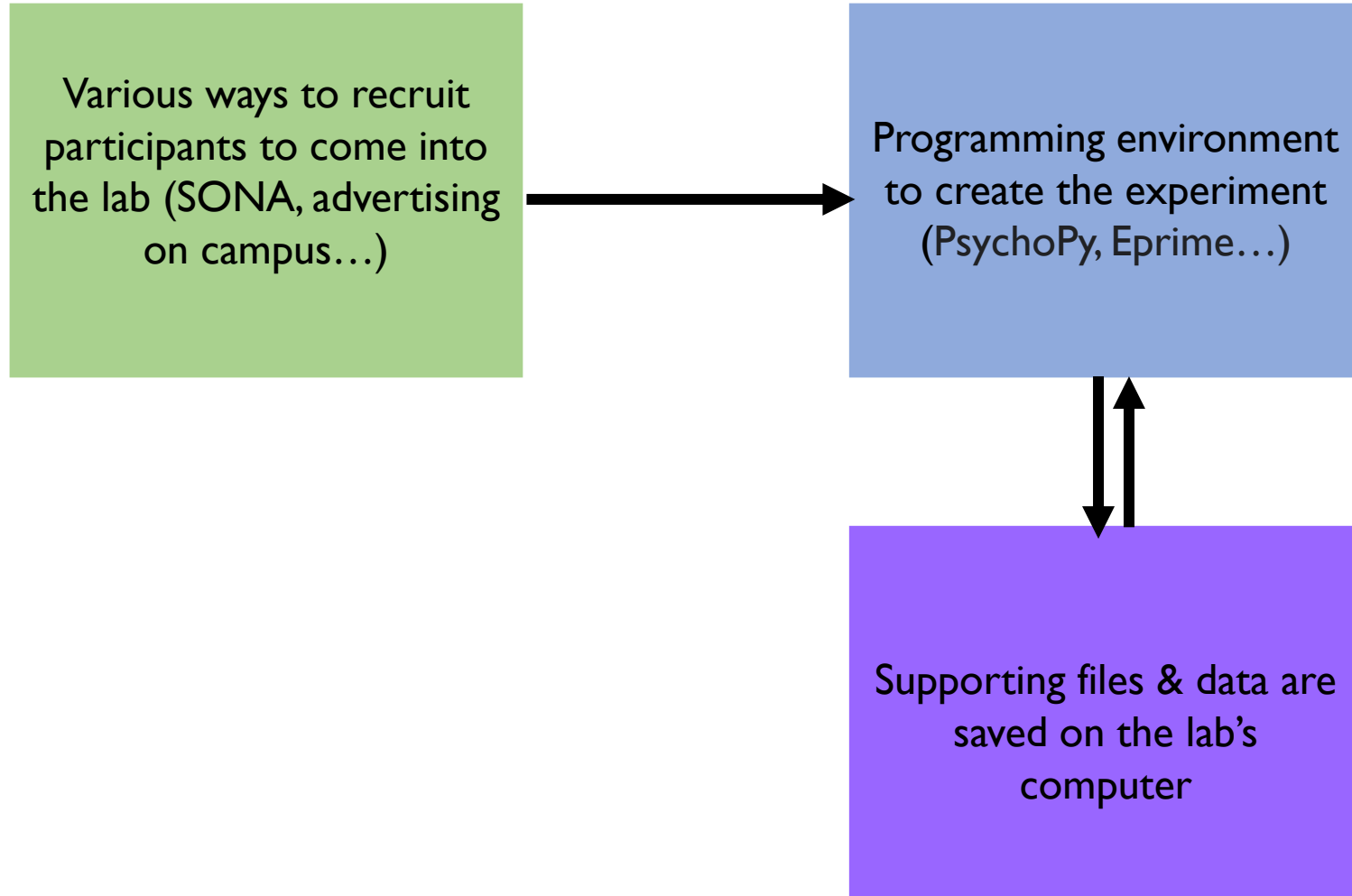
Various ways to recruit participants to come into the lab (SONA, advertising on campus...)



Programming environment to create the experiment (PsychoPy, Eprime...)



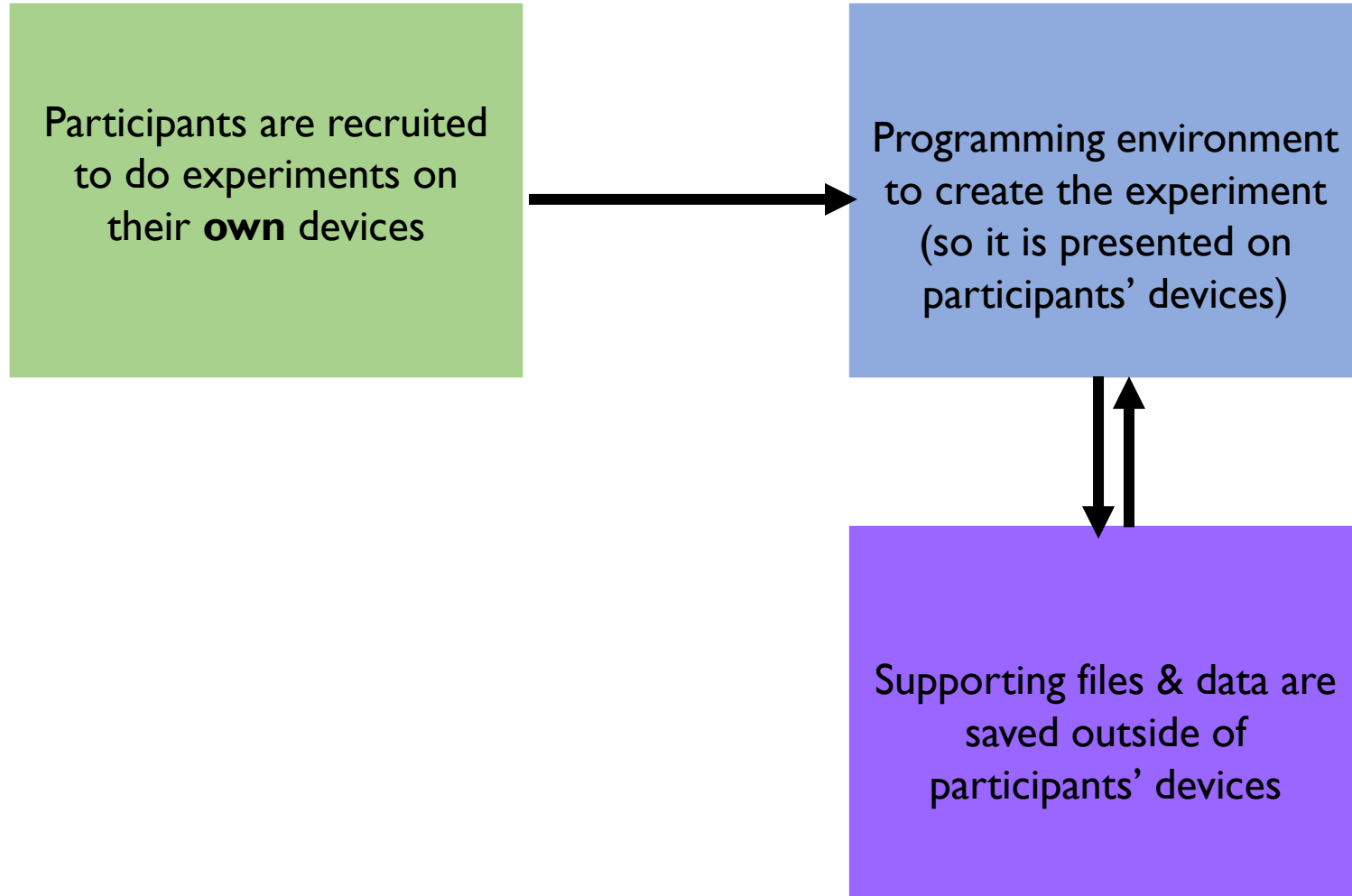
# Running experiments in the lab



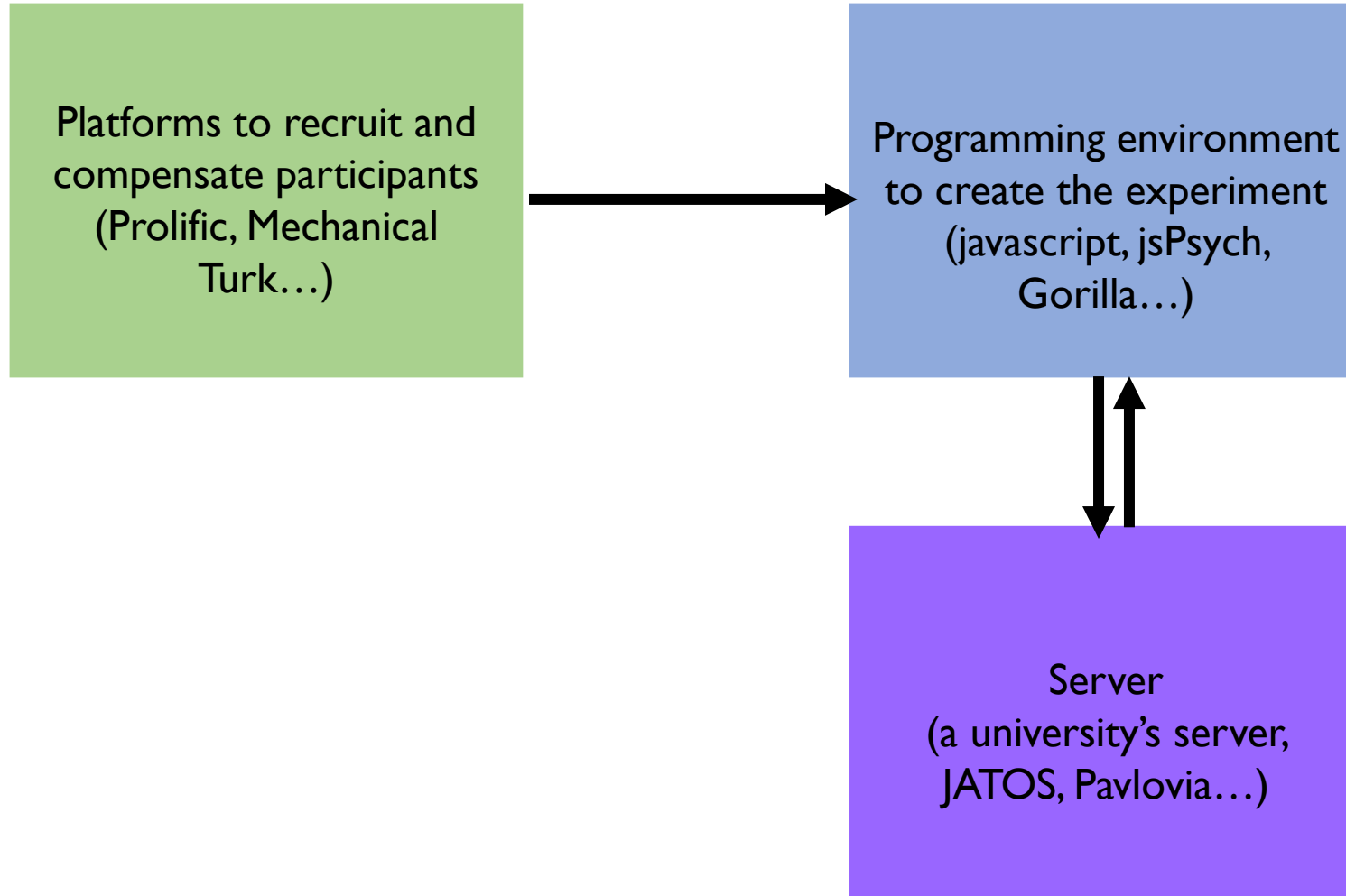
# Running experiments online



# Running experiments online



# Running experiments online



# Overview of the current tutorial

Platforms to recruit and  
compensate participants  
(**Prolific**, Mechanical  
Turk...)

Programming environment  
to create the experiment  
(**javascript**, **jsPsych**,  
Gorilla...)

Server  
(a university's server,  
JATOS, Pavlovvia...)

# Recruiting participants online

# Crowdsourcing

- Once an experiment runs on a browser, it can be potentially sent to anyone with an internet connection
- Crowdsourcing sites



Designed for  
crowdsourcing  
anything



Designed for  
scientific data  
collection



# A quick look at Prolific



## What do you want to do in Prolific?



### Take studies

Take part in engaging research, earn cash, and help improve human knowledge.



### Run research


Recruit people around the world and collect high quality responses within minutes.

# A quick look at Prolific





STUDY DETAILS

UNPUBLISHEDACTION ▾

What would you like to call this study?

 Test study

Describe what participants will be doing in this study

 H<sub>1</sub> H<sub>2</sub> B / U S   


In this study, you will be expected to complete the following tasks:

- Answer some brief demographic questions.
- Give feedback on our new product.

Your participation is expected to take 10 minutes in total. Please only take part in this study if you are using a desktop/laptop computer.

[Hide advanced](#)

Internal name (only visible to you)

 Feedback survey - US females only

# A quick look at Prolific

- Adding a link to the actual study

## STUDY LINK

What is the URL of your study?



`https://your-survey-URL.com?PROLIFIC_PID={{%PROLIFIC_PID%}}&STUDY_ID={{%STUDY_ID%}}&SESSION_ID={{%SESSION_ID%}}`

# A quick look at Prolific

- Targeting a specific audience

Who will see your study?

- ☐ I want a representative sample
- ☒ I want to apply custom prescreening

Age

Edit Remove

Sex

Edit Remove

Current Country of Residence

Edit Remove

[Add another filter?](#)

- ☐ I don't mind. Everyone can see it!

# A quick look at Prolific

- Targeting a specific audience

Which devices should participants use to take your study?

☐ Mobile ☐ Tablet ☒ Desktop

We've found 8,126 matching participants who have been active in the past 90 days

# Recruiting children for online studies

- We have no experience with this (yet)
- **Katie Schuler's tutorial at 16:00!**
- Recruitment is trickier compared to adults
  - But, e.g., [childrenhelpingscience.com](https://childrenhelpingscience.com)

# Data quality

- Are participants who they say they are?
  - Actual humans
  - Language proficiency
  - Age
- Are they paying attention?
  - Multi-tasking
  - Randomly responding
- **Online experiments need to be designed to handle this**

# Data quality

- Think about specific concerns, and design exclusion criteria to address them accordingly (Jenni Rodd, BeOnline2018; BeOnline2020)
  - Measure completion times
  - Repeat key questions in different ways
  - Language tests
  - Attention checks



# Data quality

Please skip this and move on to the next question.  
Do not click on the scale items that are labelled from 1 to 9.

This is just to screen out random clicking.

Very Rarely



Very Frequently

Next

(Oppenheimer, Meyvis, & Davidenko, 2009; Psychstudio, 2019)

# Data quality

- Think about specific concerns, and design exclusion criteria to address them accordingly (Jenni Rodd, BeOnline2018; BeOnline2020)
  - Measure completion times
  - Repeat key questions in different ways
  - Language tests
  - Attention checks
  - Debriefing
  - Make random clicking annoying for participants
    - Make them repeat a trial during training when they get it wrong
    - Make pauses after wrong answers longer

# Data quality

- Make the experiment as short and fun as possible
- **Pilot** before starting

# Ethical practices

- Online studies are not cheaper than lab studies (in terms of compensation for participants) + Mturk/Prolific fee
  - Mturk has no minimum pay rate
  - Prolific has a cheap minimum pay rate (£5/hour)
  - **Pay fairly**, match at least the National Minimum Wage
- Treat participants with respect
- **Pilot** before starting

# Pros and cons of crowdsourcing experimental data

- Not in person
- Large samples (more statistical power)
- Fast
- Access different and more diverse populations
- Less control than lab experiments
- Not everything can be done online

# Comparability with lab data

- Do effects of lab-studies replicate online?
  - Is the lab data the “gold standard” or simply the only data available?
  - More variation coming from more noise, or more diverse participants?
- Effects of many paradigms first tested in the lab were replicated with crowdsourced populations (e.g., Monroe et al., 2010; Stewart et al., 2017)
  - Artificial language learning
    - Online replications of lab results (e.g., Fedzechkina & Jaeger, 2020; Roberts & Fedzechkina, 2018; Smith & Culbertson, 2020)
    - Online novel experiments (e.g., Carr et al., 2020; Culbertson & Adger, 2014; Ferdinand et al., 2019; Hendrickson & Perfors, 2019; Kanwal et al., 2017; Maldonado & Culbertson, 2020; Martin & Peperkamp, 2020; Vujović et al., 2021)

# Creating online experiments