Two demonstrations today, one on language comprehension and another on language production.

1. Language comprehension---Sound processing

Instructions will appear on the homescreen - Write in **Test** for Student Name.
You will hear a word, and you will be asked to pick between the two words on the screen (bear and pear). Will press F and J respectively. **Wear headphones!**

The experiment has two parts. Only do the **first**.
https://spellout.net/ibexexps/minglab/Psycho_Lab1/experiment.html

→ What did you notice about the sounds?
What is happening in this experiment?
What question does this experiment want to answer?

→ Now what if I told you that those sounds for bear/pear are on a continuum from one phone to the other; b-p differ in voice onset time (VOT)
bear and *pear* are on a 9 point continuum starting with 0ms of VOT (b-like), increasing with a constant number of milliseconds of VOT in each step
How did you perceive that continuum?

Two hypotheses:

1. **Gradient perception**
2. **Categorical perception = our ability to create distinct categories out of a continuous acoustic signal**

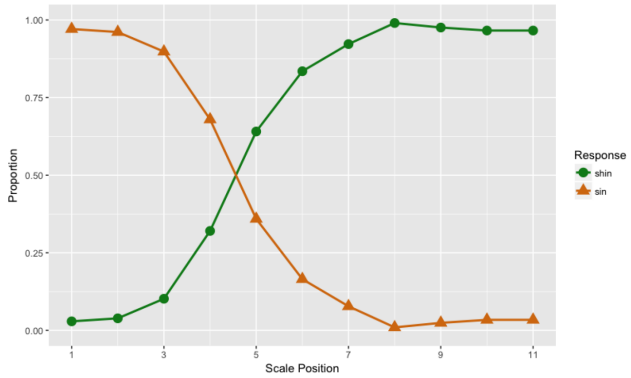
Given what we know about language use, language variation → what might be the arguments for one over the other?
→ This asks about **sound processing**. We know that our speech signal is gradient. But when we gave you a gradient signal, you perceived the signal as categorical. This means we do not perceive all the slight variation we might have, and rather map them onto their category of sound.

Methodology: *Forced-choice phoneme categorization task*

Predictions:

1. **Gradient** = X-like, probability of hearing target increases/decreases incrementally as we move along continuum
2. **Categorical** = sigmoidal, shows abrupt change in perception at category boundary

Results:



Even though we can hear these slight changes that are made in the acoustic signal, We can still reliably assign them to our categories, and these categories can be slightly different for different people

2. Language production---Lexical retrieval

How do we produce speech? Let's look specifically at *words*. When you want to say a word, how does that happen?

We can ask if this occurs in ordered stages (think linguistic levels) or if we access the word wholesale.
Think about this as we go through our activity.

Have you ever tried to retrieve a word… ...and known that you know the word… ...but you just can't come up with it? This is called **tip-of-the-tongue state:**

- Do you know the target word? If not, is it on the tip of your tongue?
    - How many syllables?
    - What letter does it start with?
    - Any familiar sounding words?
    - Stress patterns?

1. The author of Frankenstein
2. A tubular optical instrument that contains reflecting elements to allow observation from a position displaced from a direct line of sight
3. A navigational instrument for measuring the angular elevation of the sun or a star above the horizon
4. The only substance to which Superman was vulnerable
5. In Ireland, the famous piece of rock that brings good luck if you kiss it
6. The famous spire-like peak in the Alps
7. The first portion of the small intestine
8. To relinquish power or a throne

9. A wind instrument from indigenous Australia
10. A term used to describe body marks or sores in bodily locations that match the crucifixion wounds of Jesus Christ
11. A scientist who studies insects
12. In ancient Greece, a person (such as a priestess) through whom a god was believed to speak
13. The name of the Roman goddess of war, corresponding to the Greek goddess Athena
14. The actor who played Captain Kirk in the original Star Trek series
15. A serious illness that is caused by eating food that has not been preserved correctly and that is filled with bacteria
16. An ancient instrument for counting on
17. The washing of one's body or part of it (as in a religious rite)

*What does this tell you about how we retrieve a word? In TOT state, you know the **meaning** of the word, but cannot retrieve the **form.***

Ordered stages in language production

→ Can we pick words without picking their sounds? → Apparently so!

That strong sensation that you have a particular, known word in your mind is not wrong! Often, we can access partial information about the word, such as its first letter, or number of syllables. A study of Italian speakers found that they could reliably report the grammatical gender of nouns that were eluding them.

Lemma- an abstract mental representation containing information about a word's meaning and syntactic category, but not its sounds

Lexeme- a mental representation linked to - but not the same as! - a lemma, that contains pronunciation information