

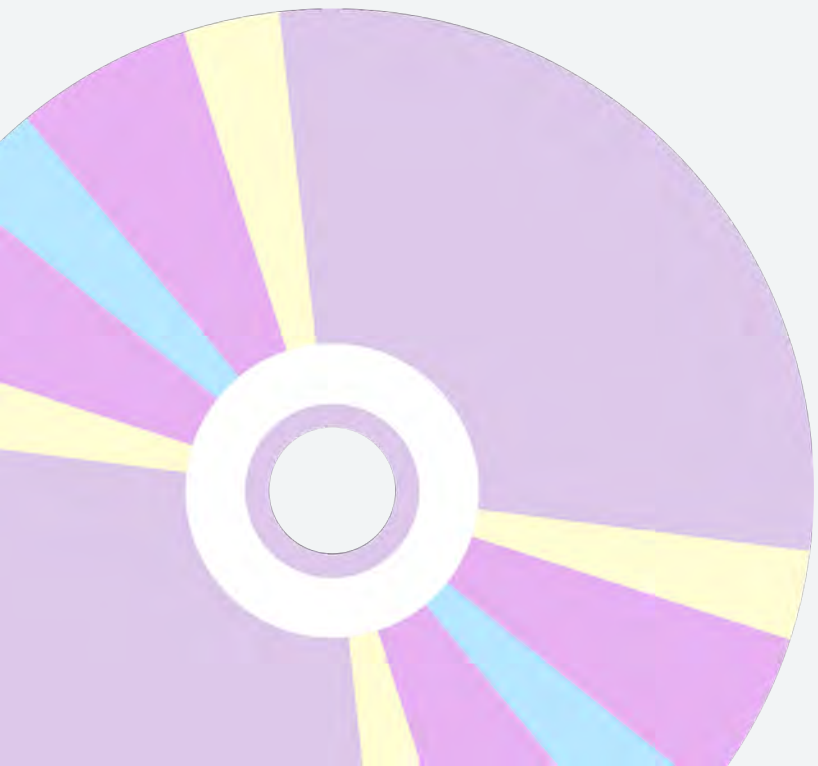


MUSICALITY

DANAE DIAZ & RICHARD WONG

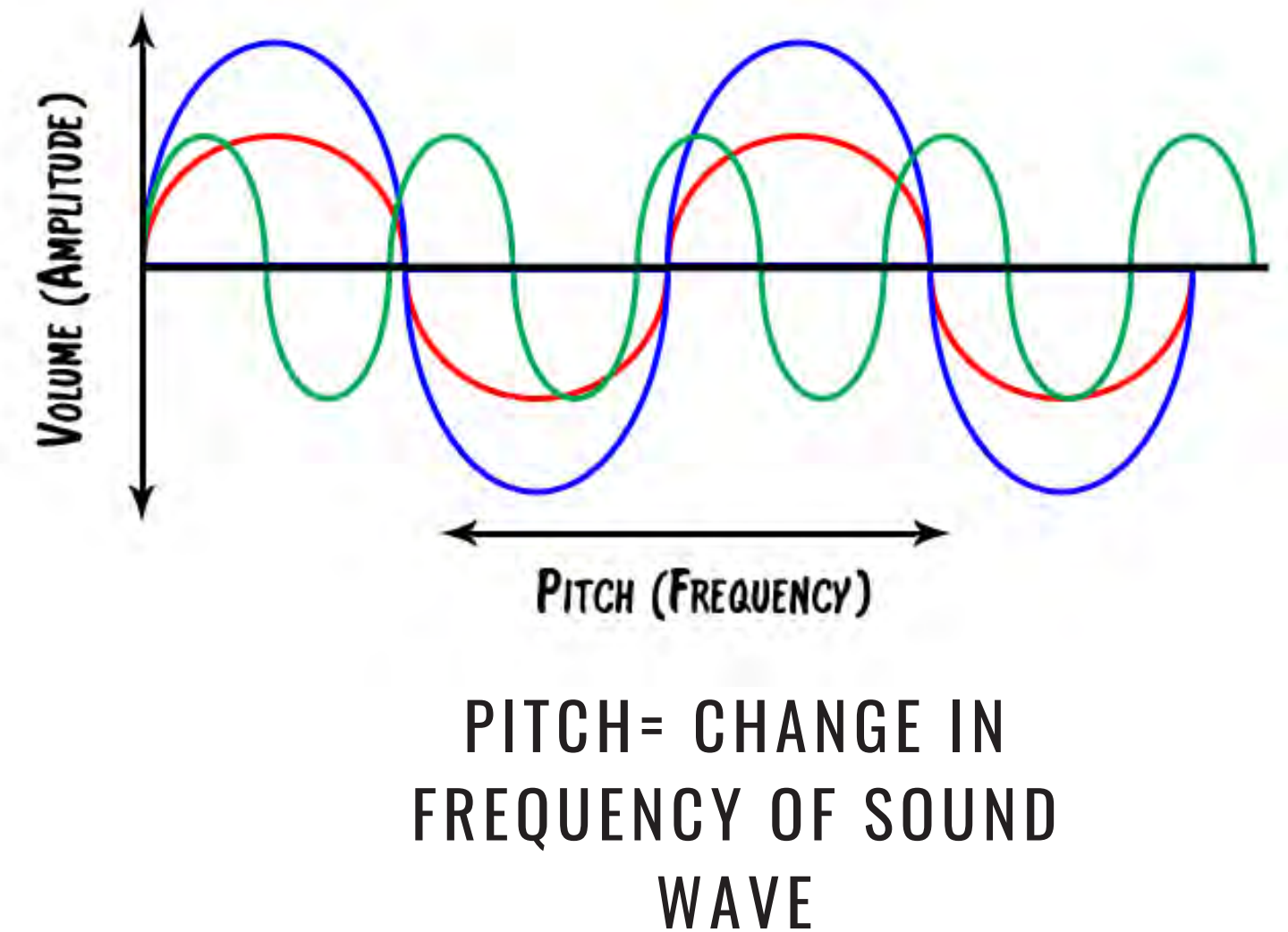
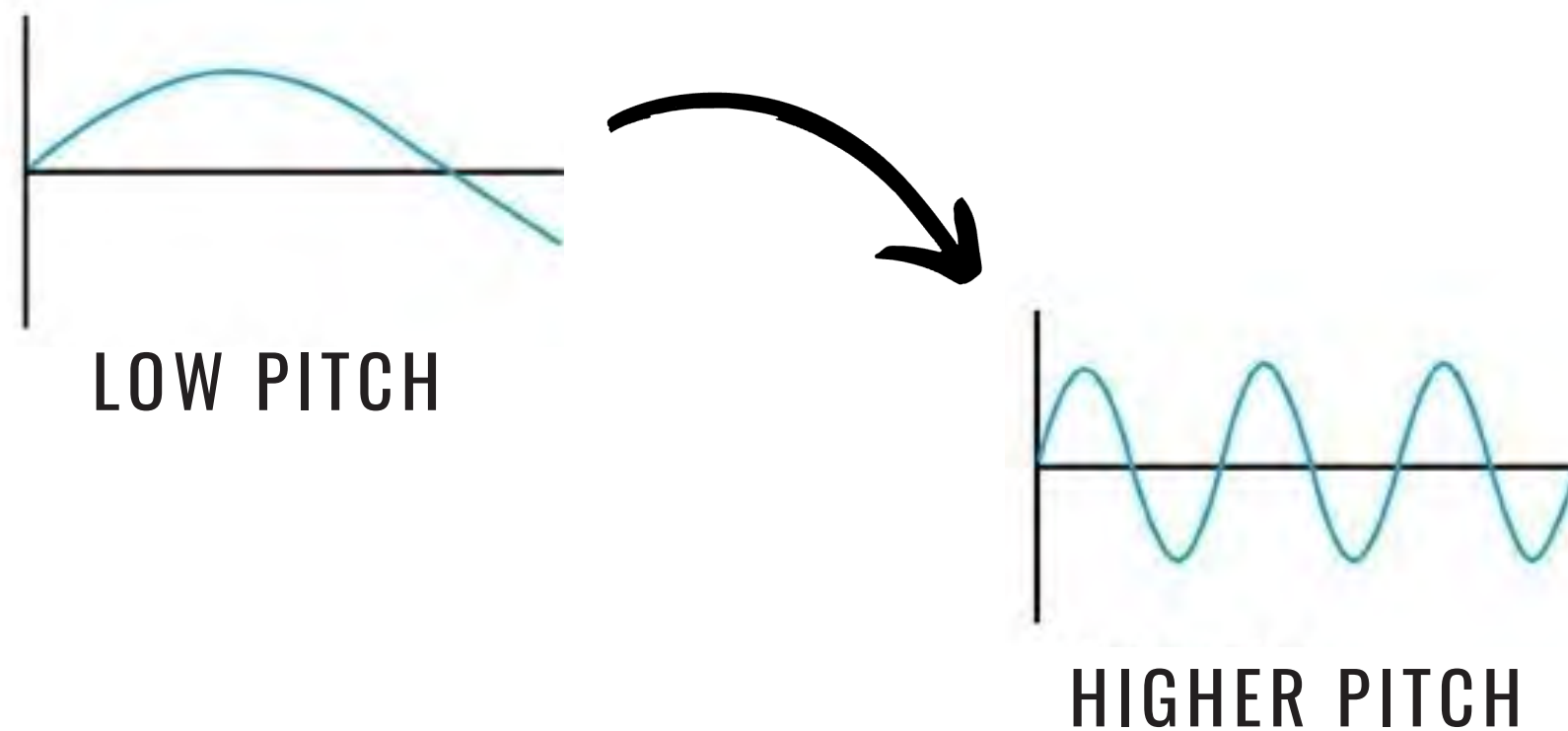
CONTENT

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PITCH

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



RHYTHM

Placement of sounds in time

Regular repeated patterns

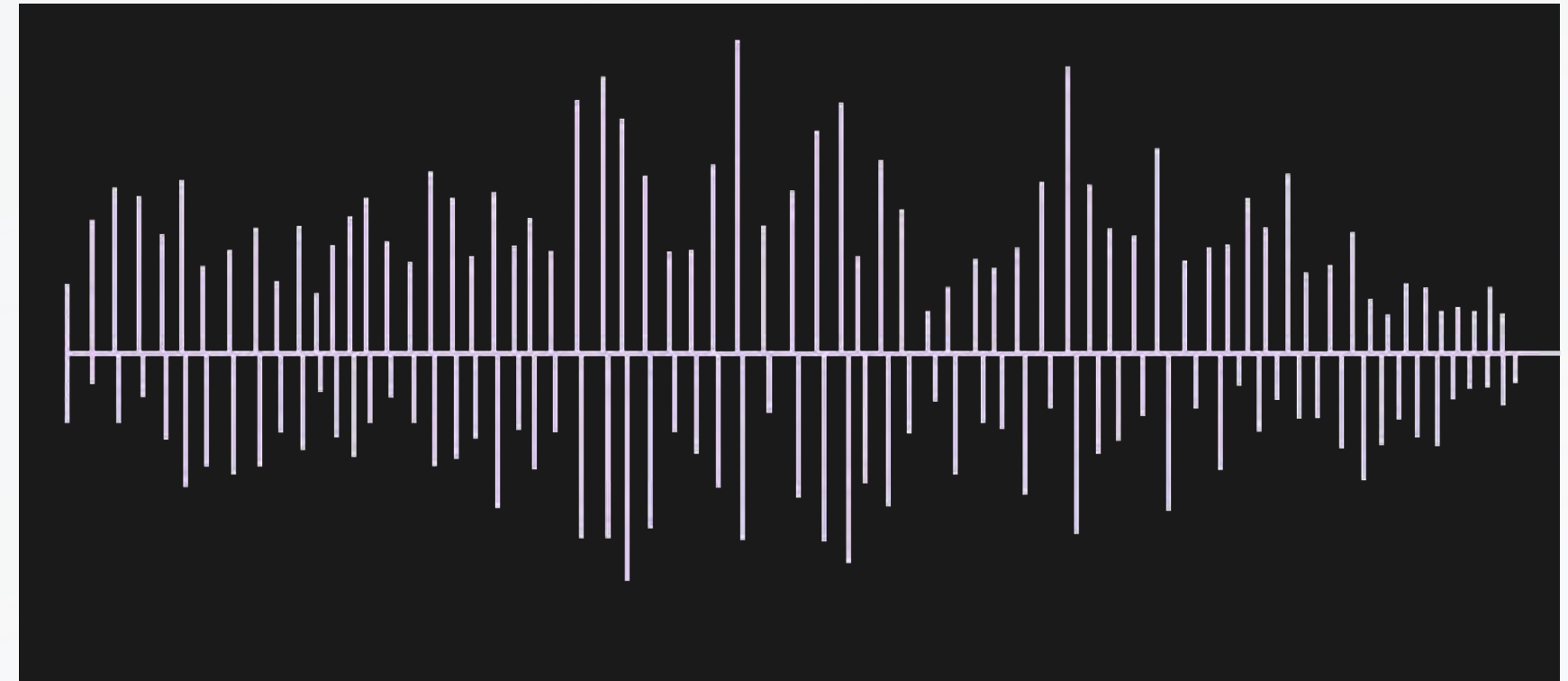


RELATIONSHIP BETWEEN RHYTHM AND PITCH

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.

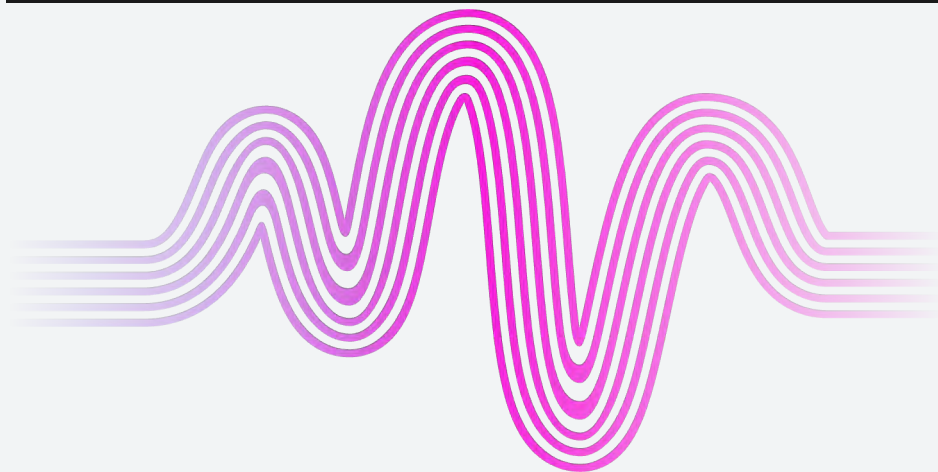




DEMO



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**

Liu et al. 2023

Ayotte et al. 2002

**Rothenberg et al.
2013**

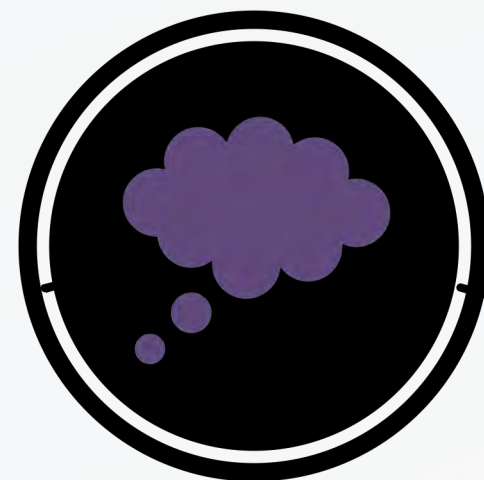
What conclusions can
actually be drawn from
the work?

What are the results?
What claims did they
make?

What, if anything,
would you do
differently?

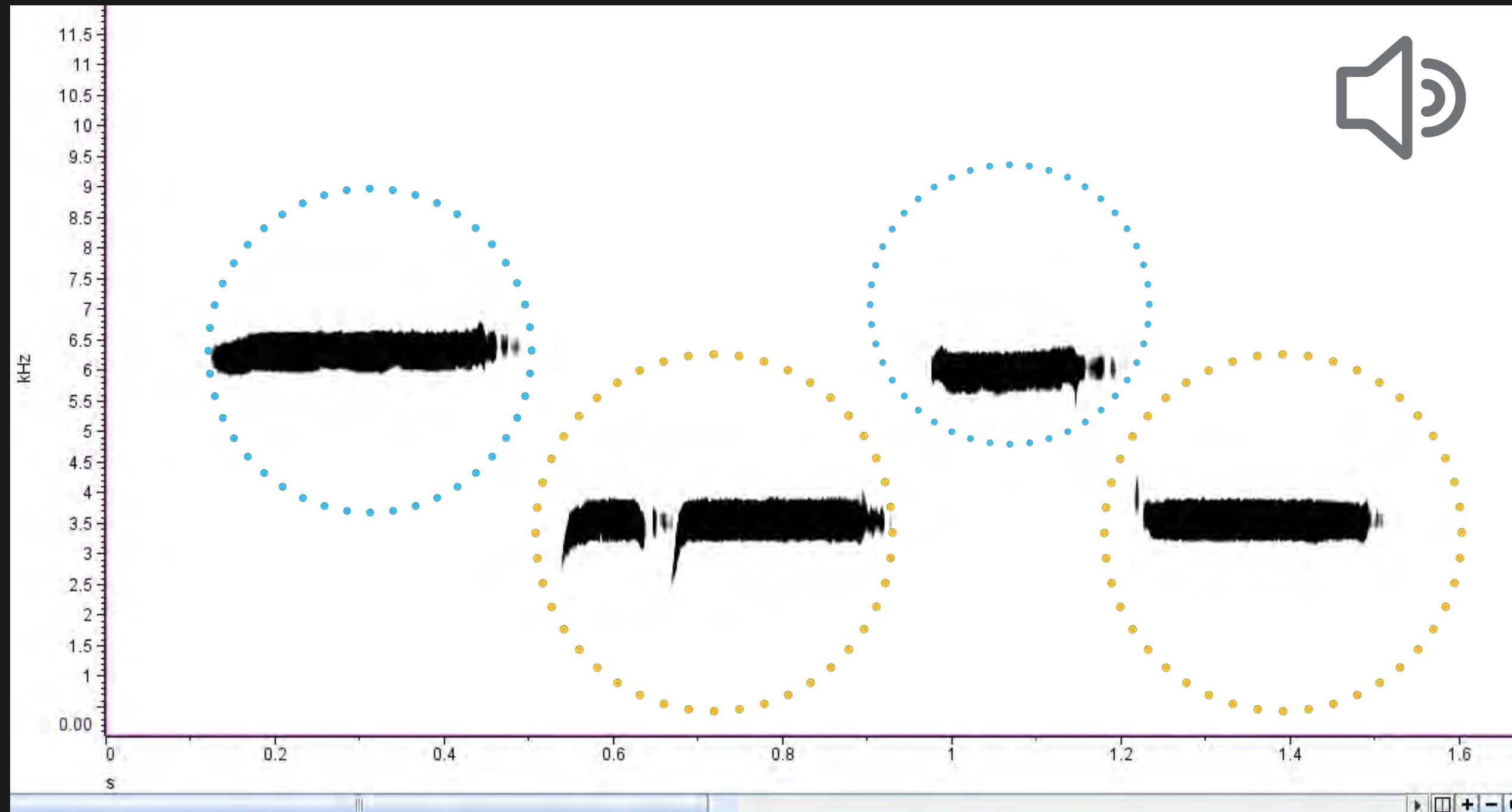
What did they actually
do?

What is the
overarching goal of
the paper?

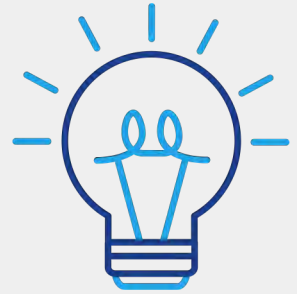


What would the
next steps be?

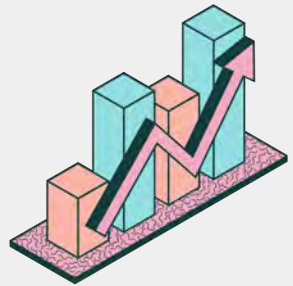
BIRDSONG



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?

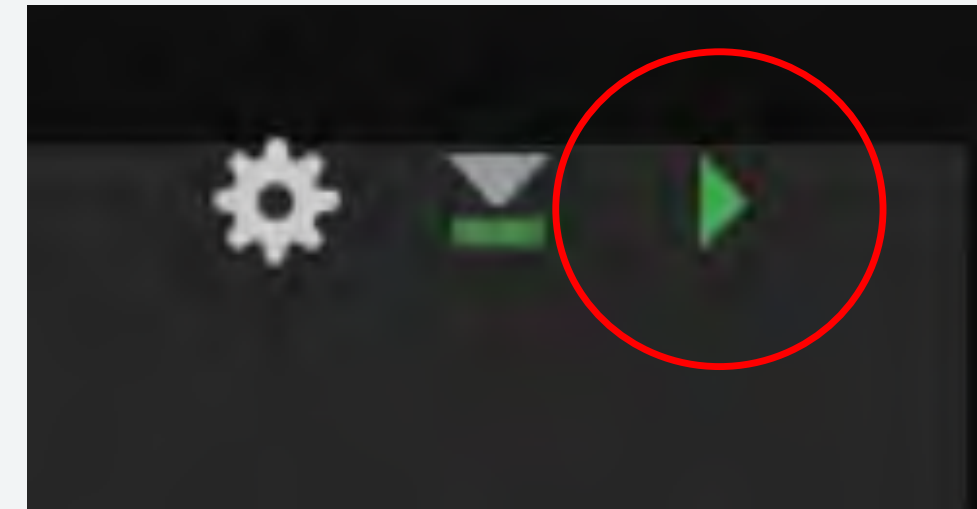


Submit to Dr. Johnsen & dmd76@duke.edu

- 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   14.205  <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
```