

Conducting speech perception experiments remotely: Some tools, successes, and challenges

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osf.io/8krg3/

For more in-depth resources, visit:

<https://tinyurl.com/2pSCa1-Theodore>

Tools: Gorilla Experiment Builder

- Software to build experiments + server to host web-based studies
- If you can dream it, Gorilla can build it
- Extensive features: *collaboration, version control, open materials, support*
- Free to build experiments; payment model is based on token currency



- Projects consist of experiments, tasks & questionnaires, and open materials
- Experiments are sequenced tasks & questionnaires
- Open materials are publicly available tasks and questionnaires

GORILLATM

Rachel M. Theodore

[Home](#) > [Projects](#) > PhLex

PhLex

Settings Create

Experiments

Open Archive

Name	Description	Complete Participants
PhLex-001	Three conditions (control, low conflict, high conflict); steps 2 - 11.	30
PhLex-002	Four conditions (control, structured, low conflict, high conflict); steps 4 - 13.	40
PhLex-003	Four conditions (control, structured, low conflict, high conflict); steps 3 - 12.	76

Tasks & Questionnaires

Open Archive

Name	Description	Type
Demographics	NIH reporting information + dialect question.	
Headphone-Check	Woods et al. (2017) headphone screen; first test.	
Headphone-Check-Again	Woods et al. (2017) headphone screen; second test, if they don't pass the first one.	
Headphone-Check-Final	Woods et al. (2017) headphone screen; third and final test, if they don't pass the second one.	
Information-Sheet-10	Consent form for 10-minute study; pay == \$1.67.	
PhLex-001	Phonetic identification task for three conditions (control, low conflict, high conflict). Control continuum == gixx. Stimuli for all continua use steps 2 - 11.	
PhLex-002	Phonetic identification task for four conditions (control, structured, low conflict, high conflict). Control/structured continuum == gith. Stimuli for all continua use steps 4 - 13.	
PhLex-003	Phonetic identification task for four conditions (control, structured, low conflict, high conflict). Control/structured continuum == gith. Stimuli for all continua use steps 3 - 12.	
VST	Vocabulary size test (Nation & Beglar, 2007).	

Open Materials

Open Archive

Name	Description	Type
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Information-Sheet-10


[Settings](#)[Preview Questionnaire](#)

Consent form for 10-minute study; pay == \$1.67.

You are viewing version 2: Update to 10 minutes @ \$1.67 w/ new approval date.

✓ This is the latest version

[Version History](#)[Edit](#)

 Image

Image

Information Sheet for Participation in a Research Study

UConn
UNIVERSITY OF CONNECTICUT

Principal Investigator: Rachel M. Theodore
Title of Study: Context Effects for Speech Perception
Sponsor: National Science Foundation, National Institutes of Health

You are invited to participate in a research study. This form includes information about the study and contact information if you have any questions.

The purpose of this study is to examine how listeners comprehend speech. The study consists of three parts. In the first part, you will listen to words and sounds and be asked to make decisions about what you hear using the computer keyboard. These decisions include identifying which word or sound you hear, which of two sounds is louder than the other, or which speaker you hear. In the second part, you will be asked to identify the dialect of English that you speak. In the third part, you will be asked to indicate your gender, race, and ethnicity. You will be given an option to not state your dialect, gender, race, and ethnicity. The information that will be collected is the keyboard responses you enter for each question.

The benign behavioral intervention is a listening task where you will hear words or sounds and make decisions about what you hear such as which word was said, whether the speaker was a man or a woman, which sound was in a word, or which of two sounds are louder. Data are collected anonymously and consist of the keyboard responses entered for each question.

This study should take approximately 10 minutes of your time. Your participation will be anonymous.

You will not be contacted again in the future.

You will receive \$1.67 after completing this study. You are required to complete all of the questions in the survey to receive payment. After you complete the survey, the payment will be deposited into your Prolific account within 24 hours of completion.

We do not anticipate any risks from completing the survey.

You may not benefit from this research. However, the benefits of your participation may impact society by helping to increase knowledge about how listeners are able to understand spoken language.

We will do our best to protect the confidentiality of the information we gather from you but we

Live Preview

Page 2 of 2

University of Connecticut Institutional Review Board (IRB) at 860-486-5802. The IRB is a group of people who review research studies to protect the rights and welfare of research participants.

Please print out a copy of this information sheet for your records.

If you would like to participate in this study, click yes to begin or no to exit.

UConn IRB PROTOCOL X19-096 APPROVED 4/3/2020

2

- ☐ Yes
☐ No

PhLex-003

[Settings](#)[Preview Task](#)

Phonetic identification task for four conditions (control, structured, low conflict, high conflict). Control/structured continuum == gith. Stimuli for all continua use steps 3 - 12.

You are viewing version 4: Add maximal spreadsheet.

✓ This is the latest version

[Version History](#)[Edit](#)[Task Structure](#)[Spreadsheet](#)[Stimuli](#)[Manipulations](#)[Script](#)

Instructions

Screen 1



Task

Screen 1



Screen 2



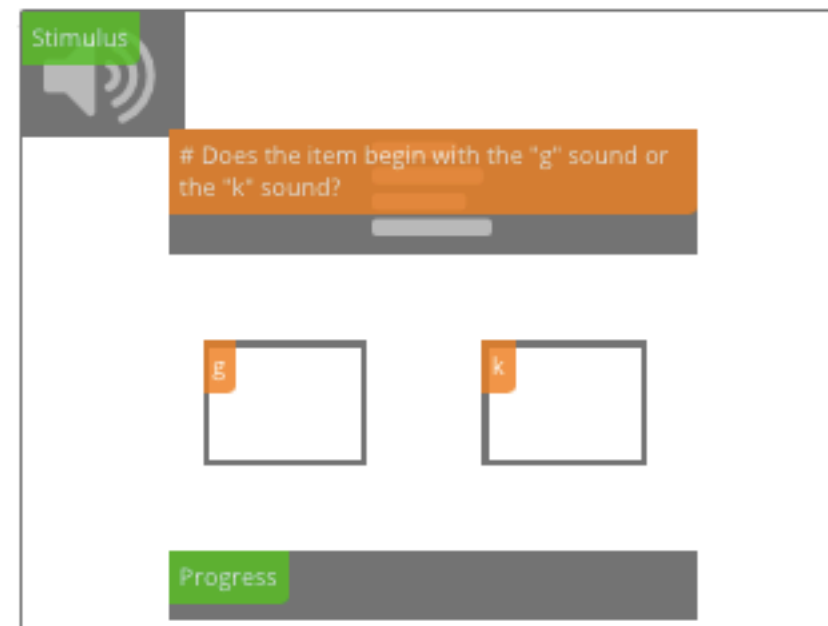
Fin

Screen 1



Task: Screen 1

Screen Layout

[Show Zone Names](#)

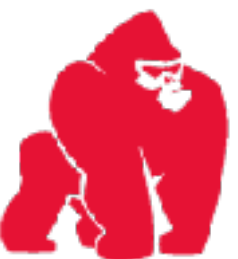
Configuration Settings

Audio

?

Tools: Gorilla Experiment Builder










- Seamless integration with Prolific, but can be used for any method of recruitment



Change Recruitment Policy



Disable	Link	Email	Recruitment Service
---------	------	-------	---------------------

	Prolific Recruit your participants through Prolific.ac
	Sona Systems® Recruit your participants through Sona Systems®
	Amazon Mechanical Turk Recruit your participants through Amazon Mechanical Turk
	Cloud Research Recruit your participants through Cloud Research (formally TurkPrime)
	Qualtrics Recruit your participants from Qualtrics
	Qualtrics Panel Recruit your participants from a Qualtrics Panel
	Kantar Profiles Recruit your participants through Kantar Profiles
	Research Now BETA Recruit your participants through Research Now
	Third Party Recruit your participants using a third-party recruitment company (e.g. marketing agency)

OK

Change Recruitment Policy



Disable

Link

Email

Recruitment Service

Simple Link

Put a URL on a poster or on Facebook, which logs participants in automatically

Pilot

Send a link to people and have them log in using their name as an ID

Supervised

Add a set of PublicIDs up front, and then give your participants their PublicID in person to log in with

OK

Change Recruitment Policy



Disable

Link

Email

Recruitment Service

Email Shot

Add participants' email addresses up front, and send them each an email with a personalised link

Email ID

Add participants' email addresses up front and assign them each a PublicID, and send them each an email containing that ID for them to log in with

OK

Tools: Gorilla Experiment Builder

- Seamless integration with Prolific, but can be used for any method of recruitment
- Real-time information on participants' progress



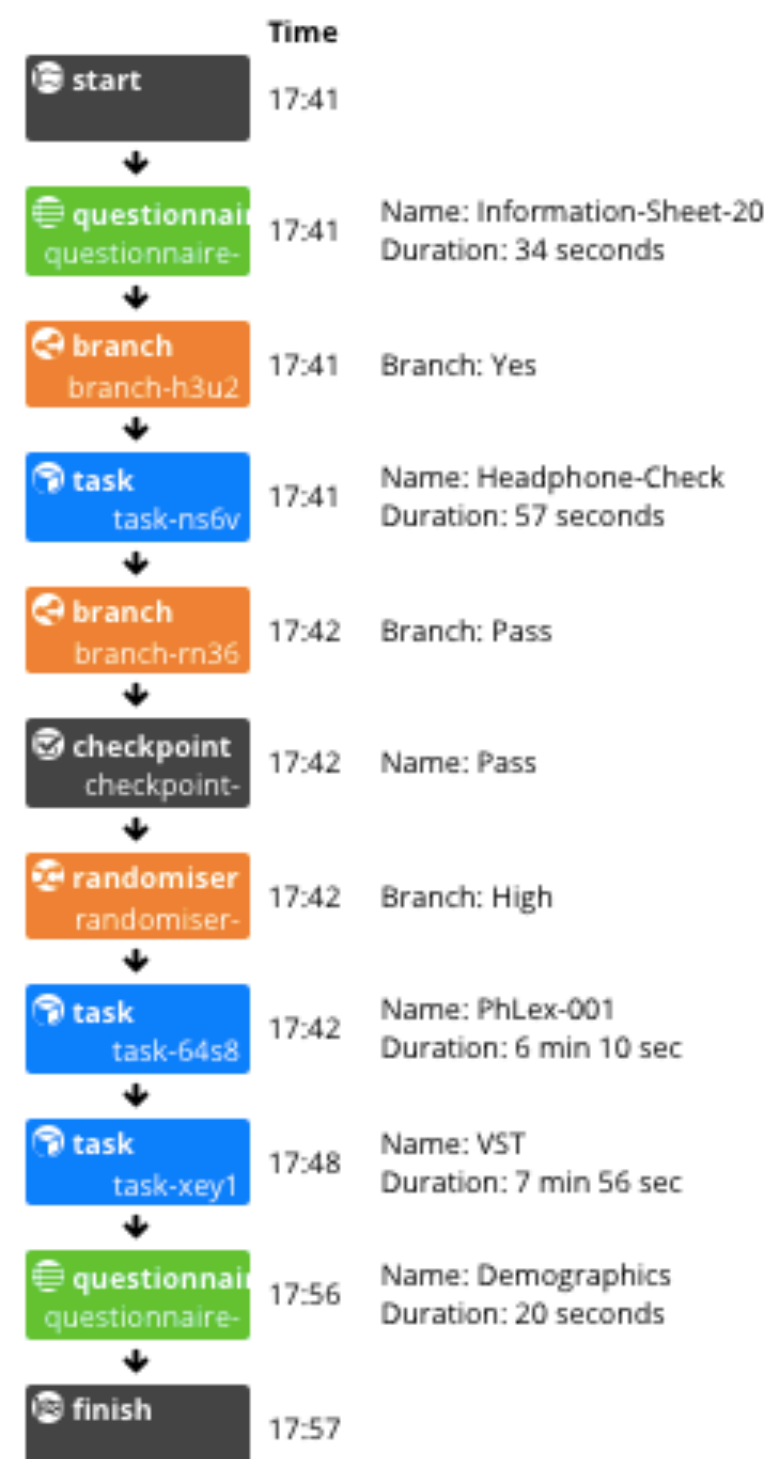
Participant Progress

Public ID [REDACTED]

Status **Complete**

Start Date 29/03/2020 17:41

End Date 29/03/2020 17:57



Tools: Prolific

- Online participant pool with large, diverse sample
- Prolific uses numerous quality control methods to ensure high quality participants
- Prolific aims to provide a more ethical alternative to other platforms (e.g., minimum pay/hour)
- Prolific doesn't host experiments; they route participants to your experiment and handle incentive payments
- Prolific makes money by charging a 30% commission on participant payments



Tools: Prolific

- Seamless integration with Gorilla, but can be used to distribute any web-based study
- Custom “Allow list” and “Block list” functions
- Extensive participant filters
 - Age
 - Nationality/current residence
 - Language(s)
 - Previous studies
- System fosters efficiency in project administration and delivers *high quality participants*



RESEARCHER

 New study Drafts Scheduled Active Completed

STUDY DETAILS

What is the title of your study?




ASA-Demonstration

Give your study an internal name (only visible to you)



My ice cream study

Describe what participants will be doing in this study. [Read our tips](#) 

In this study I will ask you to tell me your favourite ice cream and then ask you how you are feeling.

Which devices can participants use to take your study?

Mobile Tablet Desktop 

Does your study require any of the following?

Audio Camera Microphone Download software 

The devices and tool options will be displayed to participants on their study preview. These options don't screen participants. To screen participants use the ["Prescreen participants"](#) option in the [Audience](#).

[Read about device compatibility](#) 

RESEARCHER

 New study Drafts Scheduled Active Completed

STUDY LINK

How to record Prolific IDs

To link answers in your survey tool to participants in Prolific, you'll need to set up your survey tool to record our participants' unique Prolific IDs.

This enables you to match our participant [demographic data](#) with their answers. If you receive a poor quality submission, you can also [reject it in our platform](#).

What is the URL of your study?



```
552E2ED6059?external_id={{%PROLIFIC_PID%}}&STUDY_ID={{%STUDY_ID%}}&external_session_id={{%SESSION_ID%}}
```

How do you want to record Prolific IDs? *(Select an option below for instructions)*

☐ I'll add a question in my study ☒ I'll use URL parameters ☐ I don't need to record these

To link answers in your survey tool to participants in Prolific, **you'll need to set up your survey tool** to record our participants' unique Prolific IDs.

Check out our [integration guide](#) instructions for the most commonly used survey tools.

Prolific ID

external_id

Study ID


STUDY_ID

Session ID

external_session_id

[Configure parameters](#)

RESEARCHER

 New study Drafts Scheduled Active Completed

STUDY COMPLETION

How to confirm participants have completed your study

When participants start your study they will leave the Prolific app. When they return, we need to capture a unique Completion Code to prove they completed your study.

[Read more about study completion](#) 

How do you want to confirm participants have completed your study? *(Select an option below for instructions)*

☒ I'll redirect them using a URL ☐ I'll give them the Completion Code to copy & paste

Please set up your survey tool to redirect participants back to the Prolific app. This URL includes the Completion Code so we can capture it automatically.

Please note this must be at the very last step of your survey.

`https://app.prolific.co/submissions/complete?cc=32AE6502`

Copy

RESEARCHER

 New study Drafts Scheduled Active Completed

AUDIENCE

Who will see your study?



Representative sample



Prescreen participants



Everyone

YOUR CRITERIA

Current Country of Residence

United States

[Edit](#) [Remove](#)[Add another one?](#)We've found **42,899** matching participants who have been active in the past 90 days

Find the participants you need

147,137 participants



Search for screeners

Demographics

Geographic

Languages

Custom Screener

Work

Education

Health

Beliefs

Family & relationships

Lifestyle and interests

Technology and online
behaviour

Current Country of Residence



Age



Nationality



Nationality (UK)



Sex



Ethnicity (Simplified)



Ethnicity



Gender identity



Sexual Orientation



Relationship/Marital status



Find the participants you need

42,899 participants



Search for screeners

Demographics

1

Geographic

Languages

Custom Screener

Work

Education

Health

Beliefs

Family & relationships

Lifestyle and interests

Technology and online
behaviour

< Back

Current Country of Residence

Participants were asked the following question: In what country do you currently reside?

Please note that Prolific is currently only available for participants who live in OECD countries.

[Read more about this](#)

Select the required responses or [select all](#)

Type to search...

United Kingdom

United States



Ireland

Germany


France


Canada


Remove


Apply


RESEARCHER

 New study

 Drafts

 Scheduled

 Active

 Completed

We've found **42,899** matching participants who have been active in the past 90 days

STUDY COST


How many participants are you looking to recruit?

 20




How long will your study take to complete?

 Max. time: 44 mins

Participants are paid according to your estimated study completion time. If the median completion time exceeds your estimate we will ask you to make additional payments. [Read more about study completion time](#) 


 10 minutes




How much do you want to pay them?

 1.67

10.02/hr




Hourly rate



Total cost: \$43.42

[Show cost breakdown](#) 

Save as draft

Preview

Publish 

ACTION

Submissions Progress

More ▾

☐

4 Jun 2021, 23:05

00:08:58

3BAD9C35

APPROVED

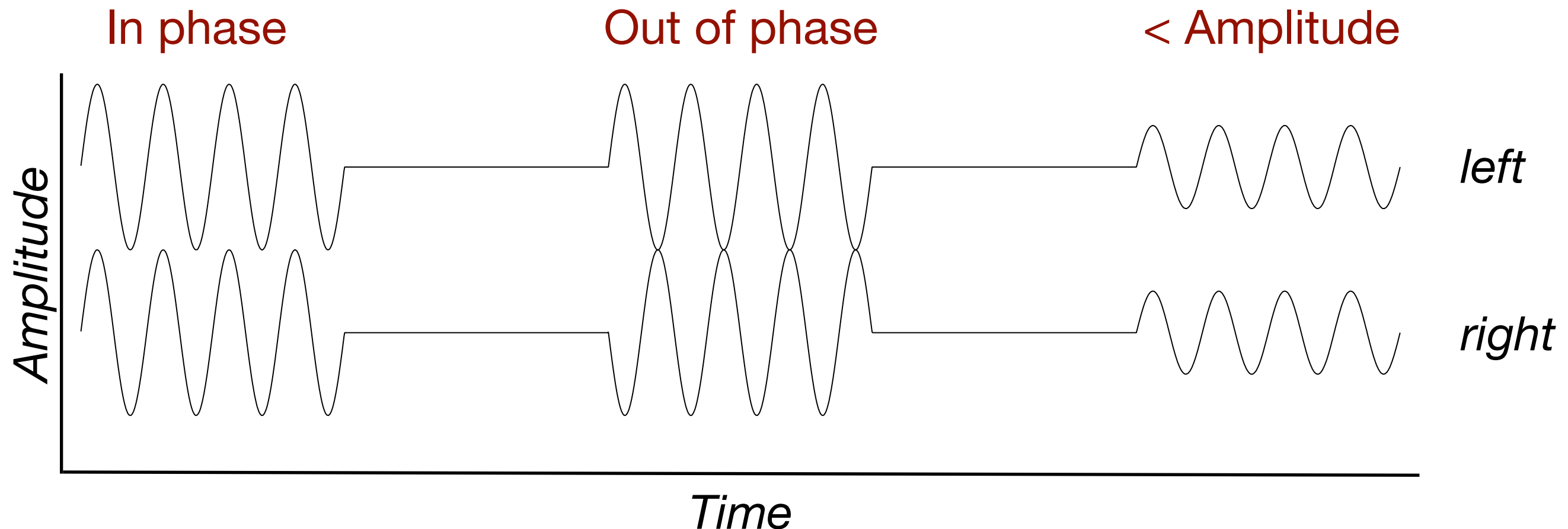


Tools: Headphone compliance

- Woods et al. (2017)
- Milne et al. (2020)

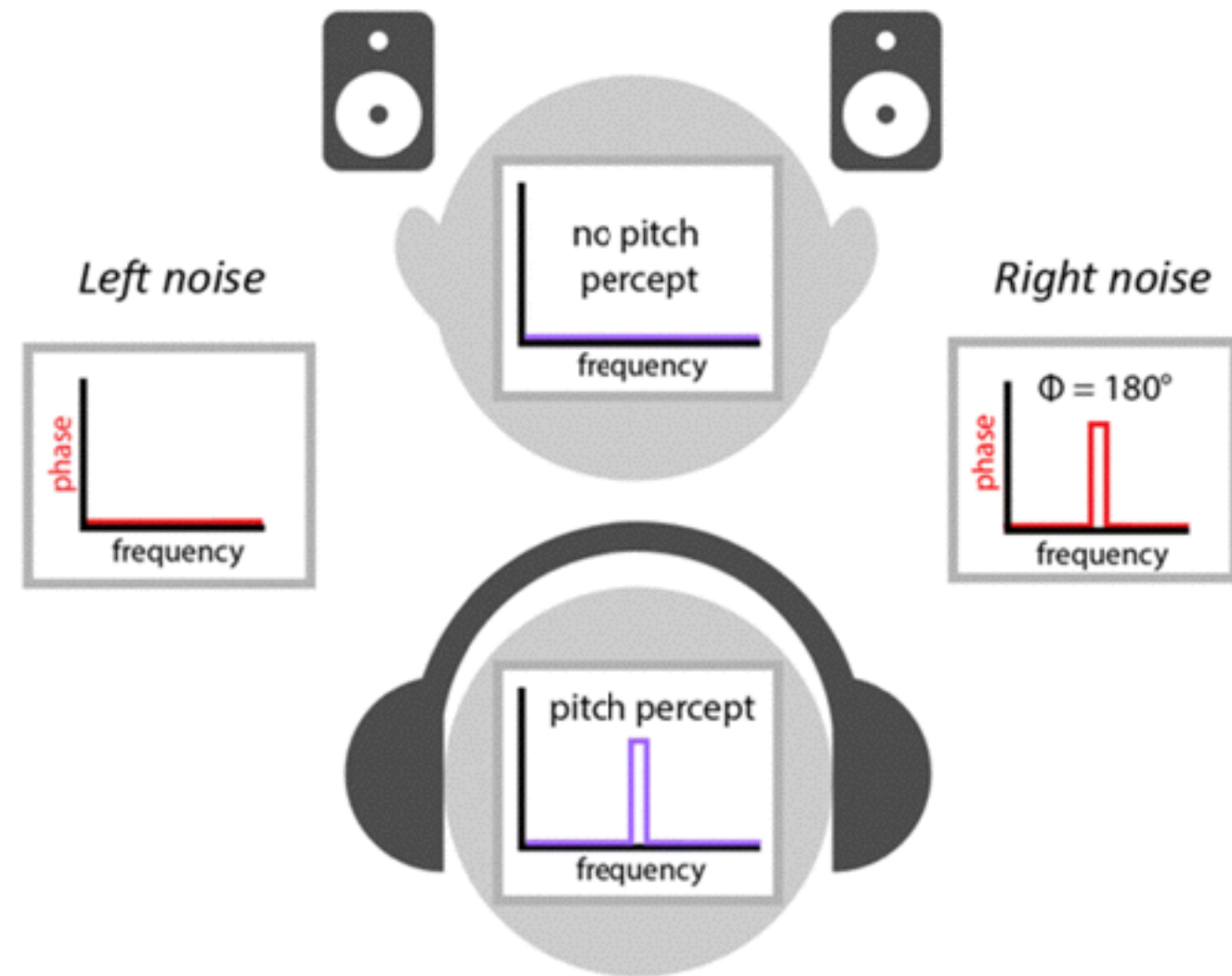
Tools: Headphone compliance (Woods et al., 2017)

- Six-trial, loudness decision task; “pass” is defined as ≥ 5 correct responses
- On each trial, three tones with equal frequency and duration are presented



Tools: Headphone compliance (Milne et al., 2020)

- Six-trial, tone detection task; “pass” is defined as 6 correct responses
- On each trial, three noise bursts are presented
- For one noise burst, noise is presented with a phase shift at 600 Hz
- Over headphones, listeners perceive the Huggins pitch



Adapted from Figure 1 of Milne et al., 2020

Tools: Headphone compliance

- The Huggins pitch task (Milne et al., 2020) shows more reliable detection than the loudness detection task (Woods et al., 2017)
- As reported in Milne et al. (2020), combining the two tasks **correctly identified 80%** of headphone users with a **false positive rate of 7%**
- If ear channel matters, be sure to supplement your headphone screens with a simple channel detection task...

Successes

- Categorical perception/distributional learning
- Lexically guided perceptual learning
- Perceptual learning for noise-vocoded speech
- Talker adaptation

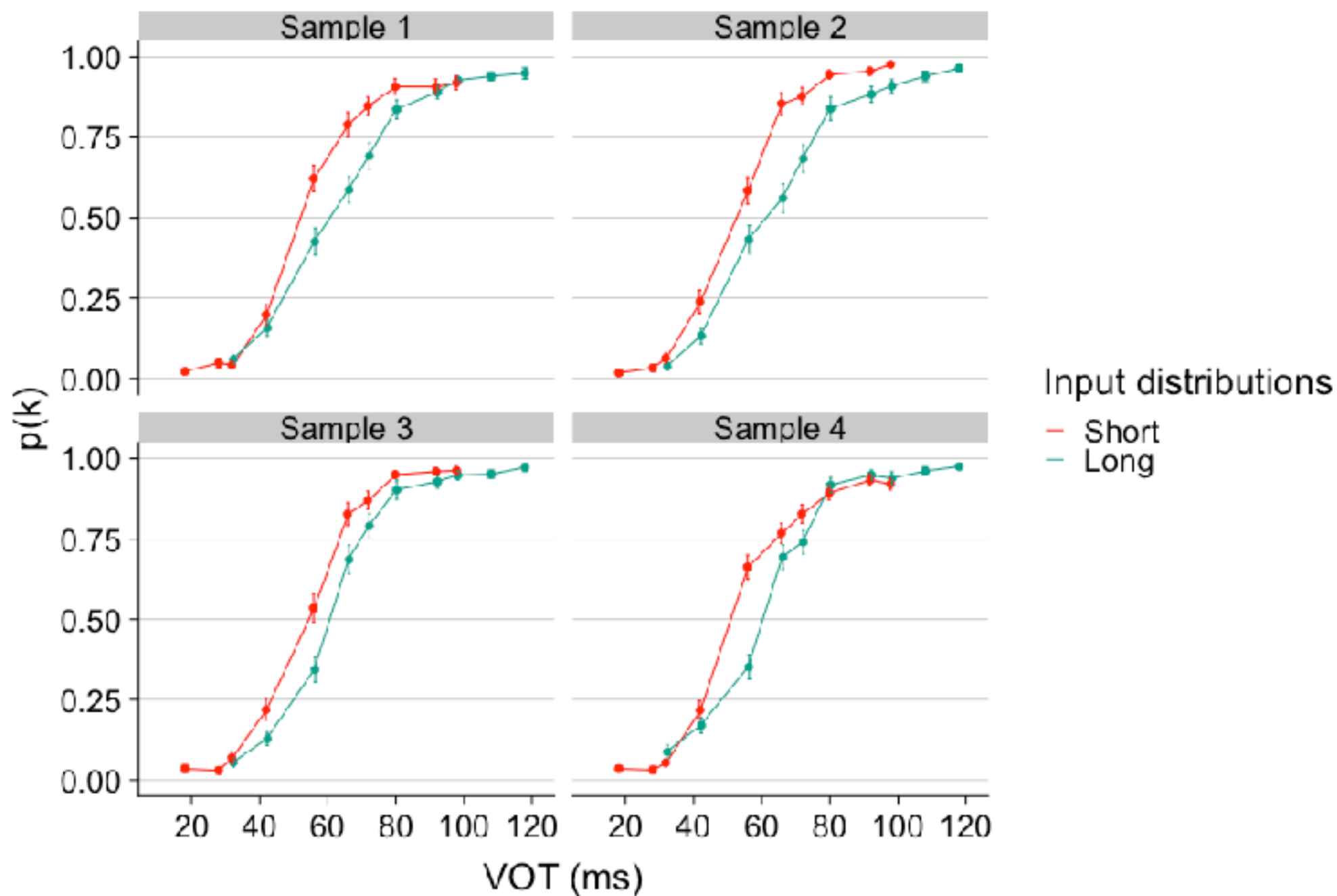
Success 1: Categorical perception/distributional learning

Block 1

- 152 trials of phonetic ID for tokens drawn from a VOT continuum to form either short or long VOT input distributions

Block 2

- 152 trials of phonetic ID for tokens drawn from a VOT continuum to form either short or long VOT input distributions



To achieve sample ($n = 320$), we excluded $n = 52$ due to failure to perform the task and $n = 27$ due to failure to pass headphone screen; attrition = 20%.

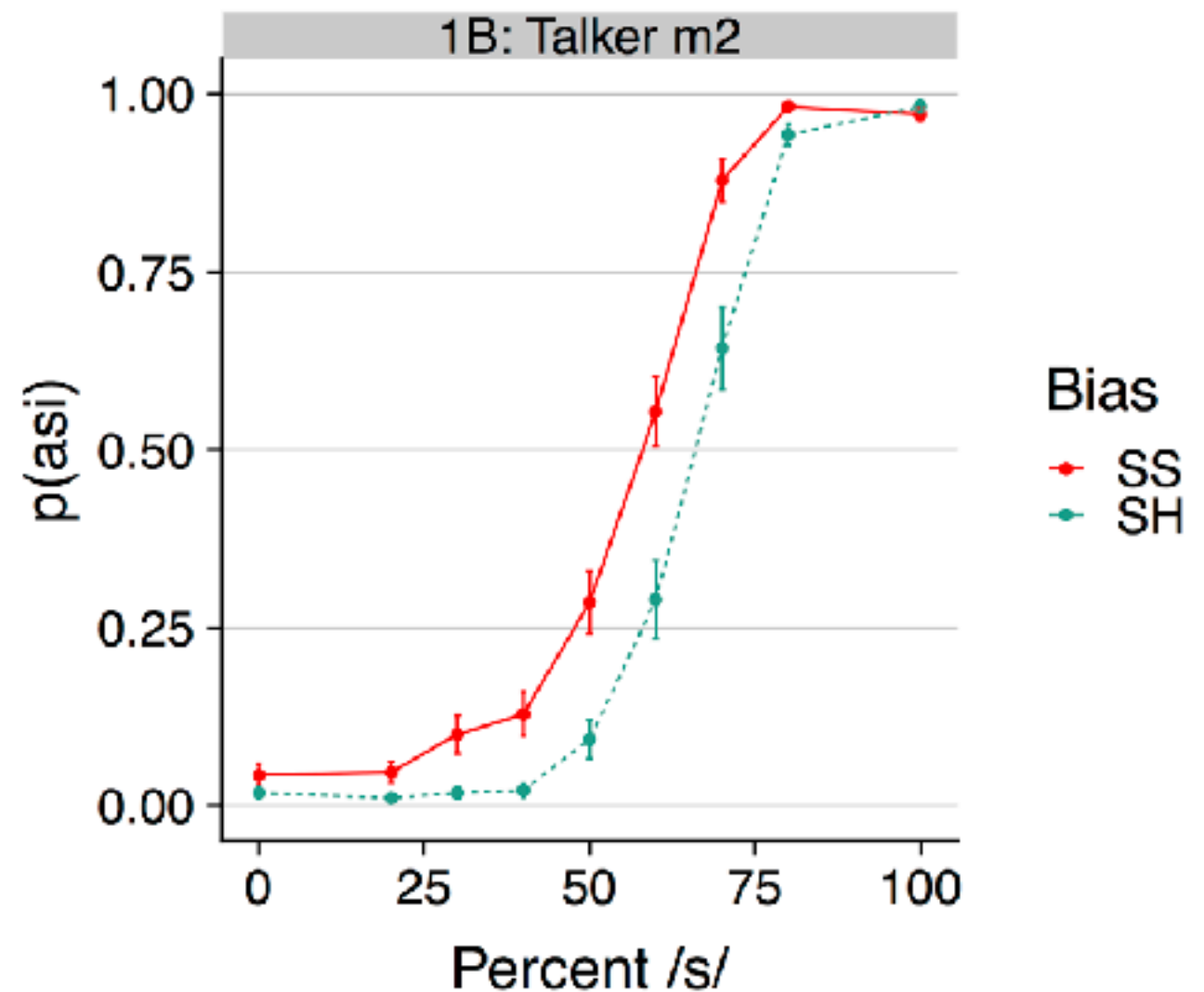
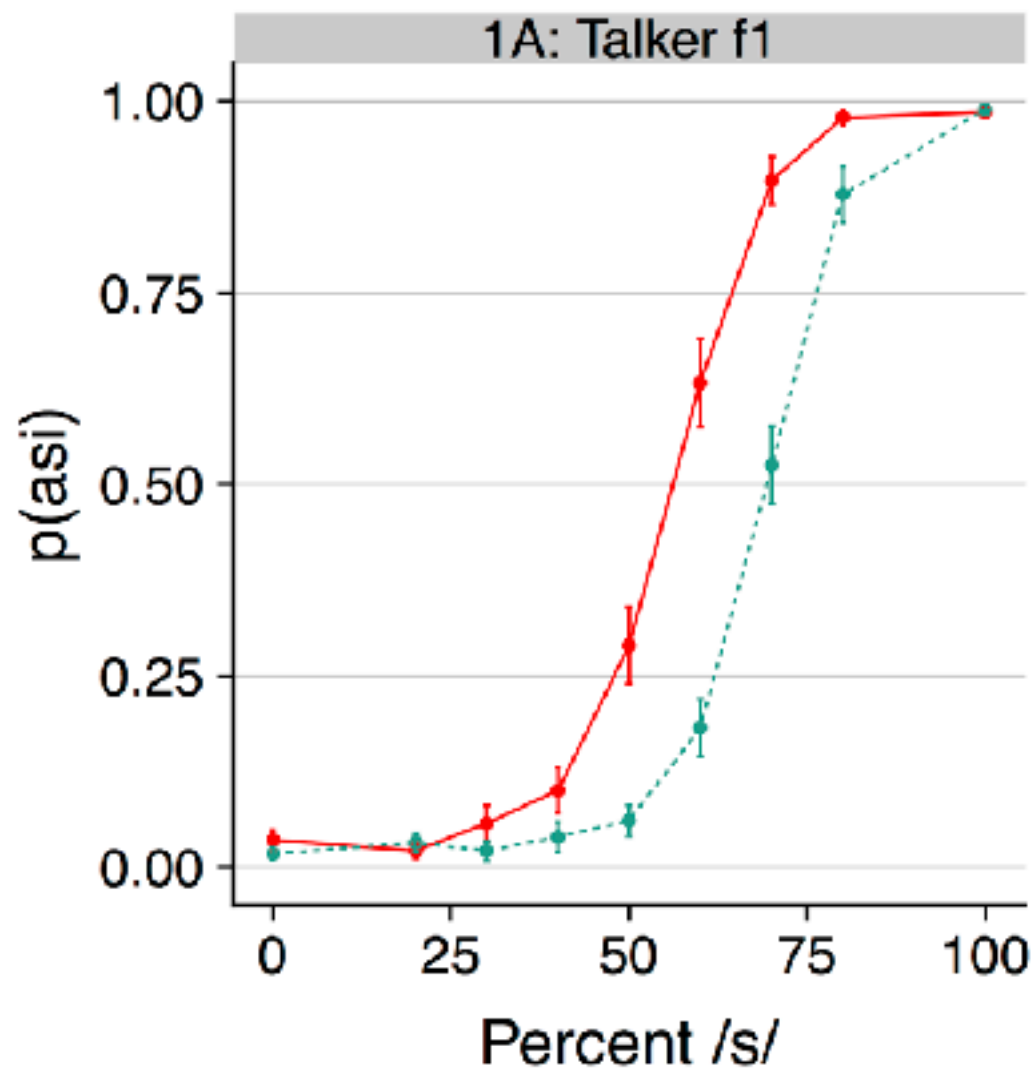
Success 2: Lexically guided perceptual learning

Block: Exposure

- 200 trials of a lexical decision task for word and nonword stimuli; critical ambiguous productions embedded in either /s/ or /ʃ/ biasing contexts

Block: Test

- 72 trials of phonetic ID for tokens drawn from an /asi/-/afi/ continuum



To achieve sample ($n = 560$), we excluded $n = 32$ due to failure to perform the task and $n = 112$ due to failure to pass headphone screen; attrition = 20%.

Success 3: Perceptual learning for vocoded speech

Block: Pre-test

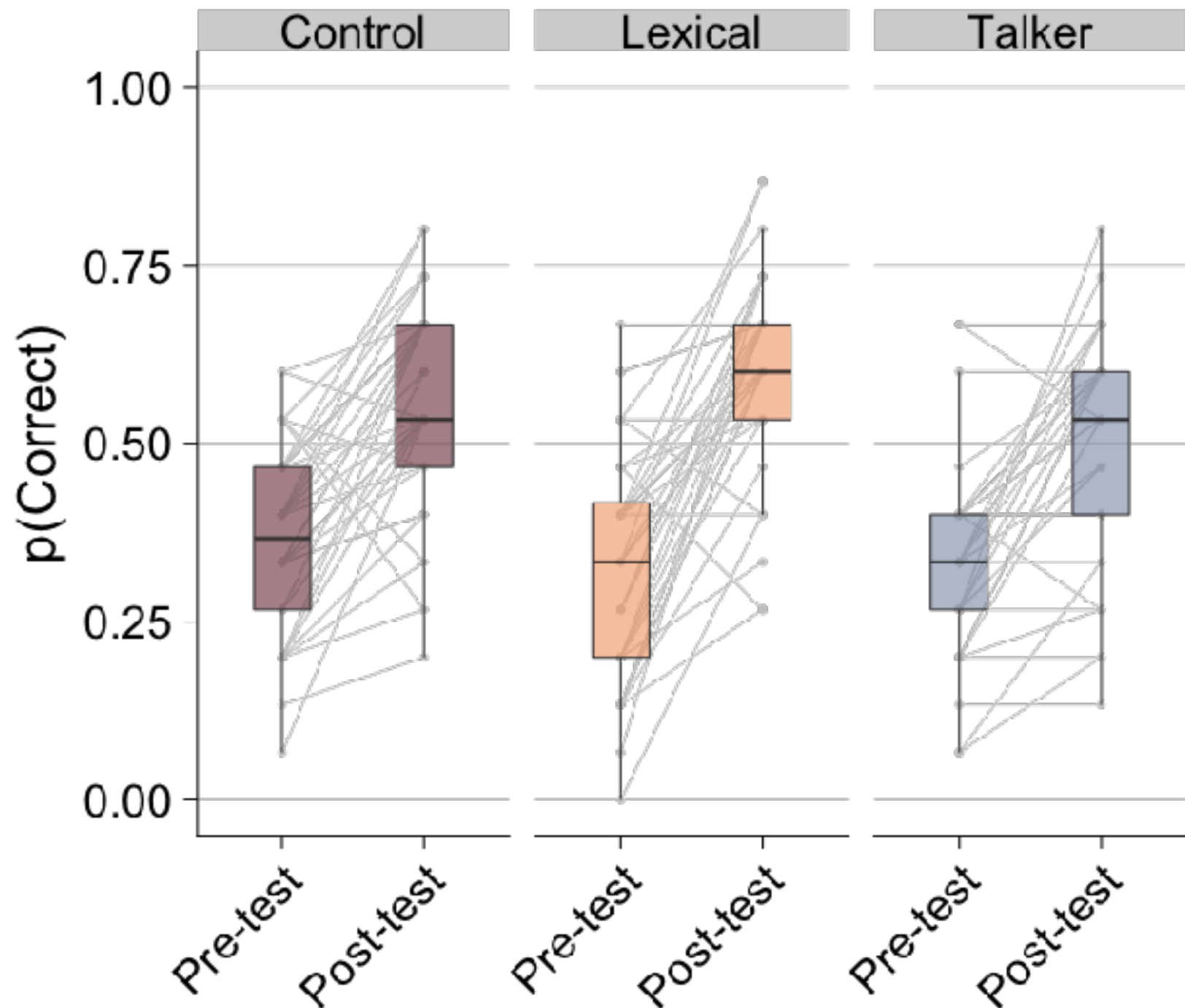
- 30 trials of a transcription task for vocoded sentences w/o feedback

Block: Training

- 150 trials with vocoded sentences
 - *Control*: Sentence transcription w/o feedback
 - *Lexical*: Sentence transcription w/ feedback
 - *Talker*: Talker ID w/ feedback

Block: Post-test

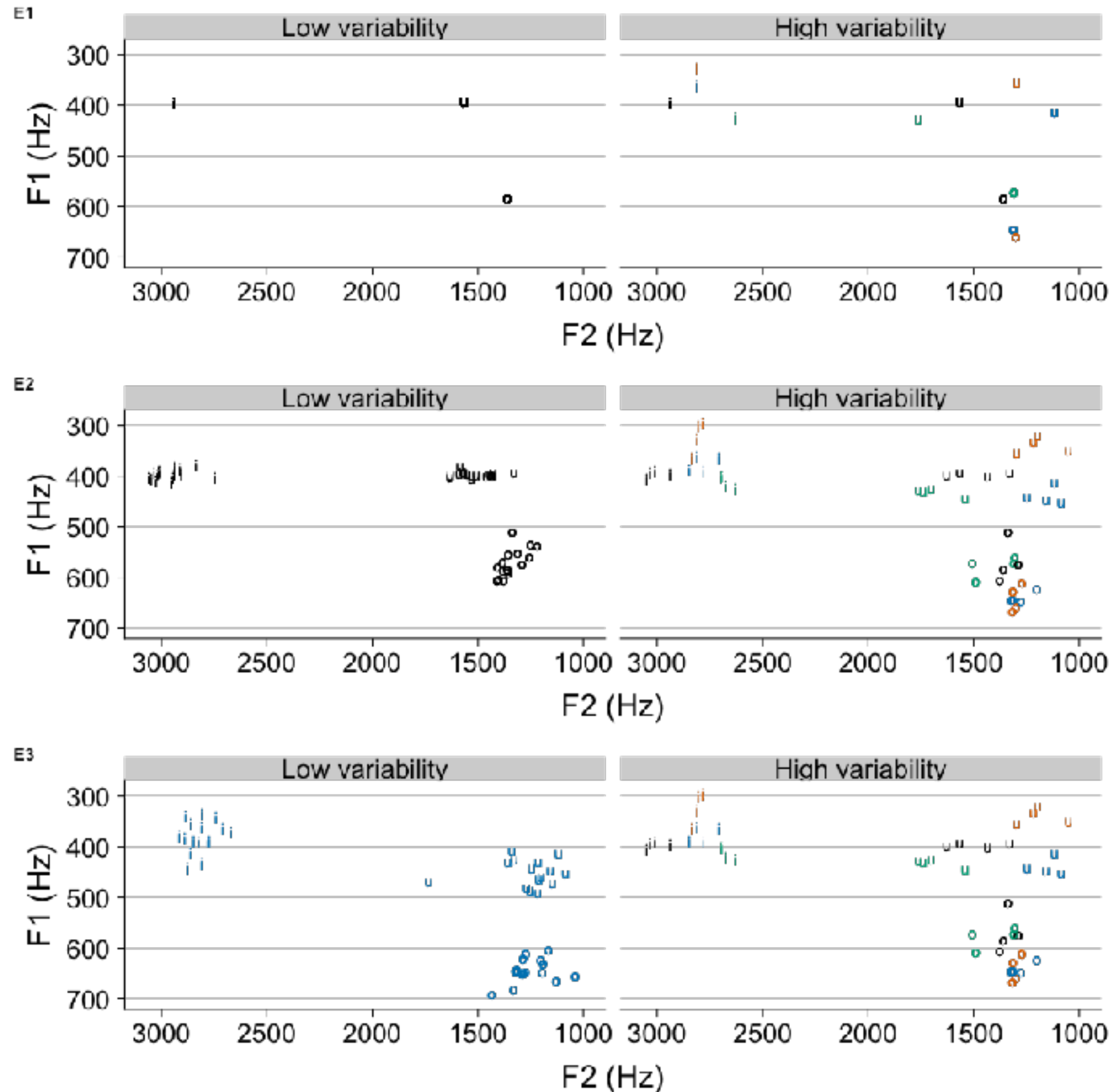
- 30 trials of a transcription task for vocoded sentences w/o feedback



To achieve sample ($n = 108$), we excluded $n = 2$ due to failure to perform the task and $n = 12$ due to failure to pass headphone screen; attrition = 11%.

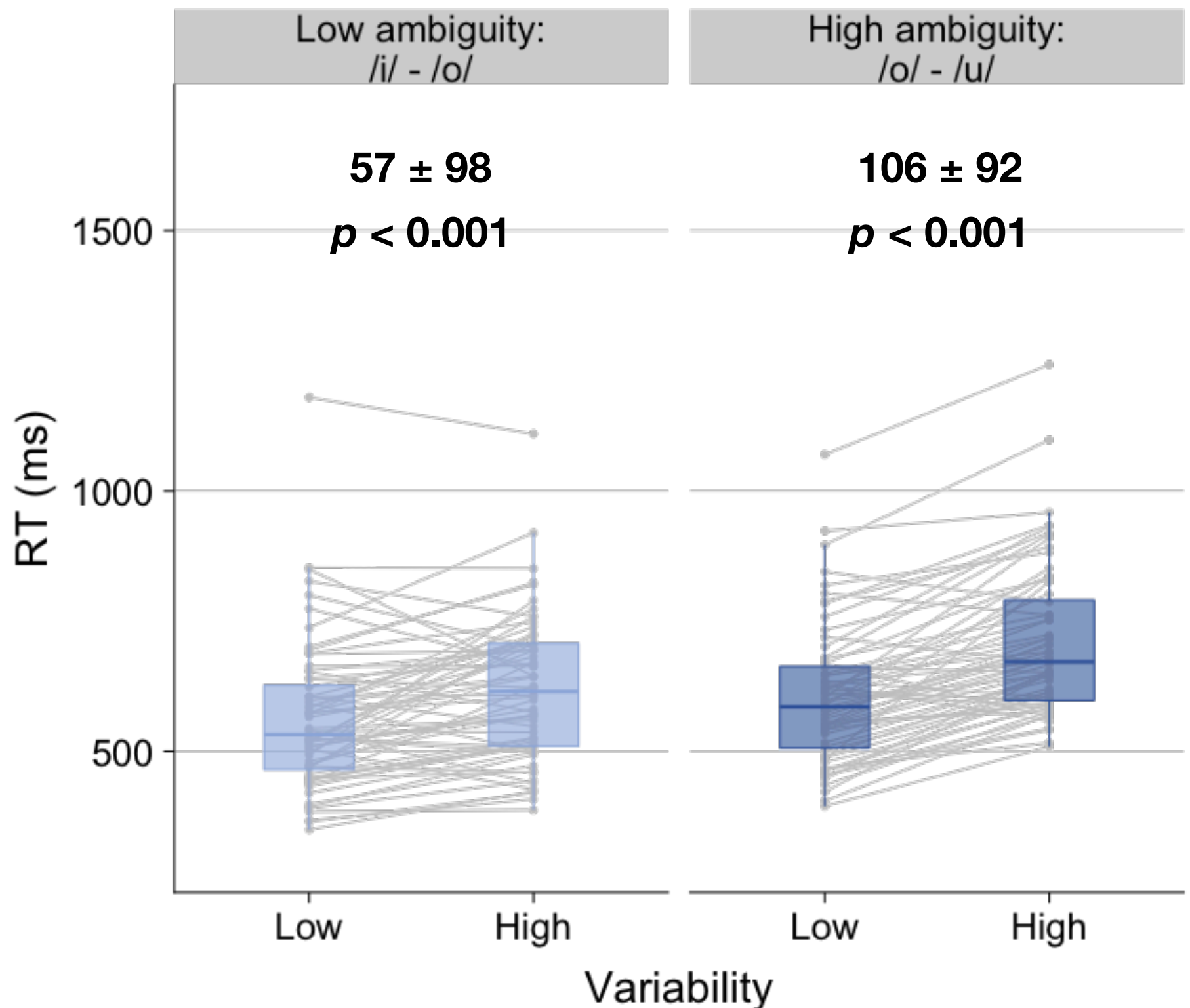
Success 4: Talker adaptation

- Four blocks (64 trials/block) of a speeded word ID task
- Blocks crossed talker variability and phonemic ambiguity
- Dependent measure was reaction time
- Can effects < 100 ms be reliably detected in web-based protocols?



Success 4: Talker adaptation

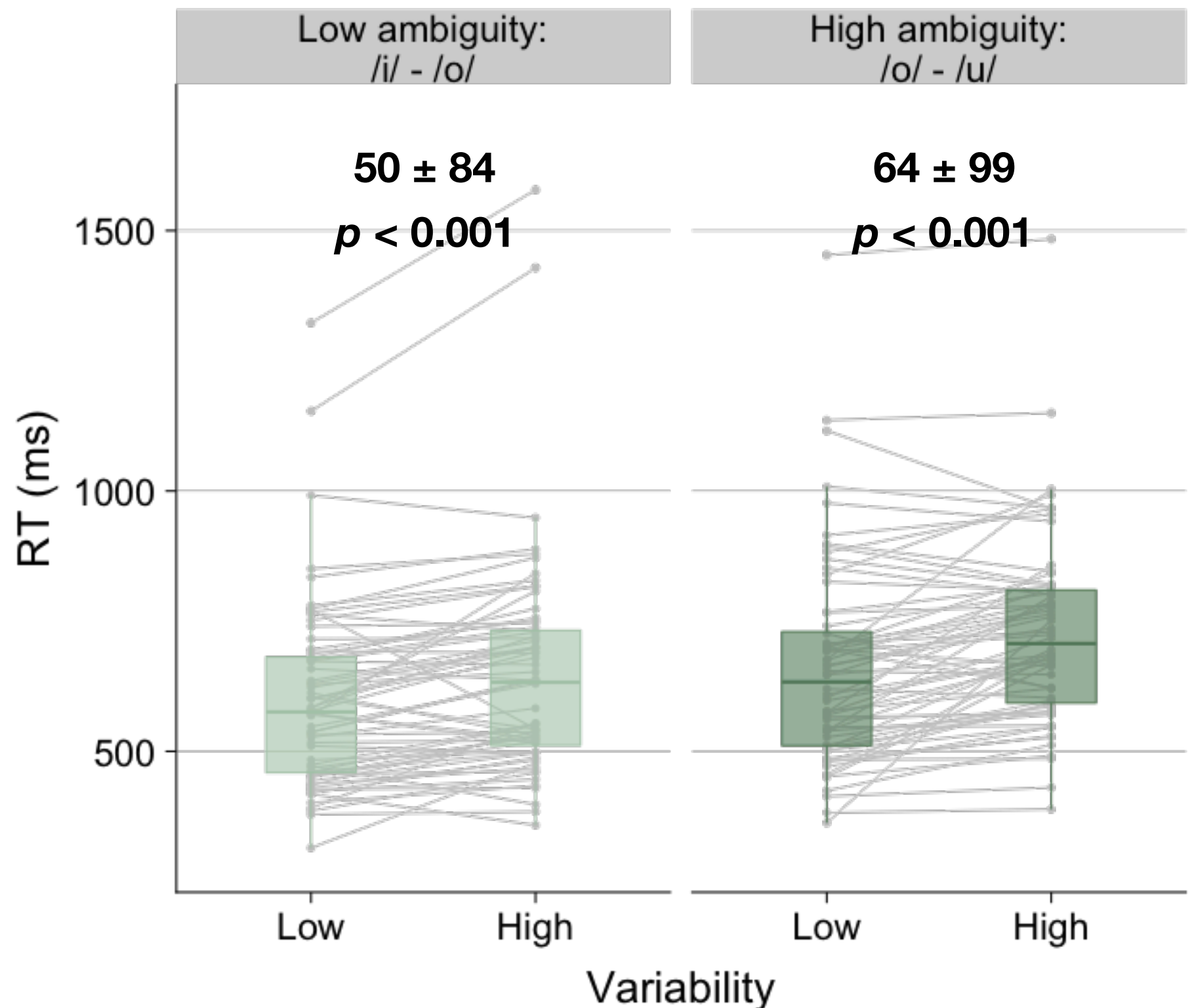
- Four blocks (64 trials/block) of a speeded word ID task
- Blocks crossed talker variability and phonemic ambiguity
- Dependent measure was reaction time
- Can effects < 100 ms be reliably detected in web-based protocols?



To achieve sample ($n = 320$), we excluded $n = 30$ due to failure to meet accuracy criterion and $n = 38$ due to failure to pass headphone screen; attrition = 17%.

Success 4: Talker adaptation

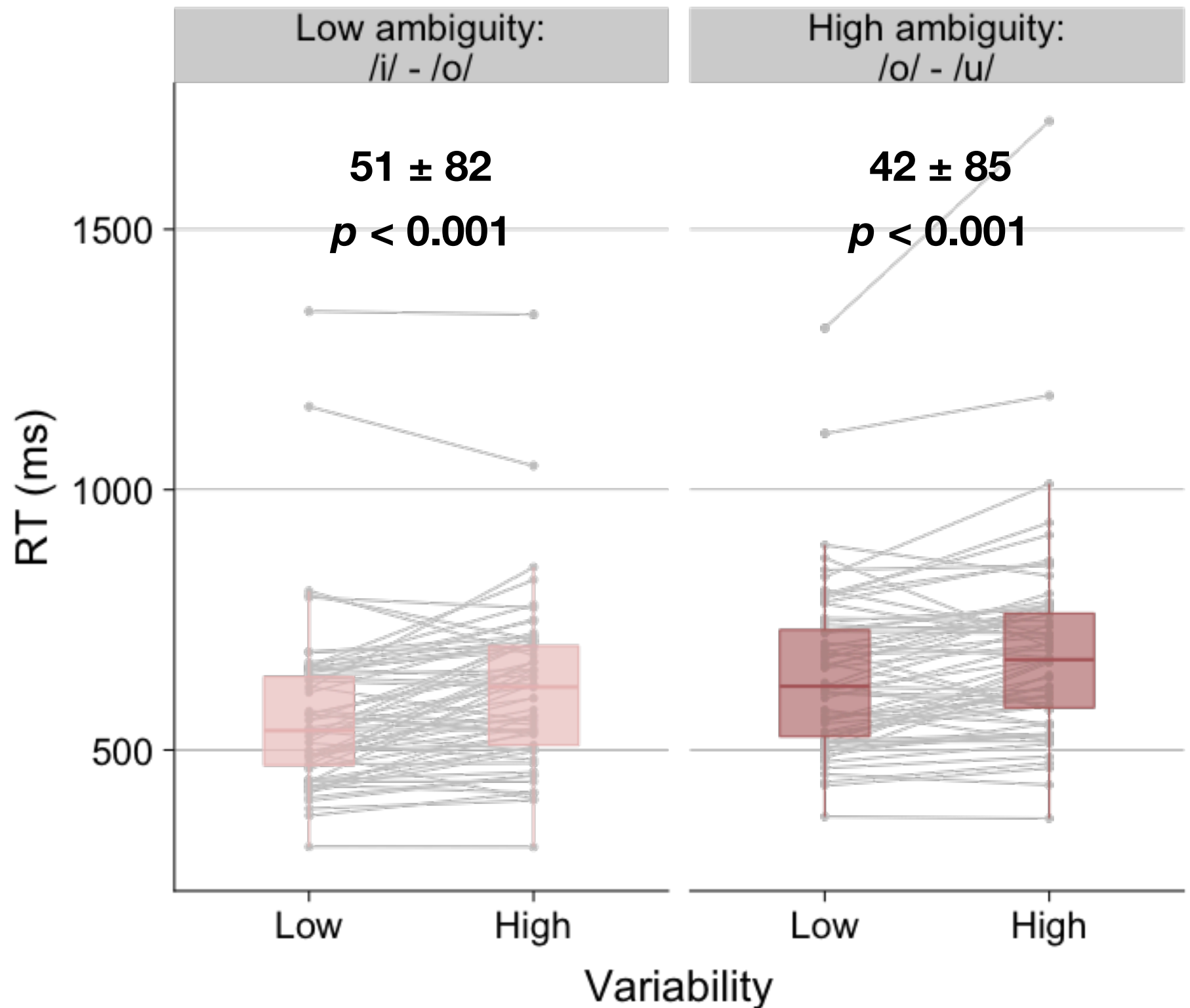
- Four blocks (64 trials/block) of a speeded word ID task
- Blocks crossed talker variability and phonemic ambiguity
- Dependent measure was reaction time
- Can effects < 100 ms be reliably detected in web-based protocols?



To achieve sample (n = 320), we excluded n = 30 due to failure to meet accuracy criterion and n = 38 due to failure to pass headphone screen; attrition = 17%.

Success 4: Talker adaptation

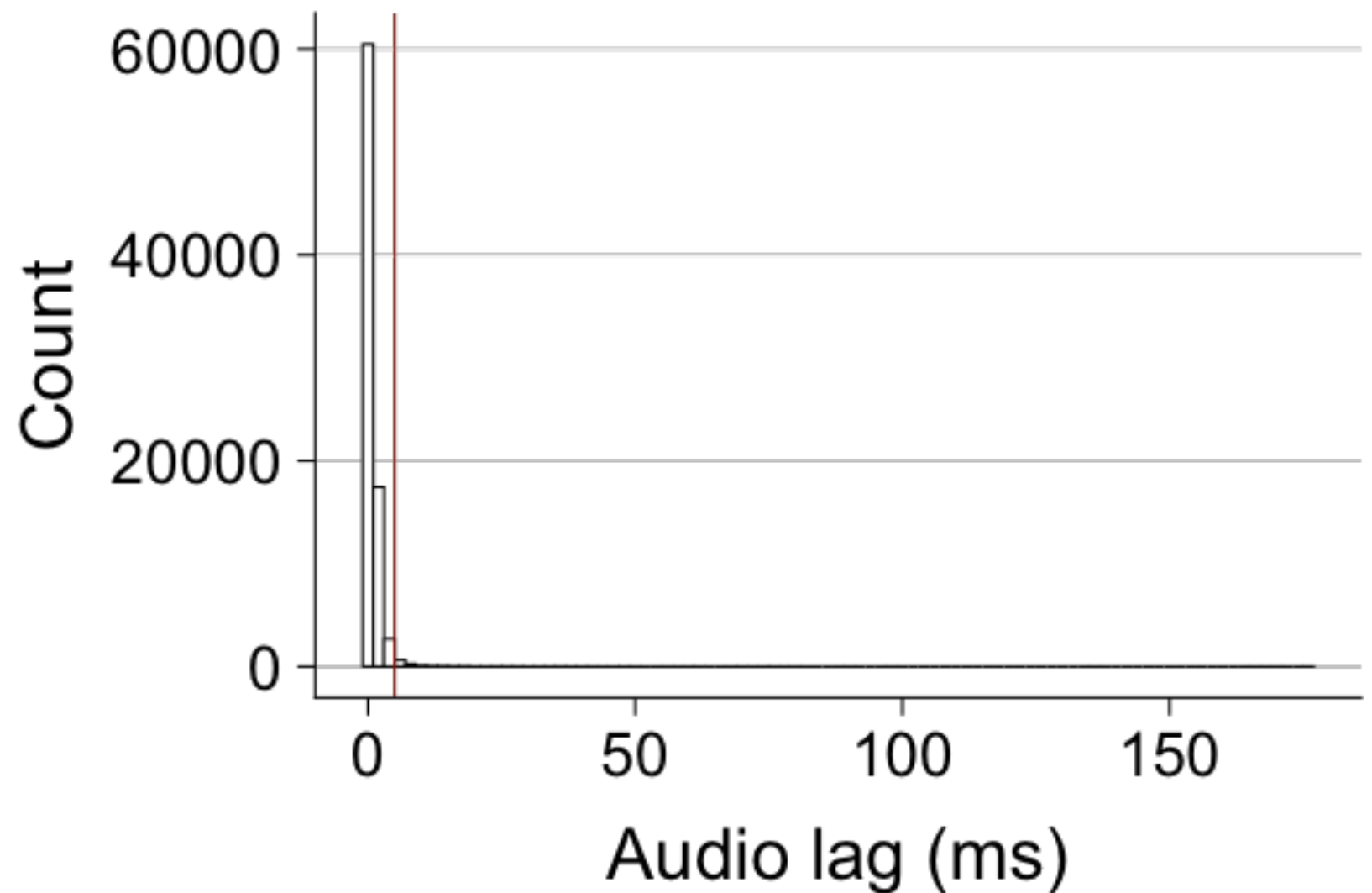
- Four blocks (64 trials/block) of a speeded word ID task
- Blocks crossed talker variability and phonemic ambiguity
- Dependent measure was reaction time
- Can effects < 100 ms be reliably detected in web-based protocols?



To achieve sample ($n = 320$), we excluded $n = 30$ due to failure to meet accuracy criterion and $n = 38$ due to failure to pass headphone screen; attrition = 17%.

Success 4: Talker adaptation

- Of 81,920 responses, the audio lag ranged between 0 and 177 ms
- 88% of responses had a lag < 2 ms
- 98% of responses had a lag < 5 ms
- Because Gorilla reports lag time, RTs can be adjusted relative to audio onset



To achieve sample (n = 320), we excluded n = 30 due to failure to meet accuracy criterion and n = 38 due to failure to pass headphone screen; attrition = 17%.

Challenges

- With the methods I've described, you can't see your participants and (usually) can't answer questions in real time
- You have less control over technology
- You have less control over the listening/testing environment

Challenges

- With the method



BuzzFeed

News

Buzz

Life

Entertainment

Quizzes

Videos



TOP POST
3,192,591 VIEWS



**12 Things That Will Absolutely Fix
Almost Everything That's Wrong
with Remote Experiments**

Tips and tricks

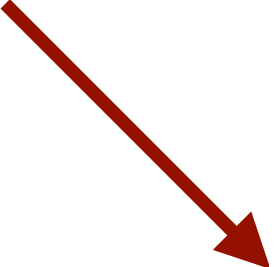
1. Be *exceptionally clear* with your participants in terms of technology requirements and study instructions

LDTN-005-d

Hosted by *Rachel Theodore*

\$1.67 • 10 minutes • \$10.02/hr • 33 places remaining

The purpose of this study is to examine how listeners comprehend speech. You will be asked to listen to words and sounds and make decisions about what you hear. Then, you will be asked to fill out demographic information.



This study needs to be completed on a desktop or laptop while hearing headphones. **Wearing headphones is really important for this task. Any headphones or earbuds are fine so long as they deliver a stereo signal, meaning that different sounds can go to the left and right ears.** Participants who do not meet these requirements will be asked to return their submissions.

Auto-play for sound files must be enabled in your browser for the study to run.

You will see a central arrow appear on the screen.

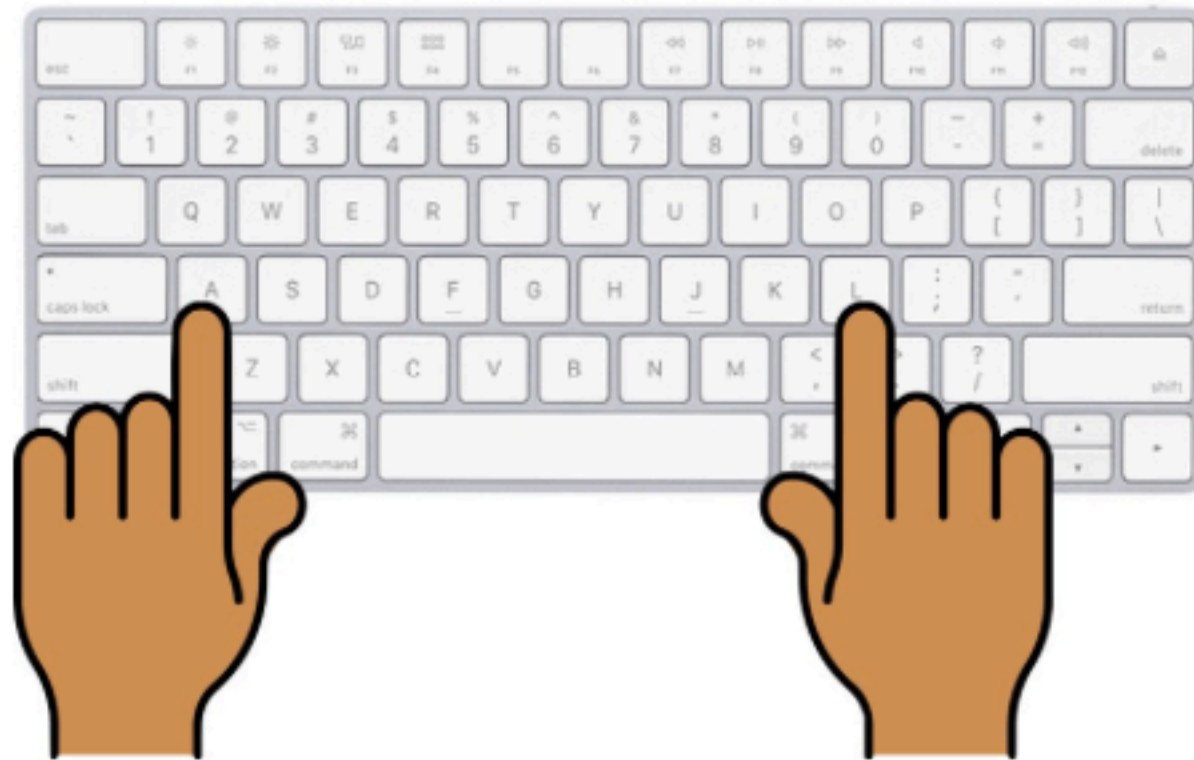
**** Press **a** as in *apple* if it is pointing left. ****

**** Press **l** as in *lemon* if it is pointing right. ****

Ignore the arrows on either side, and just pay attention to the central arrow.

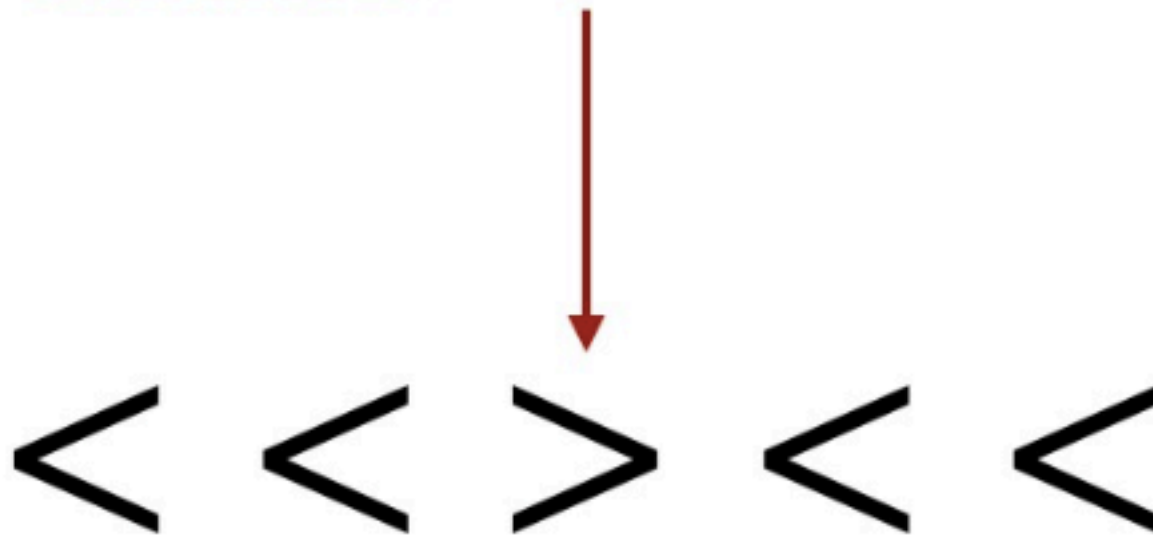
Please respond as quickly and accurately as possible. Keep your index fingers on top of the **a** and **l** keys as shown in the figure below to help make fast responses.

Press "Next" to see an example.



Next

**This is the central arrow.
It is pointing right, so you
should press the “I” key.
Press the “I” key now to
continue.**



In this part, you will hear two tone sequences on each trial. Your job is decide if the two sequences are the same or if they are different.

Let me hear an example.

Here's an example where the two tone sequences are the same. You can listen to this example a few times .

 Play

Let me hear another example.

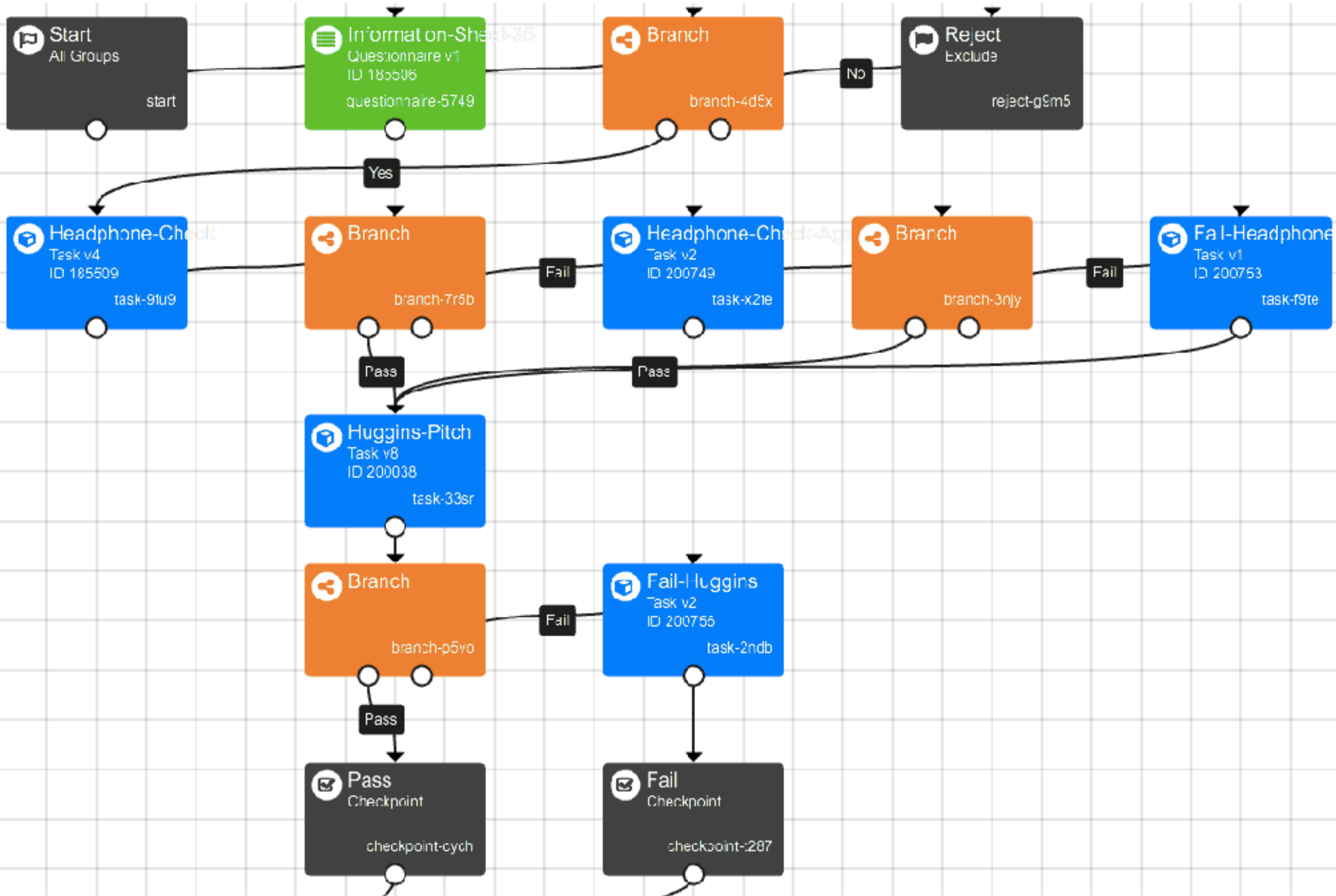
In this example, the two tone sequences are different.
You can listen to this example a few times to hear the difference.



I'm ready to begin.

Tips and tricks

1. Be *exceptionally clear* with your participants in terms of technology requirements and study instructions
2. Give people multiple chances to pass the headphone screen, *along with reminders* of the headphones requirement



Stereo headphones were not detected.

As stated in the study description, you must be wearing headphones that deliver a stereo signal to do this study. This means that your headphones need to be able to send different sounds to your left and right ears.

If you have started this study by accident, then you are welcome to return your submission on Prolific without penalty.

My headphones are connected and I want to try again

Tips and tricks

1. Be *exceptionally clear* with your participants in terms of technology requirements and study instructions
2. Give people multiple chances to pass the headphone screen, *along with reminders* of the headphones requirement
3. Make sure any constraints set in Prolific and Gorilla are *mirrored* across systems



STUDY DETAILS

What is the title of your study?



A study about ice cream

Give your study an internal name (only visible to you)



My ice cream study

Describe what participants will be doing in this study. [Read our guide](#)

In this study I will ask you to tell me your favourite ice cream you are feeling.

Which devices can participants use to take your study?



Mobile



Tablet



Desktop

Time Limit

(no time limit set)

Change Time Limit

Requirements

Device Types

☐ Phones ☐ Tablets ☒ Computers

Browser Types

(no restrictions)

Location

(no restrictions)

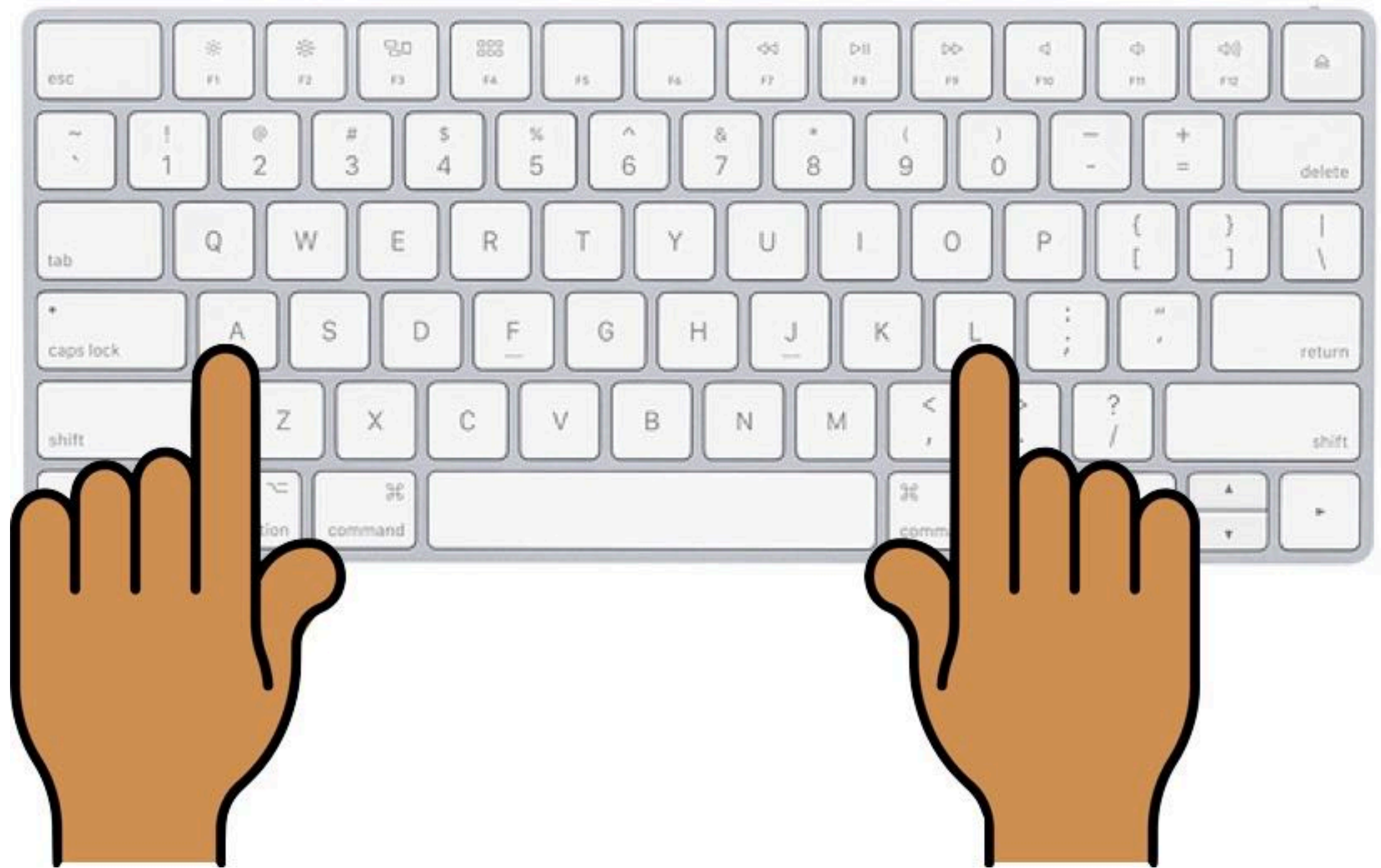
Connection Speed

(no restrictions)

Change Requirements

Tips and tricks

1. Be *exceptionally clear* with your participants in terms of technology requirements and study instructions
2. Give people multiple chances to pass the headphone screen, *along with reminders* of the headphones requirement
3. Make sure any constraints set in Prolific and Gorilla are *mirrored* across systems
4. To decrease variability in reaction times, provide a visual cue for hand placement and use within-subjects designs



Tips and tricks

5. Sign up to be a participant on Prolific

Quickly find research participants you can trust.

Launch your study to tens of thousands of trusted participants in minutes. Recruit niche or representative samples on-demand. Prolific builds the most powerful and flexible tools for online research. Sign up for free.

Research

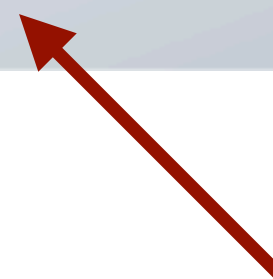
Collect high quality responses from people around the world within minutes. [Learn more](#)

[SIGN UP TO RESEARCH](#)

Participate

Take part in engaging research, earn cash, and help improve human knowledge. [Learn more](#)

[SIGN UP TO PARTICIPATE](#)



Tips and tricks

5. Sign up to be a participant on Prolific
6. Monitor and contribute to the Prolific subreddit:
<https://www.reddit.com/r/ProlificAc/new/>
7. Stay on top of your Prolific messages in real time

Just wanted to let you know that the audio did not work when I used Google Chrome, but it worked on another browser (Mozilla). Not sure if that was an issue just related to me/my computer, but I figured I would let you know, in case it's a problem for other people as well. Everything went well on Mozilla and was able to complete it.



11 Apr 2020, 12:02

Thanks so much for letting me know! We've vetted in on multiple browsers (including Chrome), but it could be a version issue. Or it could be that autoplay is not set-up in your Chrome browser but is in your Mozilla browser. Either way, I'm so glad that you could complete it, and am very grateful that you took the time to reach out to me. Thanks again for participating in our research! -Rachel

11 Apr 2020, 12:06

That test made me question my hearing lol. I swear it sounded like goat was being said for most of the test. I was trying to ignore the effect the statement leading up to the word was. Naturally whenever it said something like "For it's safety, I caged the...." my brain wanted to automatically assume goat since caging a goat doesn't make any sense. The same with "I ironed the...". You'd naturally assumed you ironed a coat and not a goat.



2 May 2021, 14:59

What you experienced is exactly what we're trying to learn more about in this study! We're studying how listeners integrate the meaning of a person's message with how words are pronounced. Some participants get the meaning before the target word (e.g., For it's safety, she caged the ---) , and others get the meaning after the target word (e.g., The --- was caged for it's safety). Our prediction is that the meaning part will be more important than the actual pronunciation when the meaning comes before instead of after the target word.

Thanks for reaching out - and thanks so much for participating in our study. We couldn't do our research without you!

Rachel

Tips and tricks

5. Sign up to be a participant on Prolific
6. Monitor and contribute to the Prolific subreddit:
<https://www.reddit.com/r/ProlificAc/new/>
7. Stay on top of your Prolific messages in real time
8. Run a small sample through your experiment and *check everything* before running your full sample
9. Keep your tasks *as quick and as engaging* as you can; I highly recommend the ***simr*** package in R for power analyses
10. Use MP3 format instead of WAV for sound files

Concerned scientist #1

“I haven’t found distortion in the spectra, yet...”

- We use the MP3 conversion algorithm in iTunes version 12.8.2.3
- The conversion yields perceptually indistinguishable variants and is sufficient for our work; it may not be for yours
- Listen and look for yourself at: <https://tinyurl.com/2pSCa1-Theodore>

Concerned scientist #2

“I have to say, I was pleasantly surprised at the fidelity of your MP3 files. I did various comparisons in Praat and was amazed that the details held up.”

Tips and tricks

11. Calibrate expectations; technological glitches will occur, people will fail your headphone screen, you will get a low effort participant
12. Apply everything else you know about running great experiments to web-based testing; in-lab and web-based methods are more similar than different

Acknowledgements



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Nick Monto



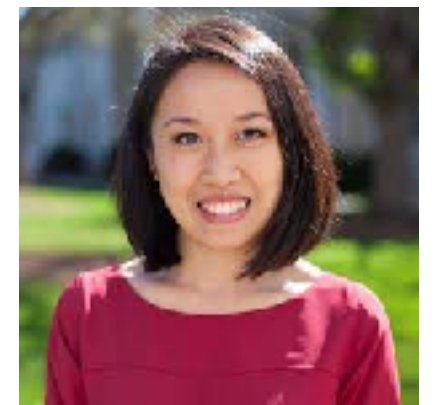
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osf.io/8krg3/

For more in-depth resources, visit:
<https://tinyurl.com/2pSCa1-Theodore>

Success 5: Word familiarity ratings

- Web-based administration of the Word Familiarity Test (WordFAM)
- Rating task for 150 items; 50 items from each of 3 frequency categories
- Adapted from Lewellen et al. (1993) and Pisoni (2007)

1 - You have never seen or heard the word before.

2 - You think that you might have seen or heard the word before.

3 - You are pretty sure that you have seen or heard the word but you are not positive.

4 - You recognize the word as one you have seen or heard before, but you don't know the meaning of the word.

5 - You are certain that you have seen the word but you only have a vague idea of its meaning.

6 - You think you know the meaning of the word but are not certain that the meaning you know is correct.

7 - You recognize the word and are confident that you know the meaning of the word.

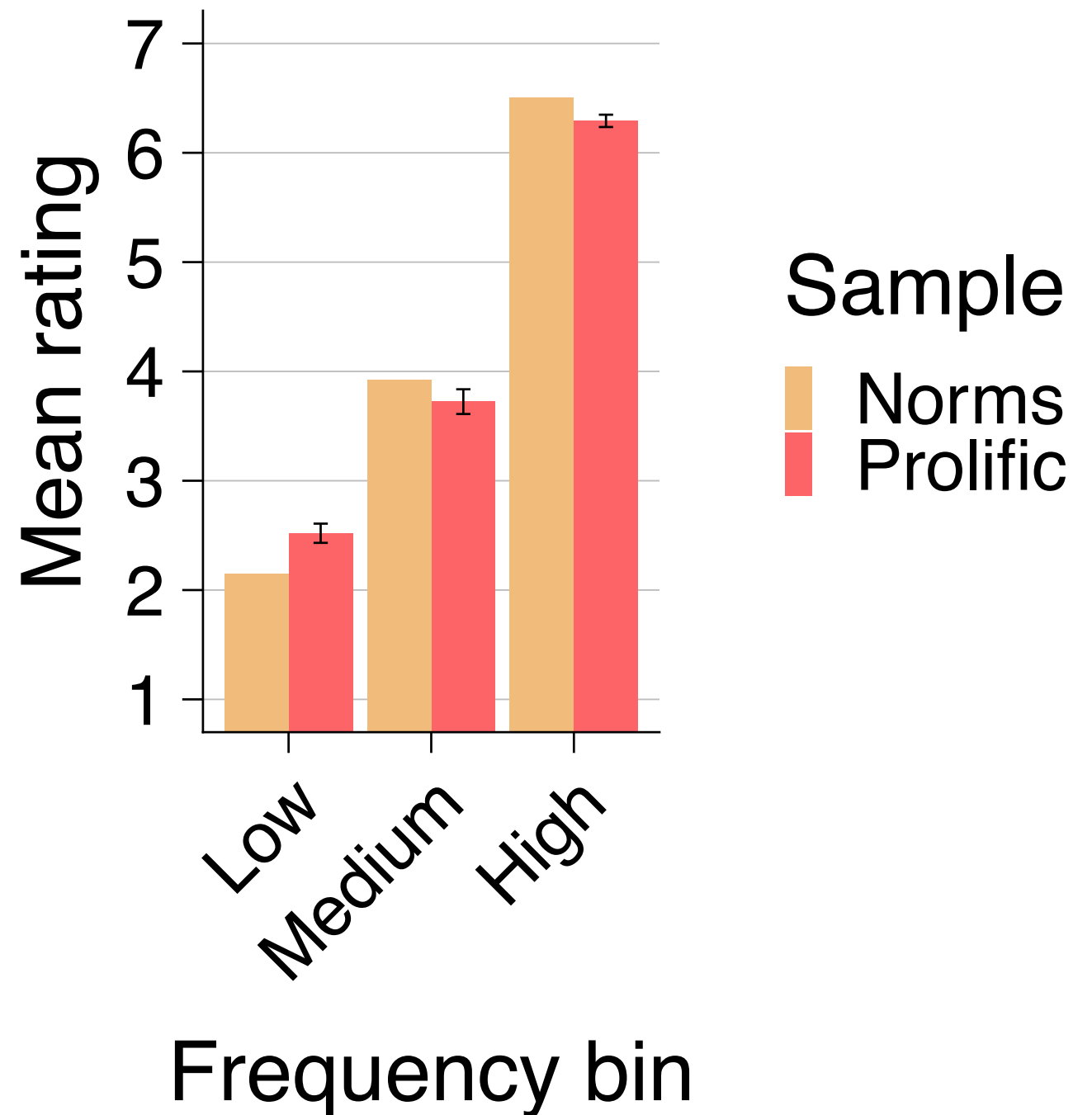
drab

A rating scale for the word "drab". It consists of seven dark gray square buttons labeled 1 through 7, arranged horizontally. Below the buttons is a horizontal progress bar with a blue segment on the left, indicating the current rating level.

To achieve sample ($n = 100$), we excluded $n = 2$ due to failure to perform the task and $n = 0$ due to failure to pass headphone screen; attrition = 2%.

Success 5: Word familiarity ratings

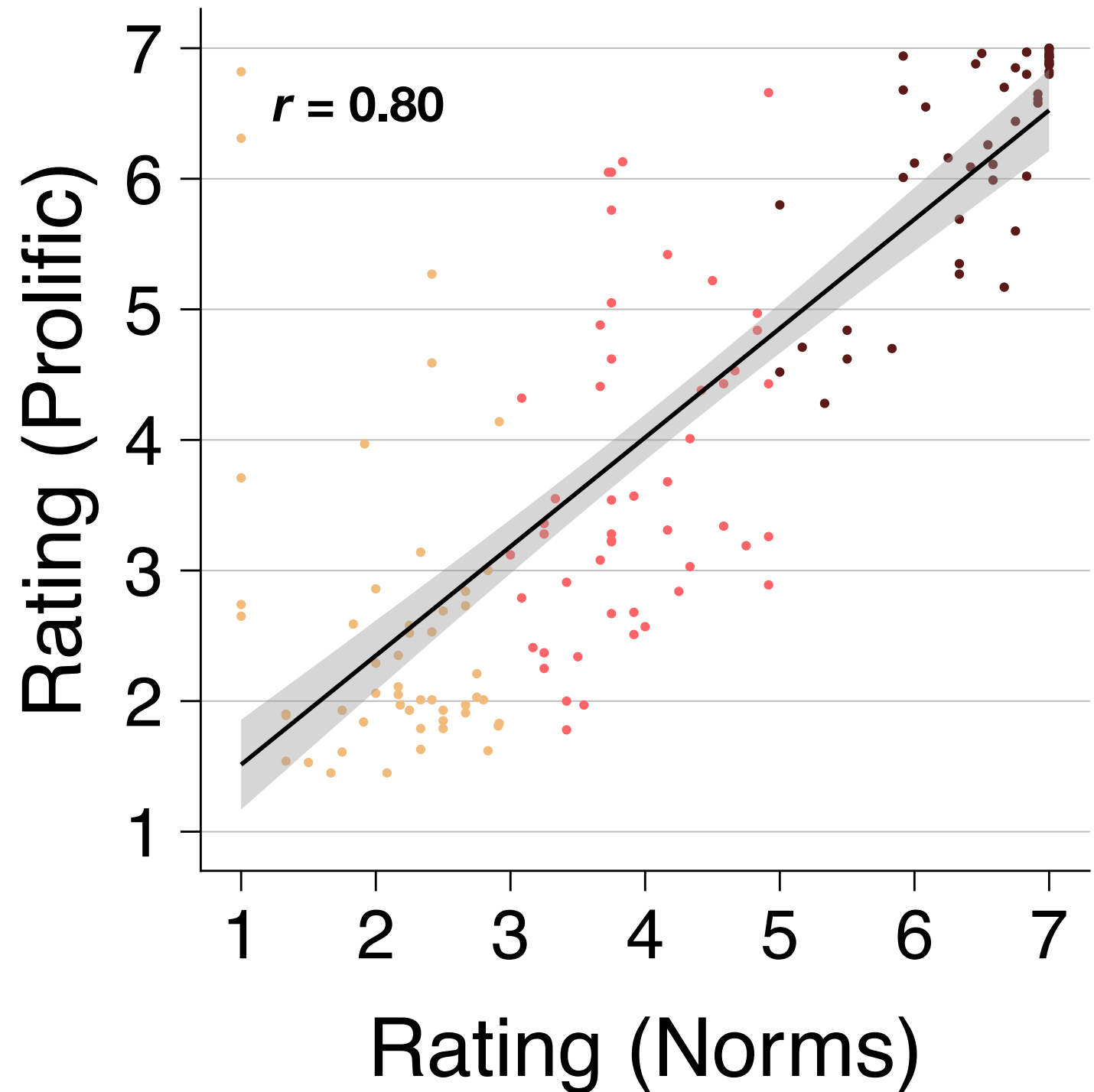
- Mean ratings by frequency category for the Prolific sample were very similar to existing norms, both by subjects and by items



To achieve sample ($n = 100$), we excluded $n = 2$ due to failure to perform the task and $n = 0$ due to failure to pass headphone screen; attrition = 2%.

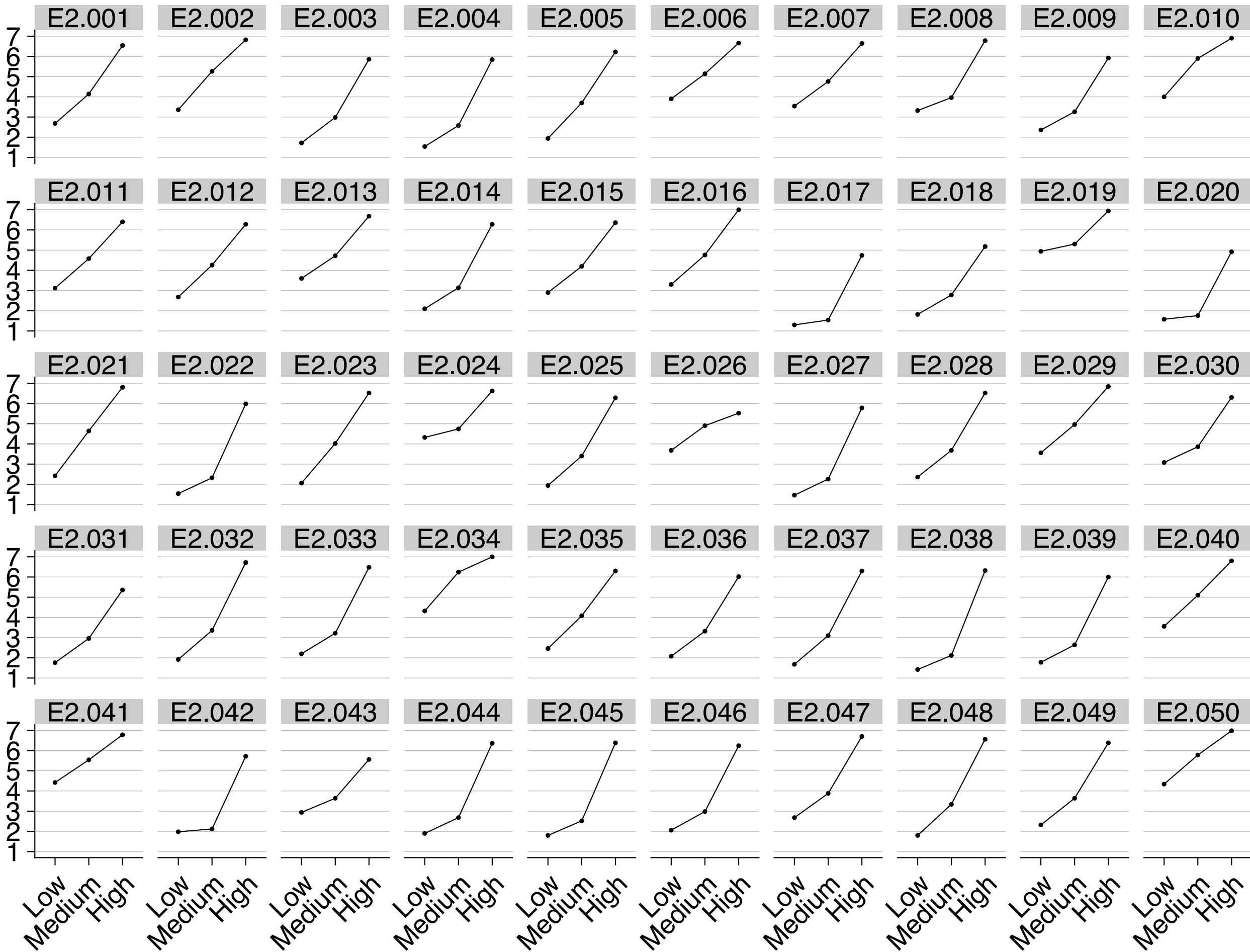
Success 5: Word familiarity ratings

- Mean ratings by frequency category for the Prolific sample were very similar to existing norms, both by subjects and by items



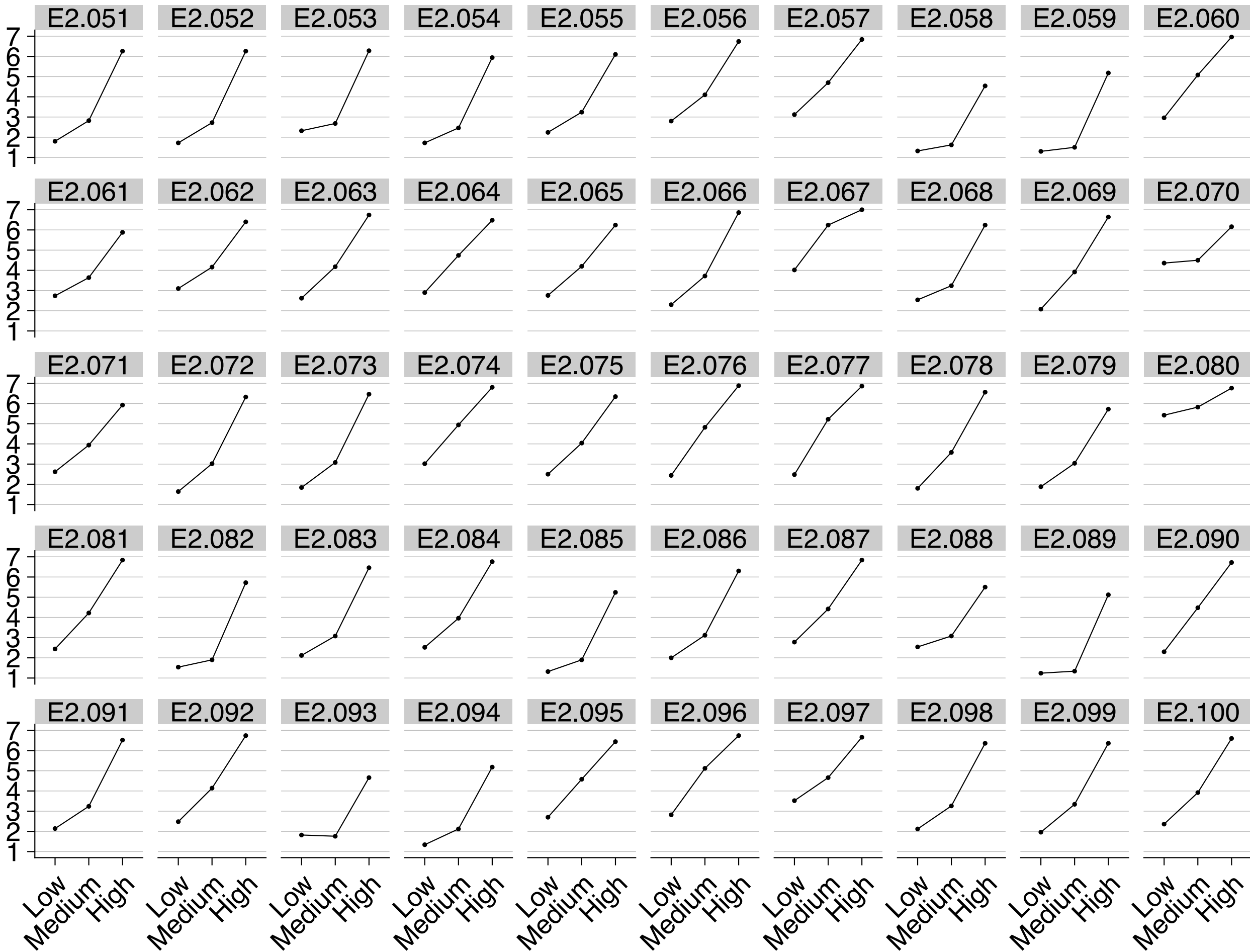
To achieve sample ($n = 100$), we excluded $n = 2$ due to failure to perform the task and $n = 0$ due to failure to pass headphone screen; attrition = 2%.

Rating



Frequency bin

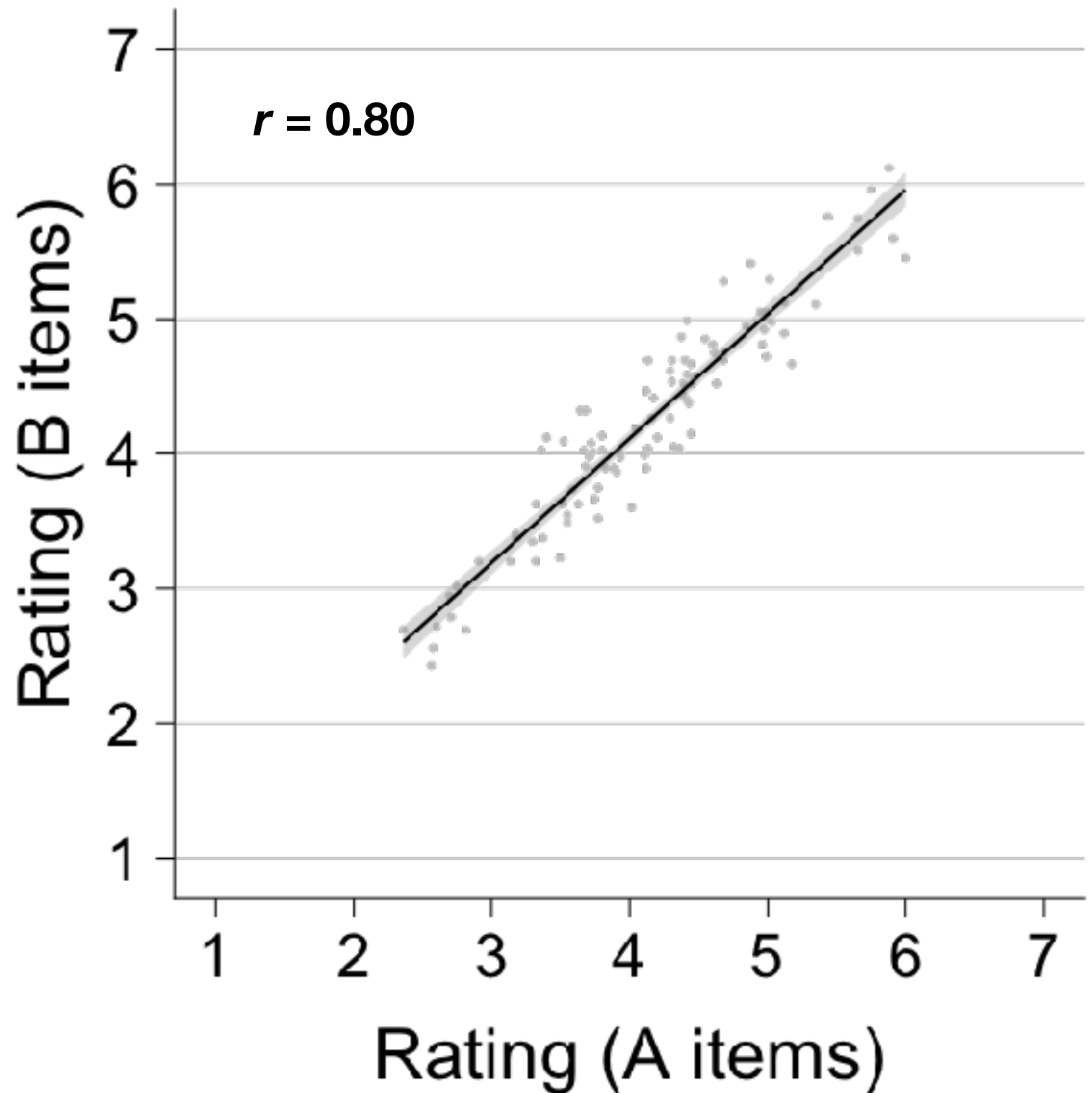
Rating



Frequency bin

Success 5: Word familiarity ratings

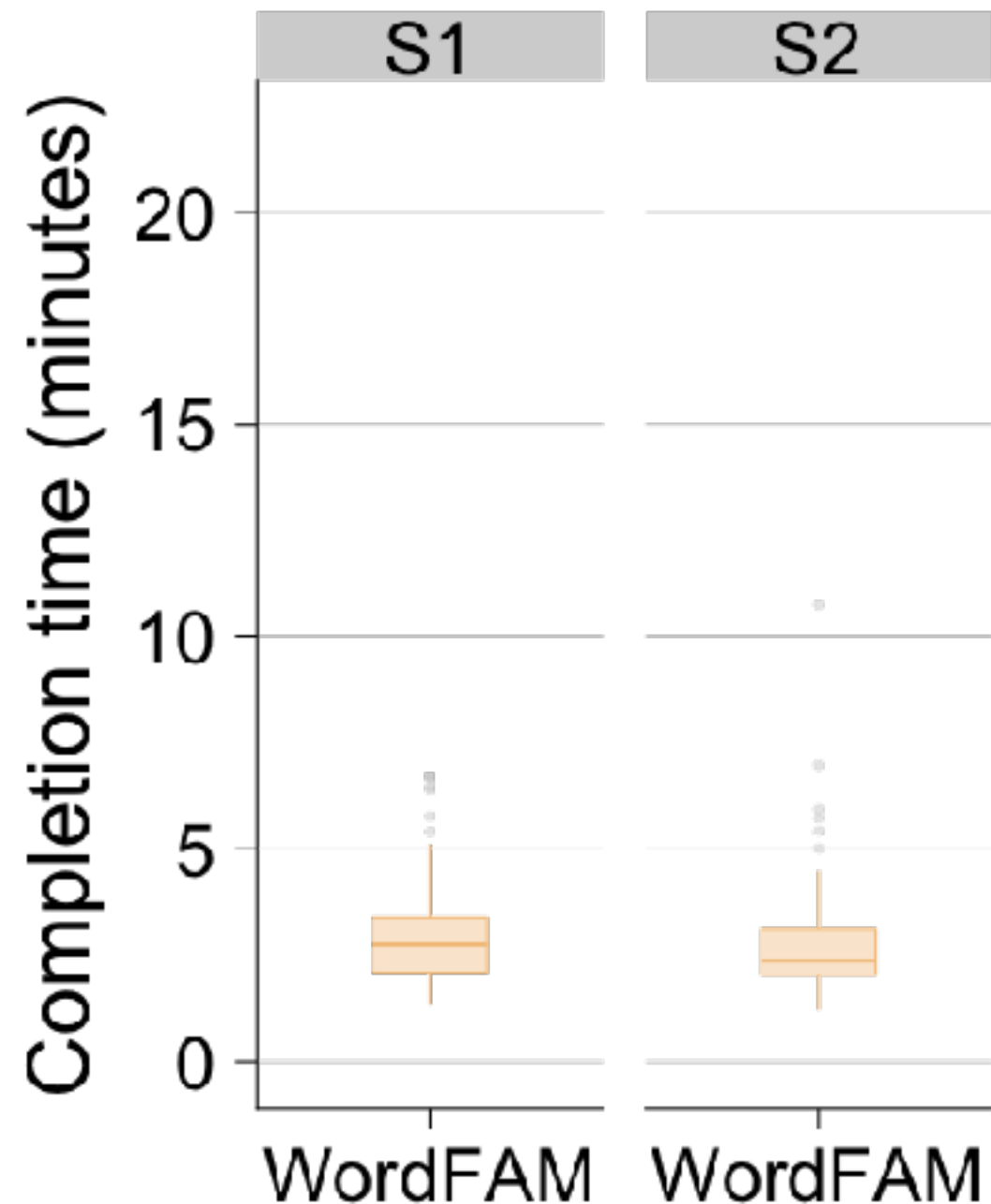
- Mean ratings by frequency category for the Prolific sample were very similar to existing norms, both by subjects and by items
- Ratings showed high split-half reliability



To achieve sample ($n = 100$), we excluded $n = 2$ due to failure to perform the task and $n = 0$ due to failure to pass headphone screen; attrition = 2%.

Success 5: Word familiarity ratings

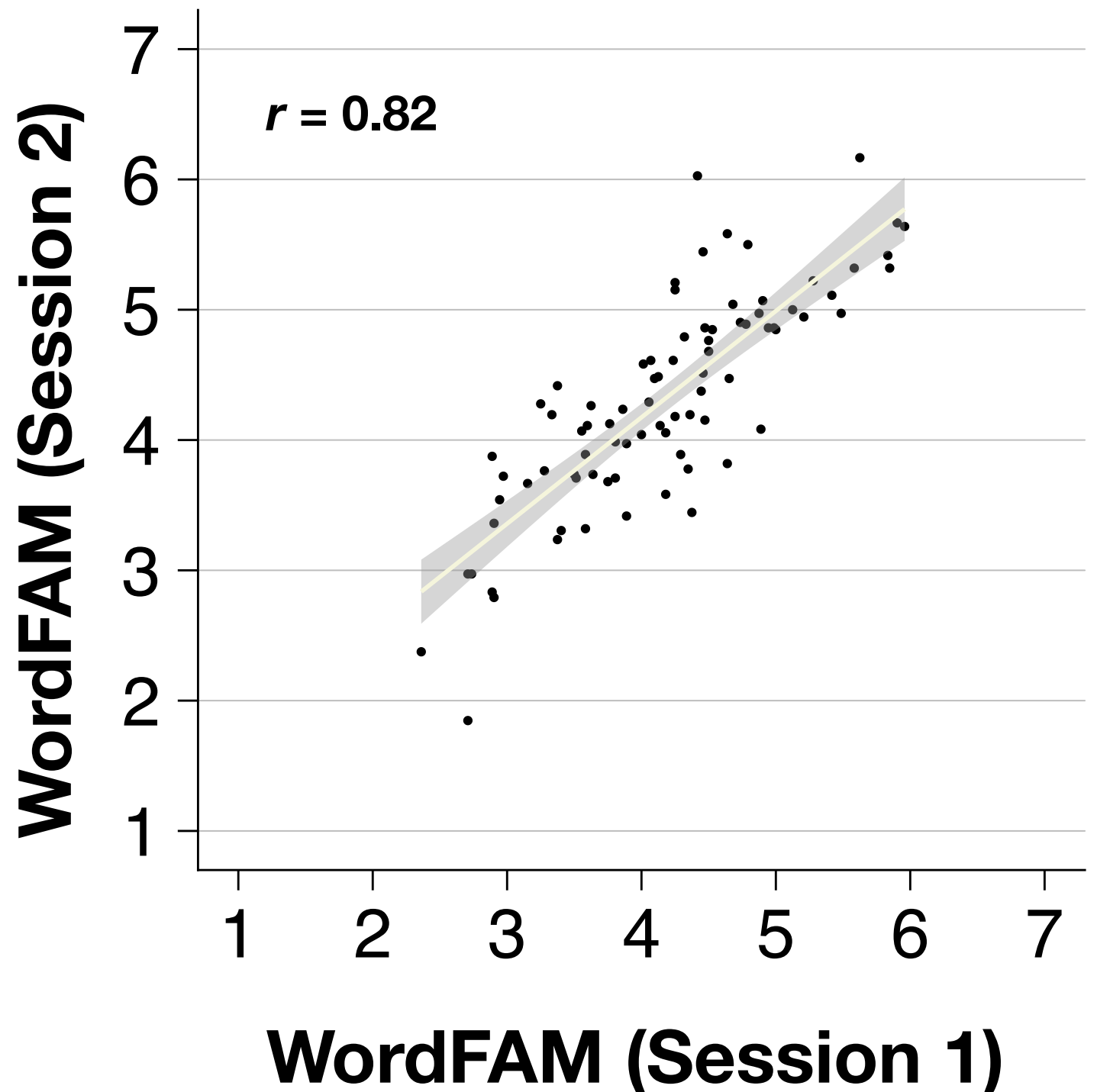
- A second experiment was conducted to examine test-retest reliability
- 100 participants were tested in session 1; 85 returned for session 2
- Mean completion time for the brief WordFAM versions was very quick



To achieve sample ($n = 85$), we excluded $n = 1$ due to failure to perform the task and $n = 0$ due to failure to pass headphone screen; attrition = 2%.

Success 5: Word familiarity ratings

- A second experiment was conducted to examine test-retest reliability
- 100 participants were tested in session 1; 85 returned for session 2
- Mean completion time for the brief WordFAM versions was very quick
- Test-retest reliability was very high in the aggregate and by category



To achieve sample ($n = 85$), we excluded $n = 1$ due to failure to perform the task and $n = 0$ due to failure to pass headphone screen; attrition = 2%.

Success 5: Word familiarity ratings

