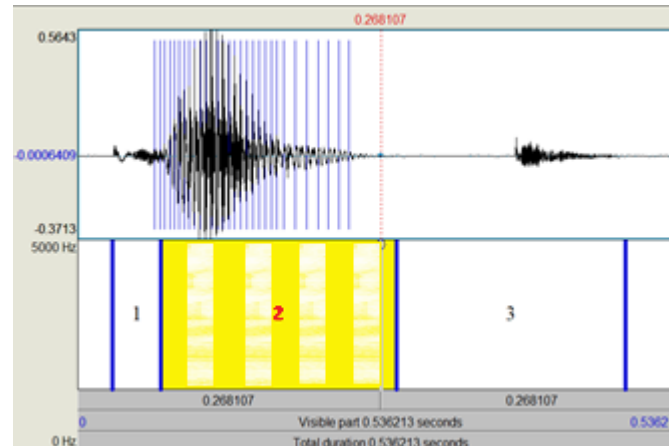


# The Accuracy of Word Detection with Varying Vowel Allowance

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## Methods:

- **Participants:** 33 subjects: 24 male, 9 female. Native English speakers, all but two reporting no other language spoken.
- **Stimuli:** pit, pat, and pet, gated into 10 different stimuli depending on vowel allowance: 0, 10, 20, 30, 40, 50, 60, 70, 80, and 90% gates. 30 total stimuli.



- **Procedure:** Stimuli presented randomly in a Qualtrics survey distributed via MechanicalTurk. The 30 stimuli were presented twice for cross reference. Subjects had to select whether they heard pit, pat, or pet before moving on to the next question. Test took 10-15 minutes, subjects were compensated 1\$ for their time.

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**Q:** How much of a vowel sound do we need to identify a word accurately?

## Background:

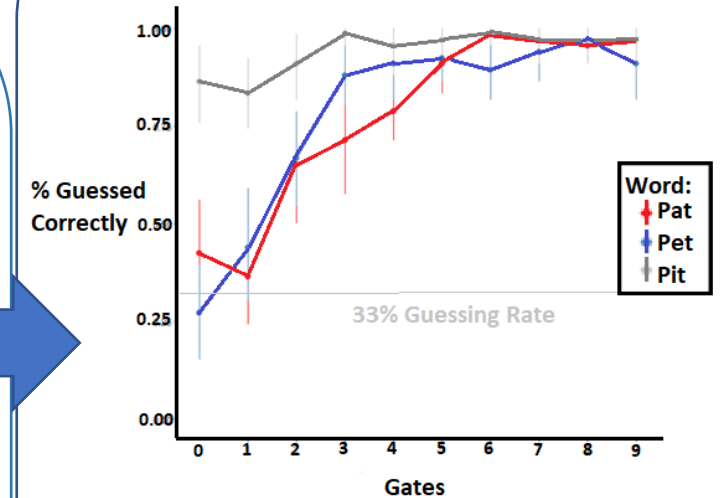
- Listeners can identify English vowels more or less reliably based on the consonant preceding them (Jenkins & Strange et al., 1999).
- Accuracy increases in proportion to vowel formants perceived (Grosjean et al., 1984).

## Hypothesis:

There will be an average percent “cut-off point” of vowel recognizability

## Results:

### Accuracy of Correct Guesses for Pit, Pat, and Pet:



- Follow-up analyses suggest listeners’ judgments were influenced by top-down information (e.g., word frequency) and bottom-up perceptual confusability.

## Conclusions:

- Near perfect accuracy for pat and pet at about 60% gate, with better than average guessing already by about 30%.
- Pit was near perfect throughout, perhaps an anomaly with the “l” sound



Pet 0% gate

Pet 50% gate

Pet 90% gate