



YANNY

LAUREL

AUDITORY BISTABLE IMAGES: THE PSYCHOLOGY OF AN ONLINE DEBATE

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RATIONALE

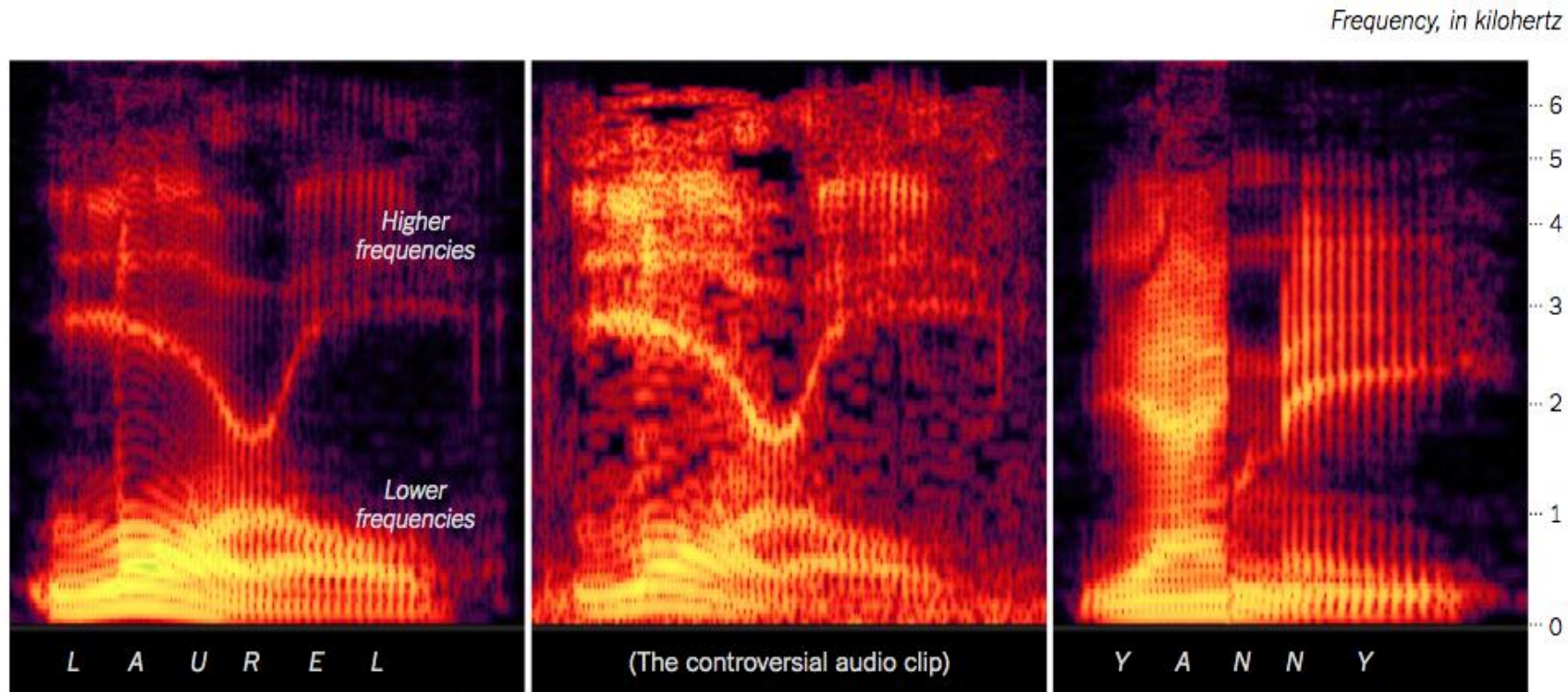
- Visual bistable images (optical illusion)
 - “The Dress” – high individual differences

Auditory Illusions

- McGurk Effect – visual x auditory interaction
- Tritone Paradox (Deutsch, 1987)
 - First research on auditory multistability in ‘70s



THE LAUREL/YANNY PHENOMENON



The source "laurel"

A spectrogram of a vocabulary.com clip of the word "laurel" shows strong lower frequencies and relatively faint higher frequencies.

An ambiguous recording

Playing the "laurel" clip over speakers and re-recording it introduced noise and exaggerated the higher frequencies.

Those higher frequencies may have led to confusion over whether the word was **Laurel** or **Yanny**.

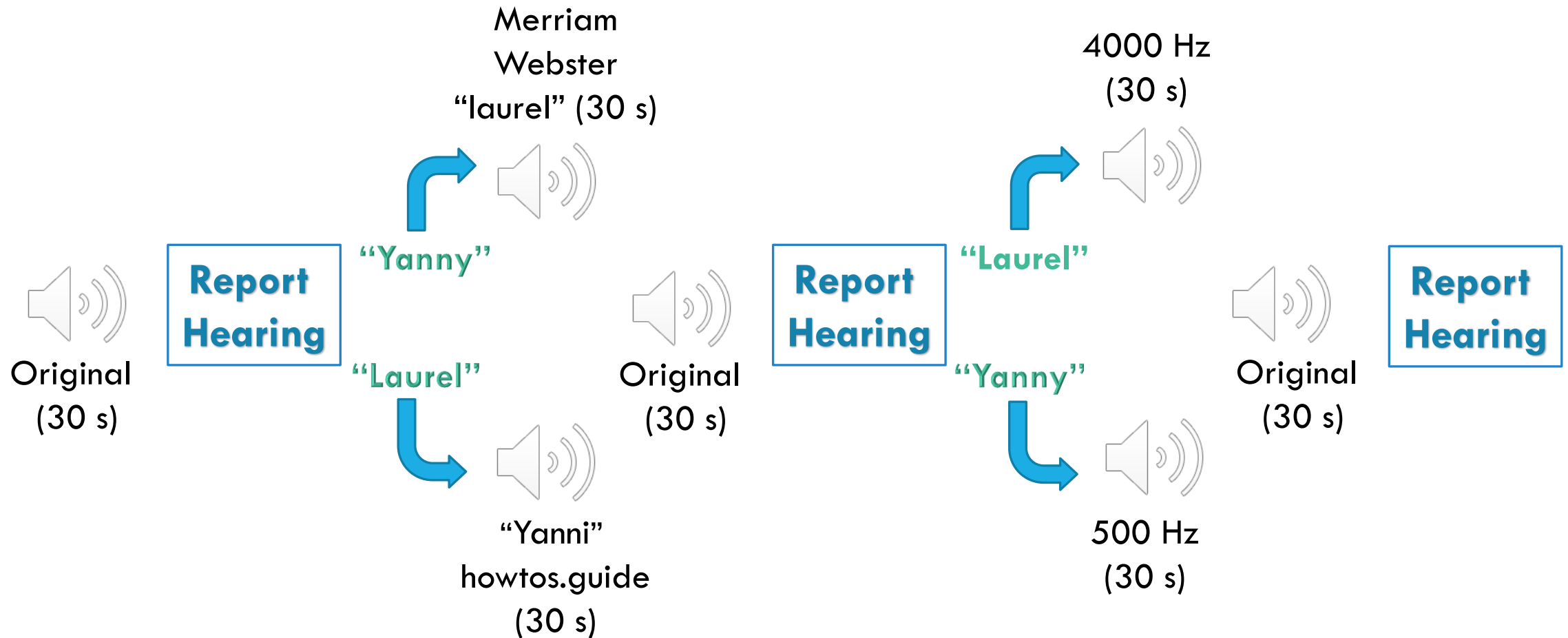
A simulated "Yanny"

For comparison, a spectrogram of the same vocabulary.com voice saying "**Yanny**" shows a similar pattern of strong high frequencies.

The spectrogram was created by merging clips of the voice saying "Yangtze" and "uncanny."

EXPERIMENT 1

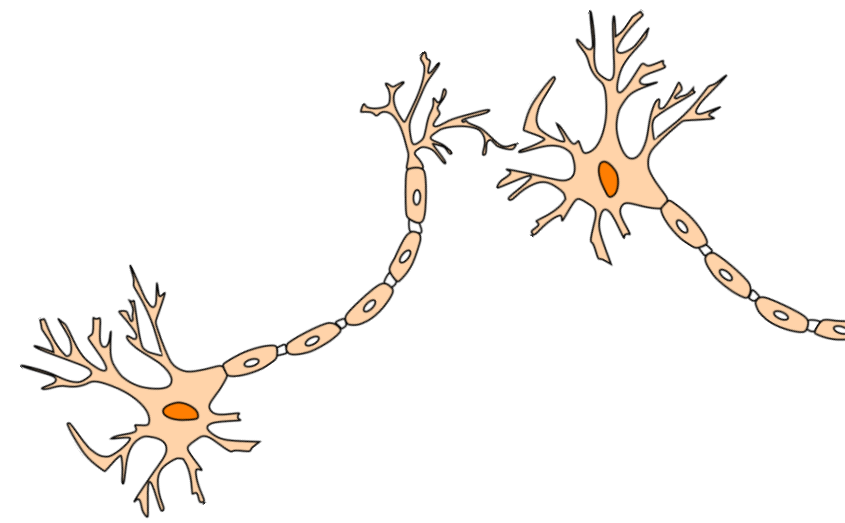
- 46 participants, mostly Intro to Psychology students
- Tested individually with speakers



RESULTS

- 10 participants (21.7%) switched at some point
 - 5 after repeated word only
 - 1 after pitch only
 - 4 switched twice
- 80% of “switchers” heard Yanny initially

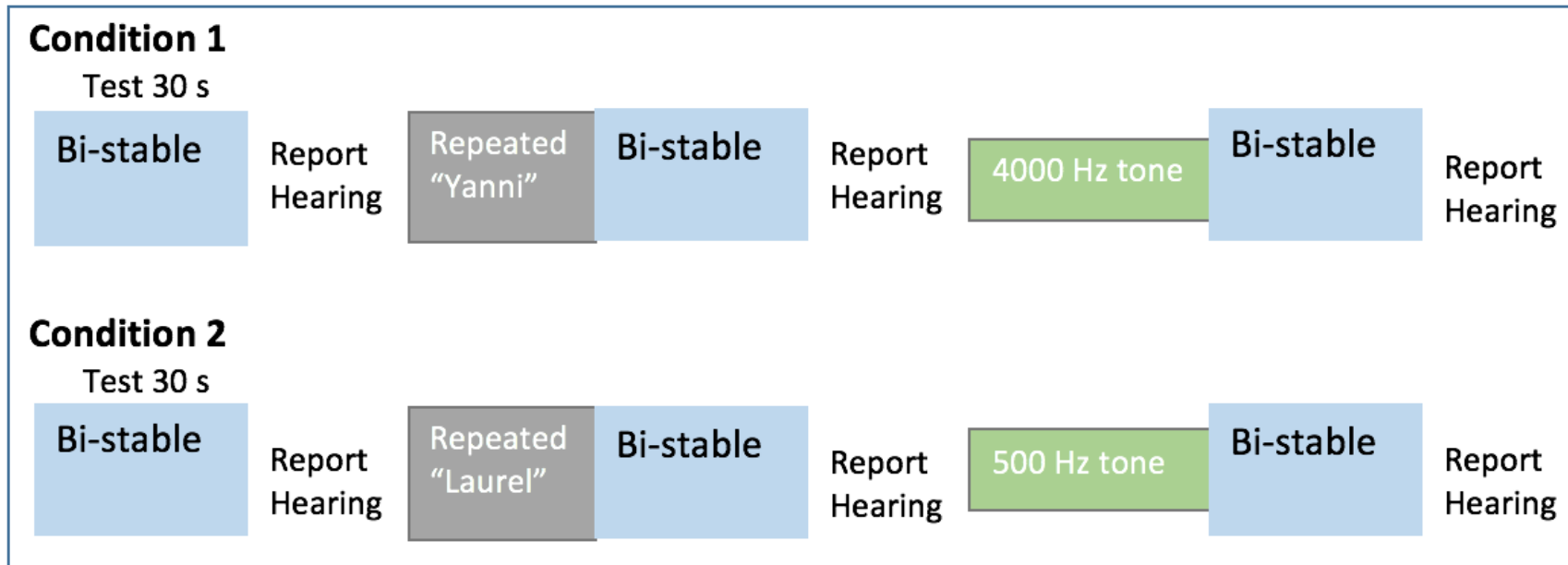
WHY THESE PRIMES



- Bosker (2018) published during our study
- Neural adaptation theory
 - Decreased response to repeated stimuli
- What effect would these primes have on everyone?

EXPERIMENT 1A

- 63 Intro to Psychology students
- Group setting and preselected primes



Results:

- 15.87% switched
 - 14.3% after word prime
 - 4.8% after pitch prime
- All switched from Yanny

EXPERIMENT 2



Low-pitch
precursor



High-pitch
precursor



1



2



3



4



5



6

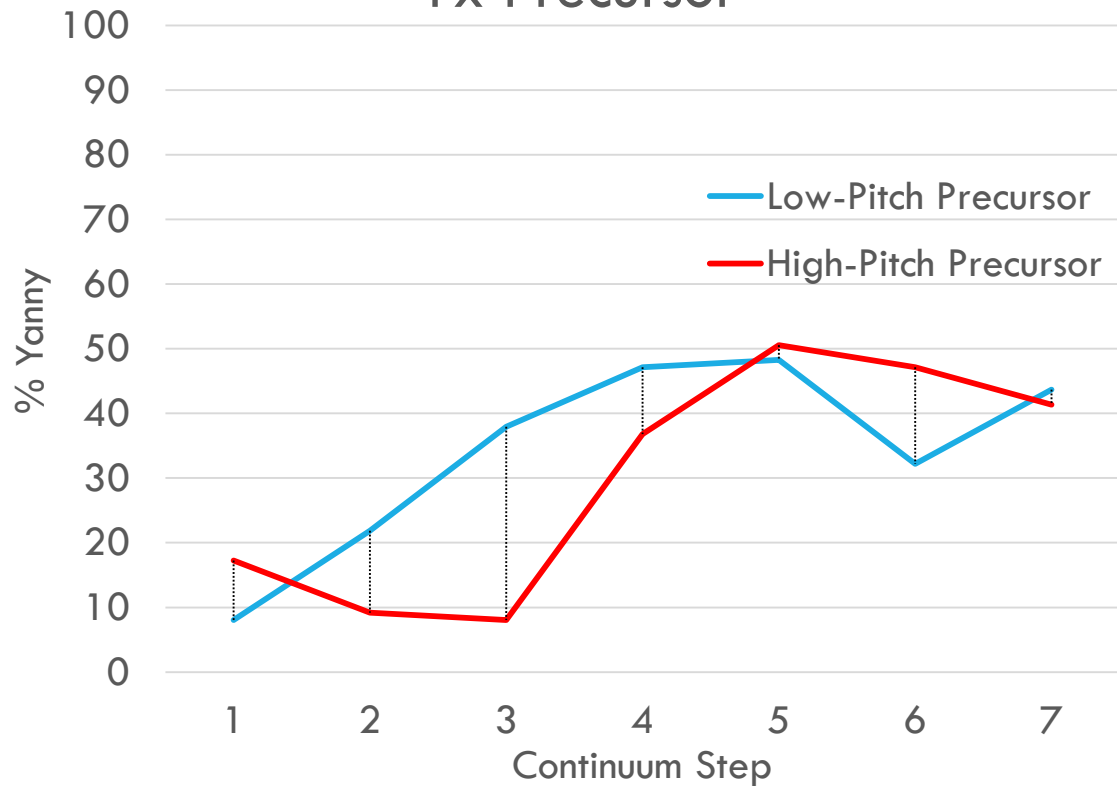


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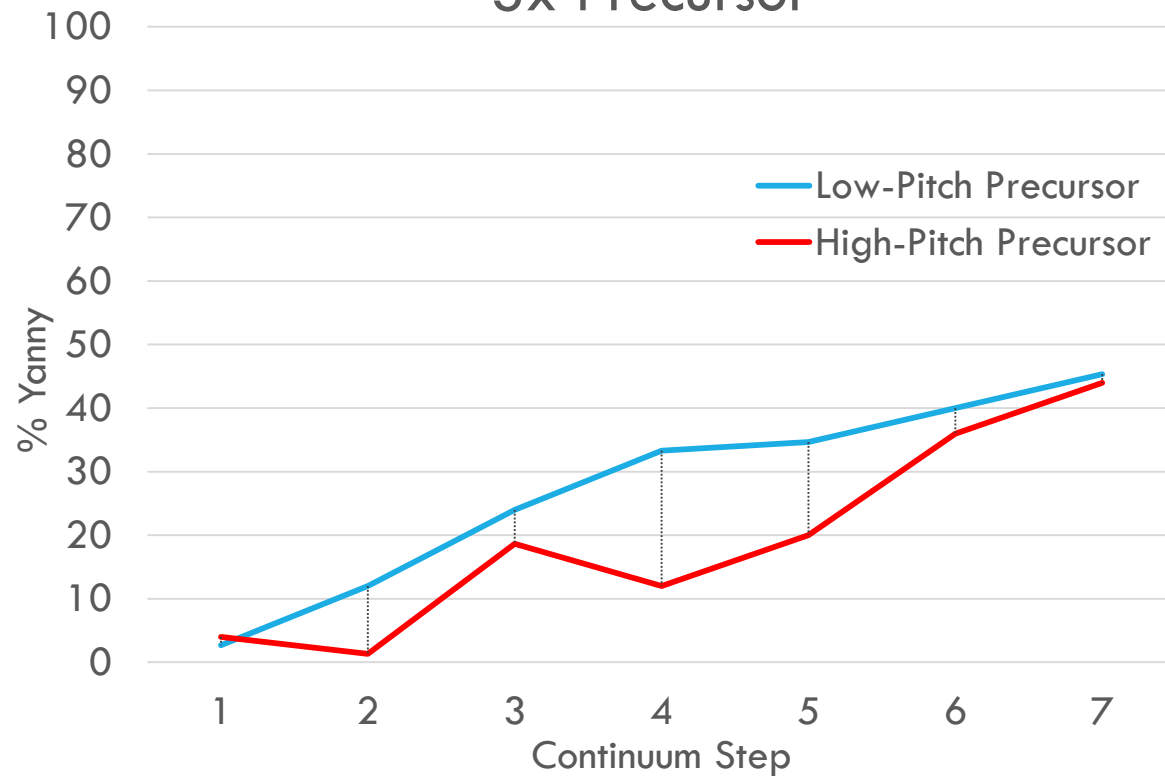
- Replication of Bosker (2018)
- Added additional condition: 3x repeated precursor

RESULTS

1x Precursor

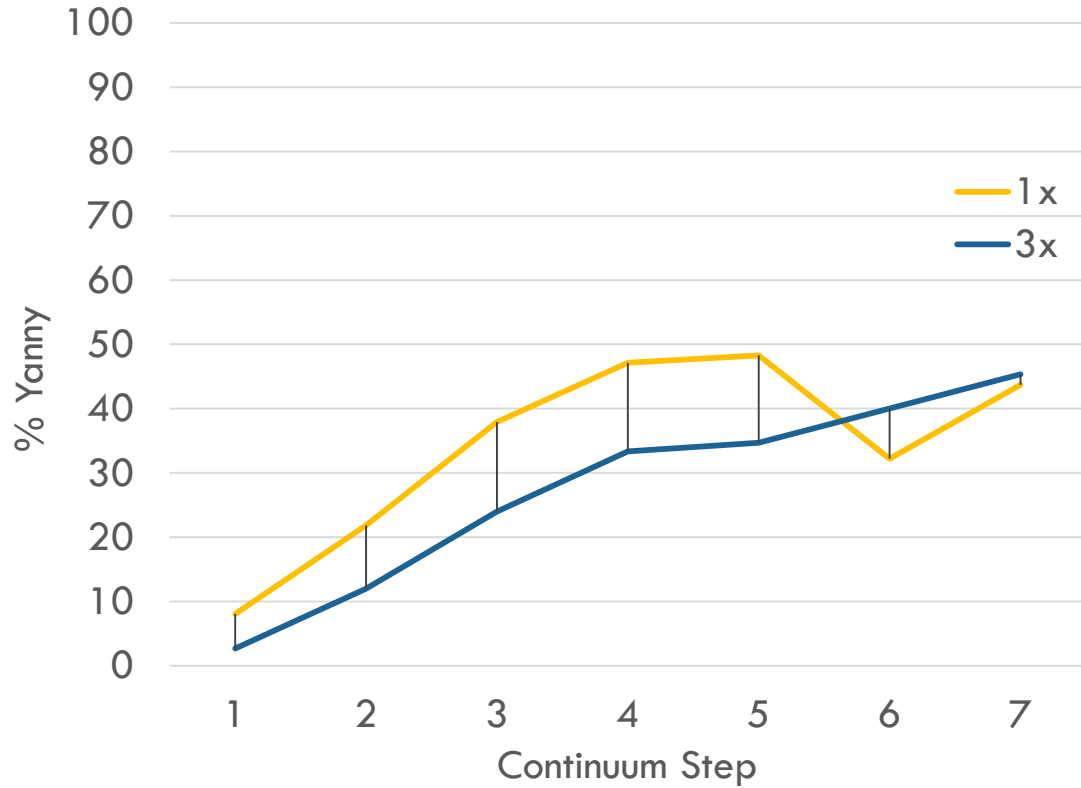


3x Precursor

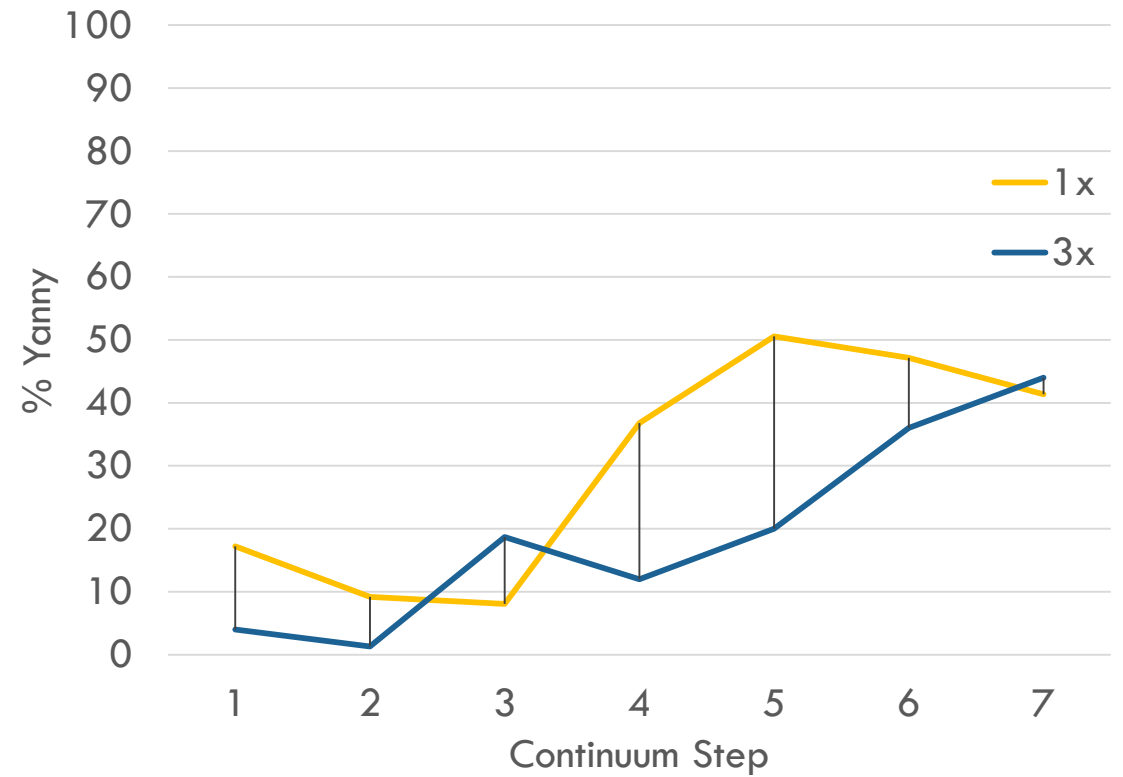


RESULTS

Low Precursor



High Precursor



CONCLUSIONS

- Laurel/Yanny is a unique bistable stimulus with strong individual differences
- Perceptual experiences of the illusion can be manipulated
 - But, some experiences seem to lend more to bistability
- Competing roles of sensory and cognitive processing
 - Binary is not necessary – both are crucial
- More to be discovered about the intricate interaction of our senses