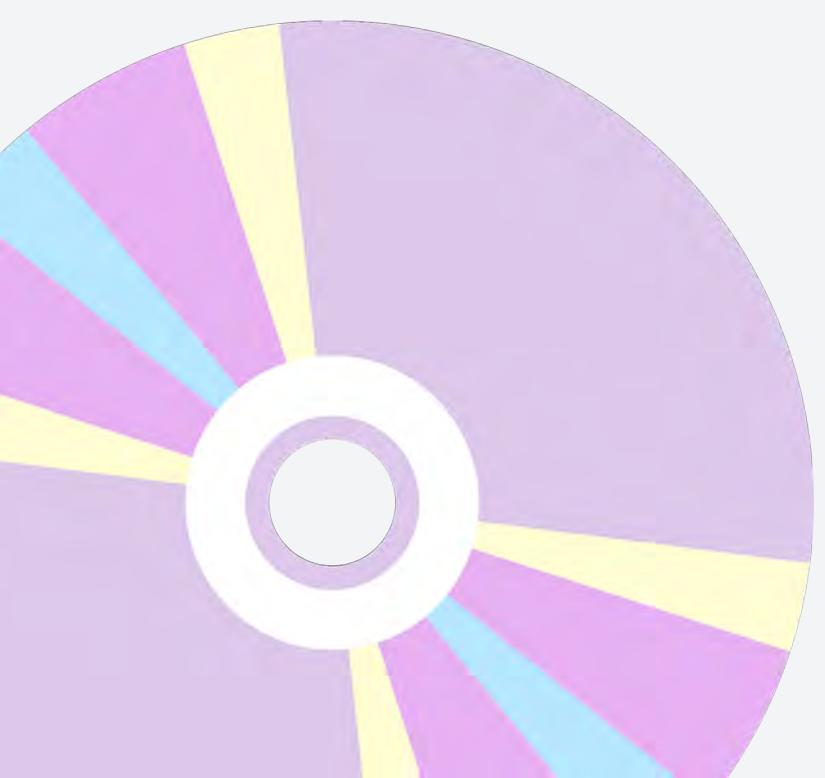




MUSICALITY

DANAE DIAZ & RICHARD WONG

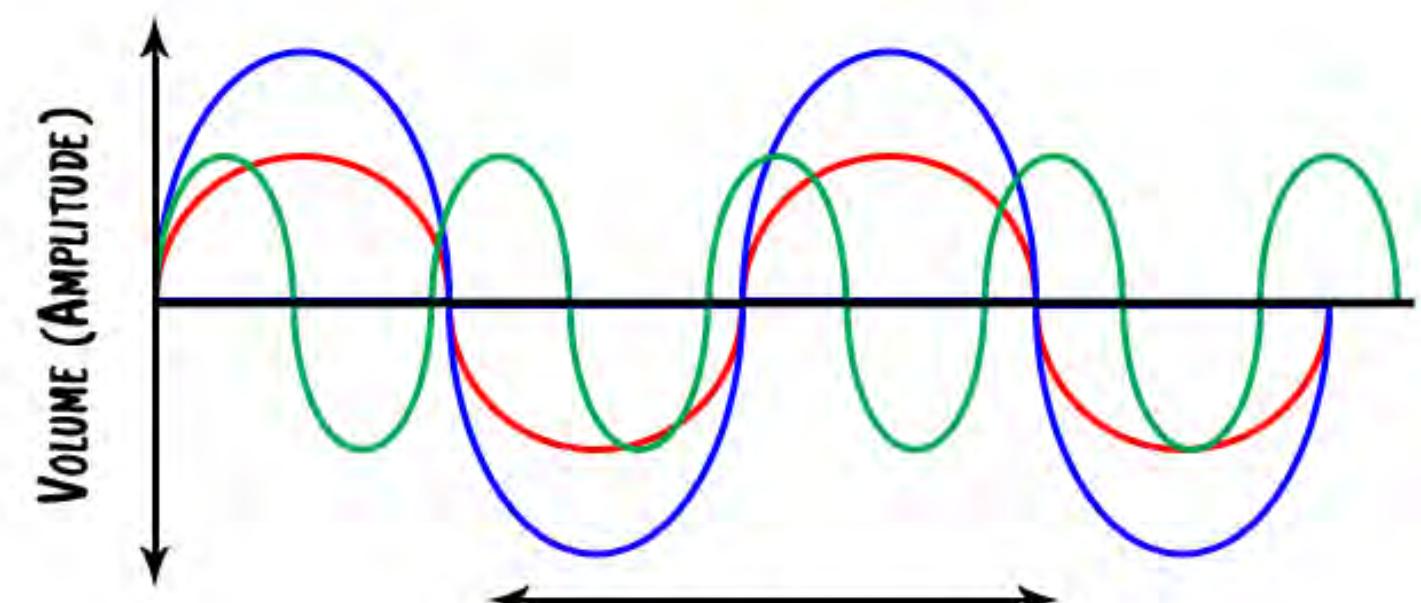
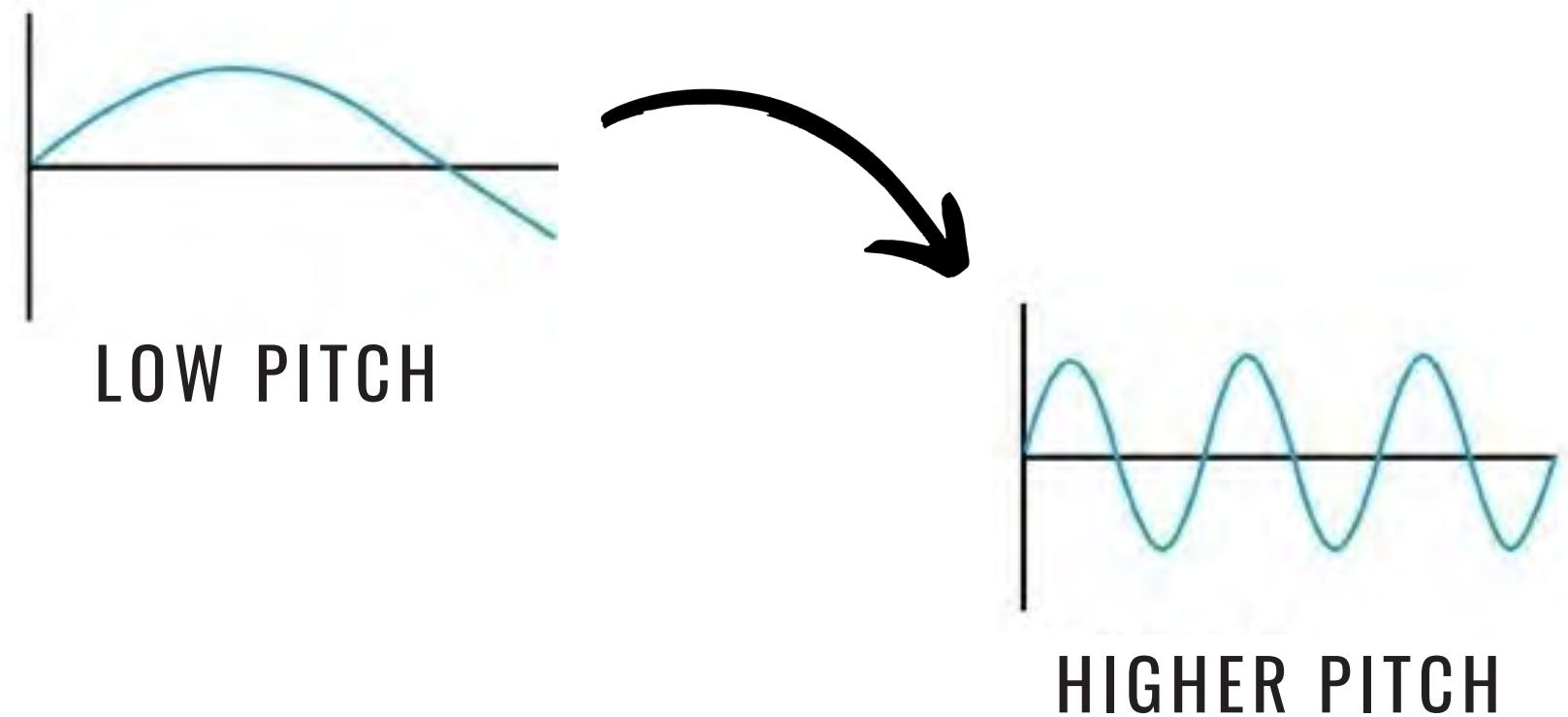
CONTENT



- 01 INTRODUCTION
- 02 MINI-LESSON
- 03 DEMO- PITCH
- 04 DEMO-RHYTM
- 05 PAPER DISCUSSION
- 06 DATA ANALYSIS
- 07 WRAP-UP

PITCH

The quality that makes it possible to judge sounds as "higher" and "lower" in the sense associated with musical melodies



**PITCH= CHANGE IN
FREQUENCY OF SOUND
WAVE**

RHYTHM

Placement of sounds in time

Regular repeated patterns

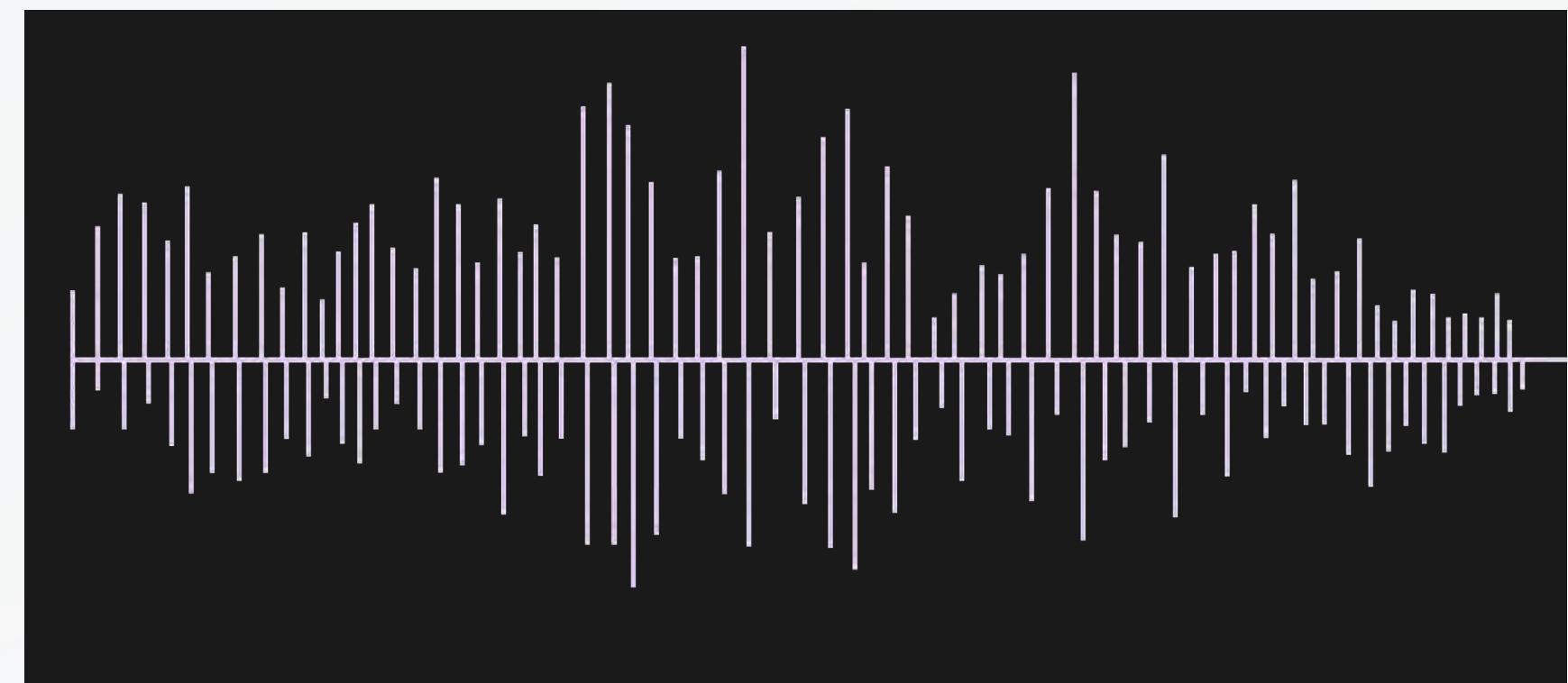


RELATIONSHIP BETWEEN RHYTHM AND PITCH

For slow things, our consciousness distinguishes individual events and interprets them as what we call “rhythm.”

For very fast things, our consciousness isn’t fast enough to distinguish the individual events, and our “pitch” hearing kicks in.

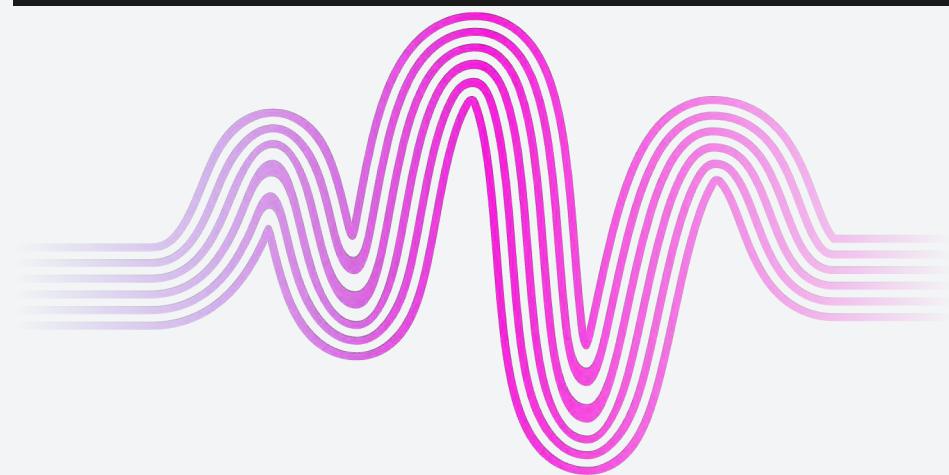
Tiny hairs in our cochlea- each one specialized in resonating at a certain pitch.





DEMO

Pitch Test



Distorted Tunes Test

- <http://www.nidcd.nih.gov/>
- You will hear a series of tunes and be asked whether the tune was played correctly yes or no.
- You will receive a score at the end

Got rhythm?

- <https://www.concerthotels.com/got-rhythm>
- You will be asked to tap your space key to the beat of the rhythm and given a score.
- Take the test three times and write each score on board under trial 1, trial 2, and trial 3.

Rhythm Test





DEMO

Record Data



- Please record scores onto the Google Sheet
- In the Experience column, have you had previous musical experience (1) or no (0)

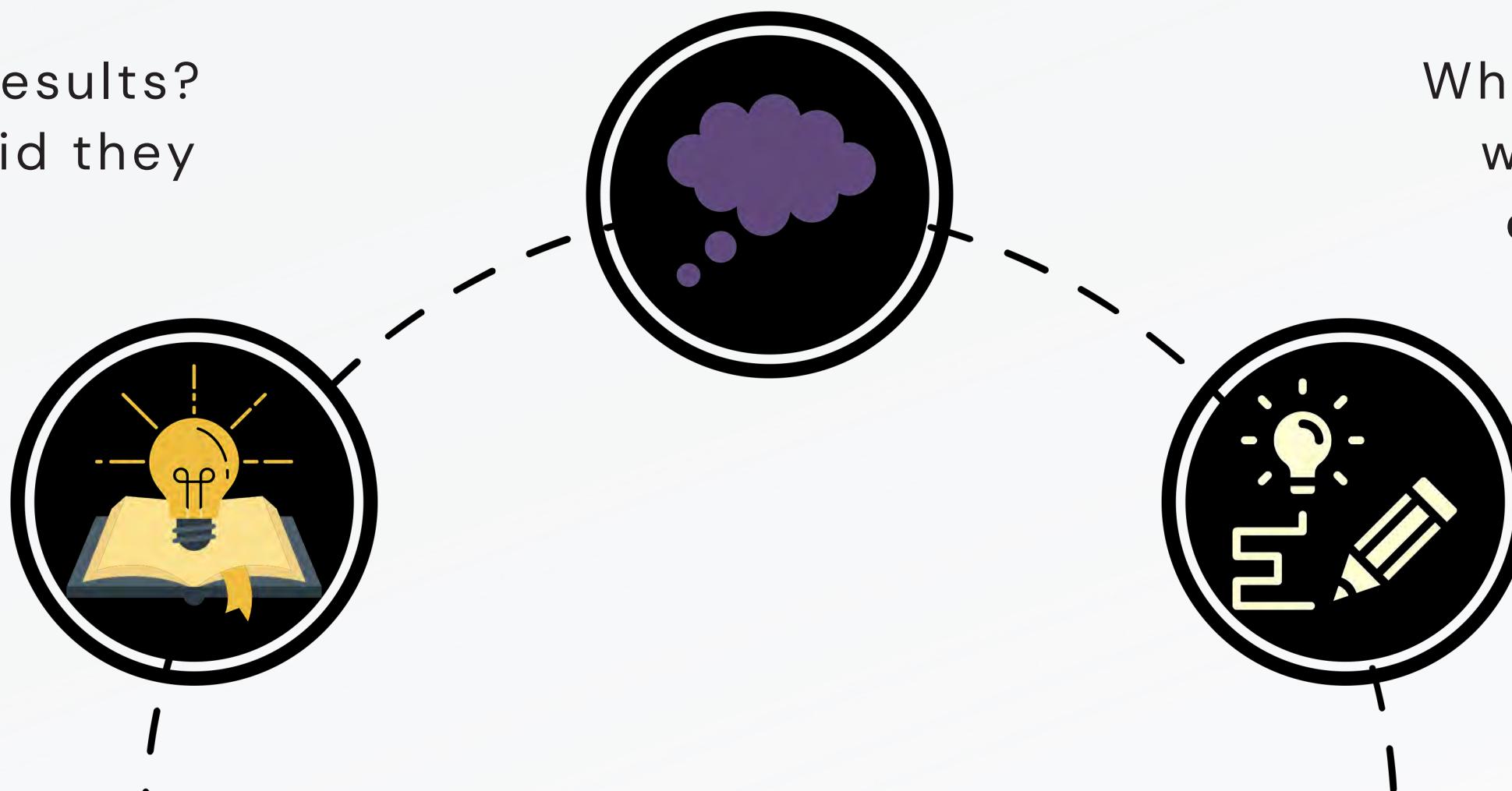
DISCUSSION

Drake and Palmer
2000

What are the results?
What claims did they
make?
What did they actually
do?
What is the
overarching goal of
the paper?

Liu et al. 2023

What conclusions can
actually be drawn from
the work?



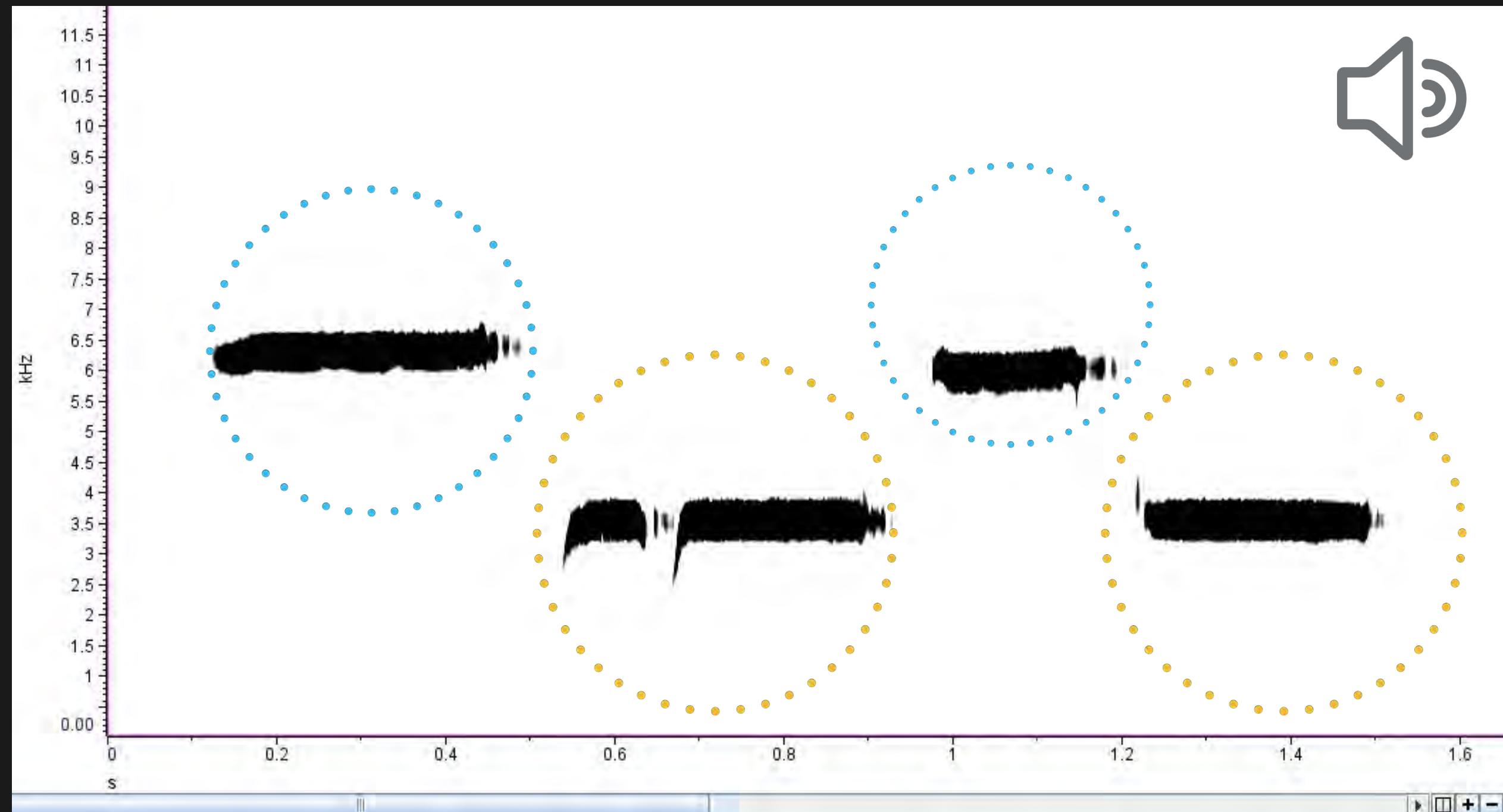
Ayotte et al. 2002

Rothenberg et al.
2013

What, if anything,
would you do
differently?

What would the
next steps be?

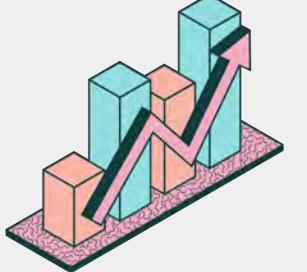
BIRDSONG



DATA EXPEDITION



What are our hypotheses?



Analyze Data Using R



Create three graphs

- Can practice improve rhythm?
- Does experience improve pitch/rhythm?
- Relationship between rhythm and pitch?

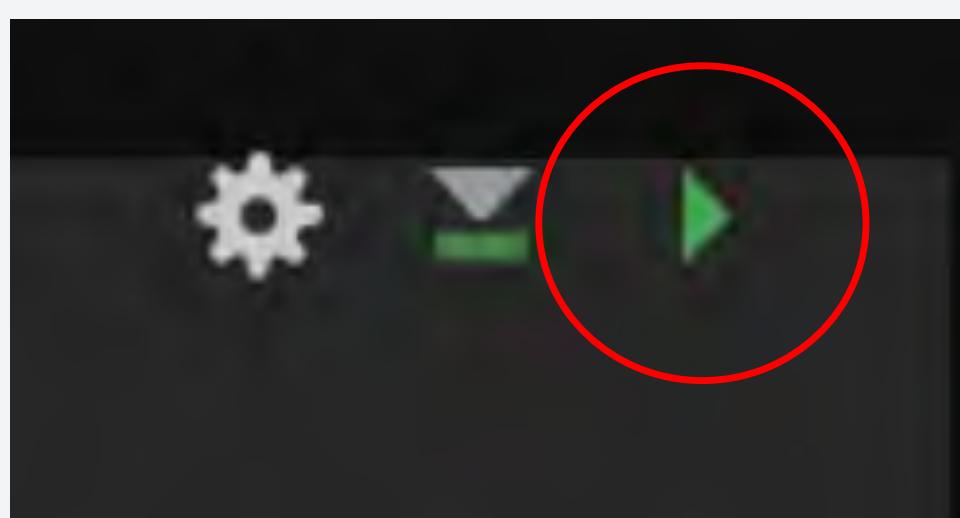


Submit to Dr. Johnsen & dmd76@duke.edu

- Three Graphs
- Each graph will have a few questions relating to the figure

DATA EXPEDITION

1. Input your demo scores to the google sheets
2. Download R folder
3. Download the google sheet as a .csv
4. Move the .csv file into the R folder
5. Run code chunks and answer homework questions



```
call:  
glm(formula = Rhythm ~ Attempt, data = Data)  
  
Deviance Residuals:  
    Min      1Q  Median      3Q     Max  
-521.24  -16.91   44.76   79.95  176.76  
  
Coefficients:  
              Estimate Std. Error t value Pr(>|t|)  
(Intercept) 809.3519   56.9726 14.206 <2e-16 ***  
Attempt      -0.5556   26.3732 -0.021  0.983  
---  
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1  
  
(Dispersion parameter for gaussian family taken to be 25039.59)  
  
Null deviance: 1302070 on 53 degrees of freedom  
Residual deviance: 1302059 on 52 degrees of freedom  
AIC: 704.13  
  
Number of Fisher Scoring iterations: 2
```