

# Exploring historical changes in musical cue use through cluster analysis



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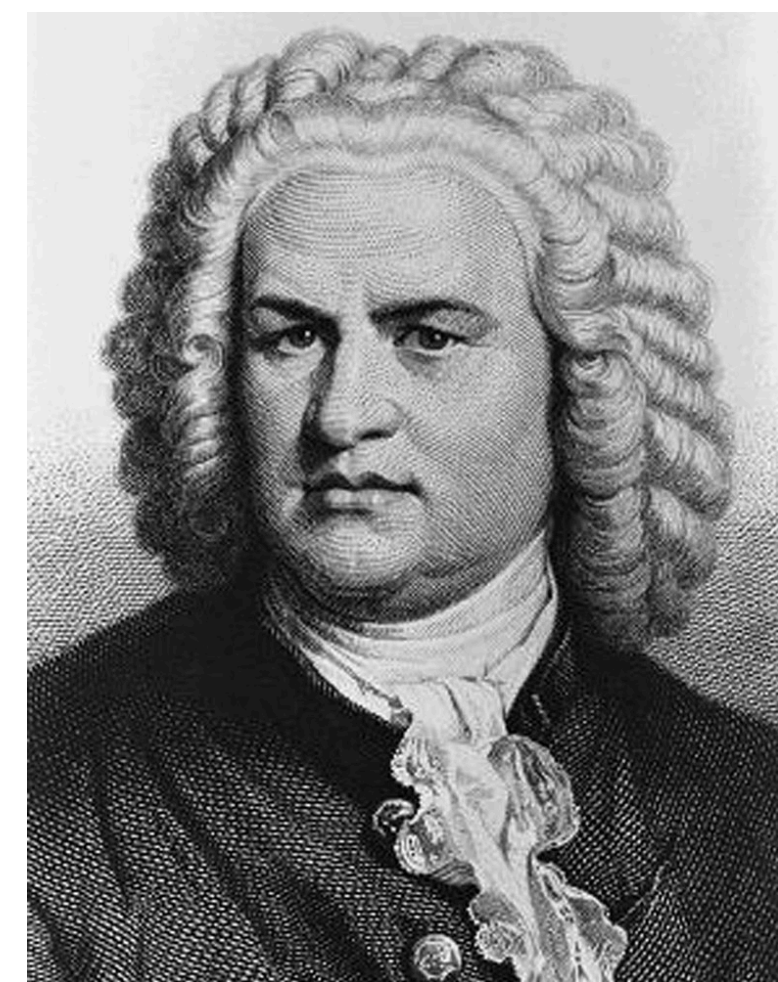
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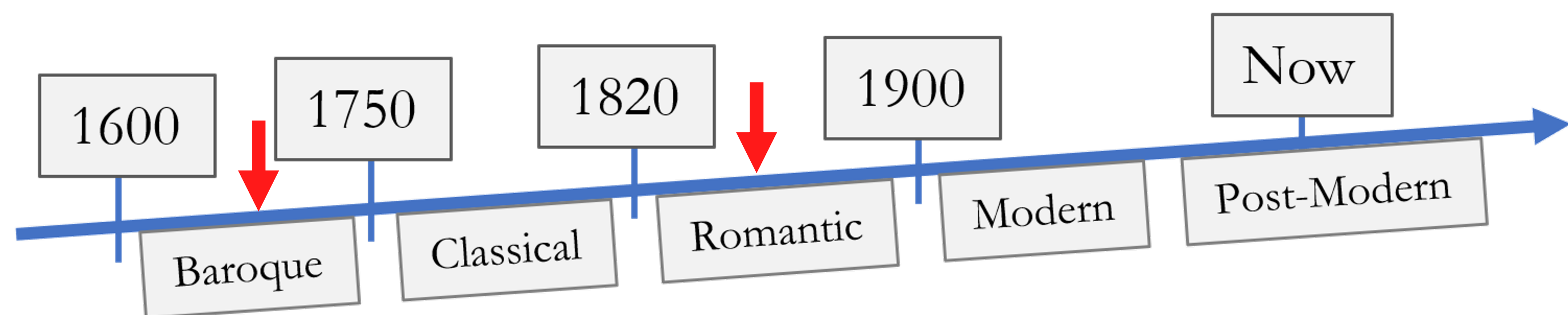
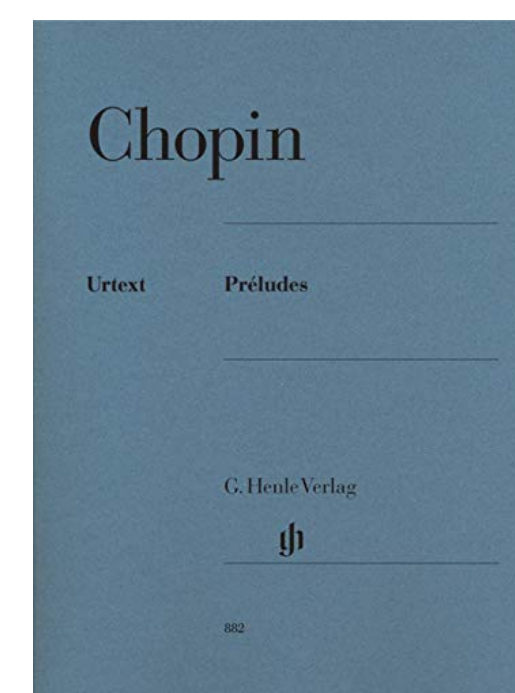
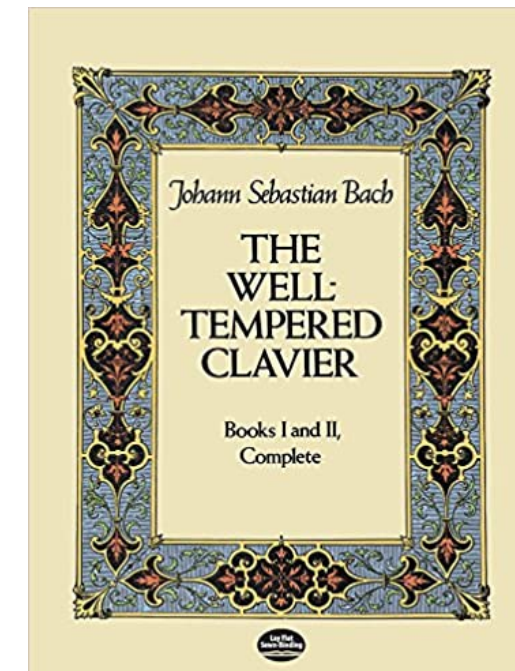
## Background



JS Bach  
(1685-1750)



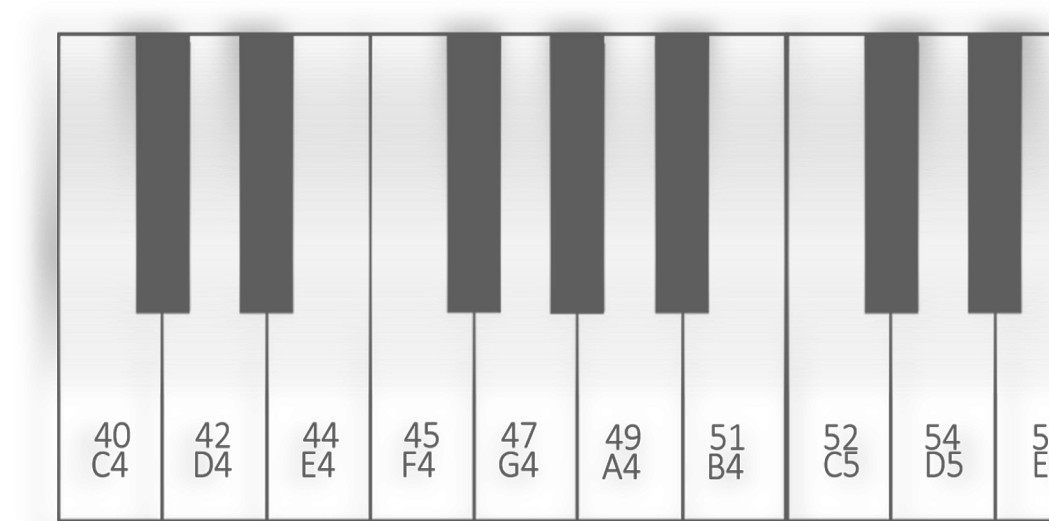
Frédéric Chopin  
(1810-1849)



## Methods



Pitch



Keyboard #

Pitch Height

Timing

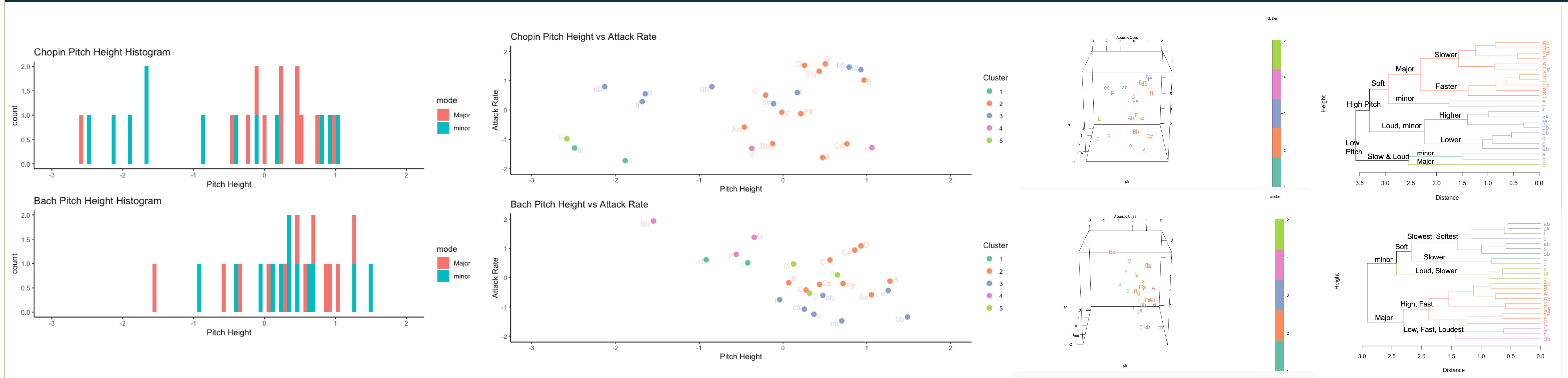
$$\frac{\text{Attacks}}{\text{Time (s)}} \times 60$$

Loudness



rms

## Findings



## Acknowledgments

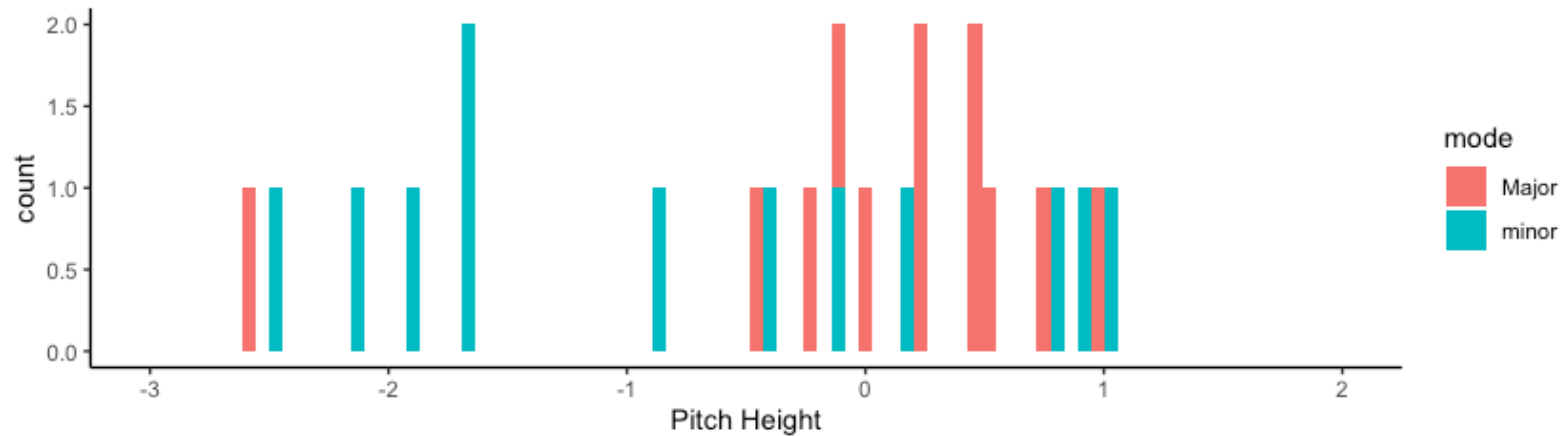
Special acknowledgement to Cameron Anderson for his important contributions to this exploratory study

## Summary

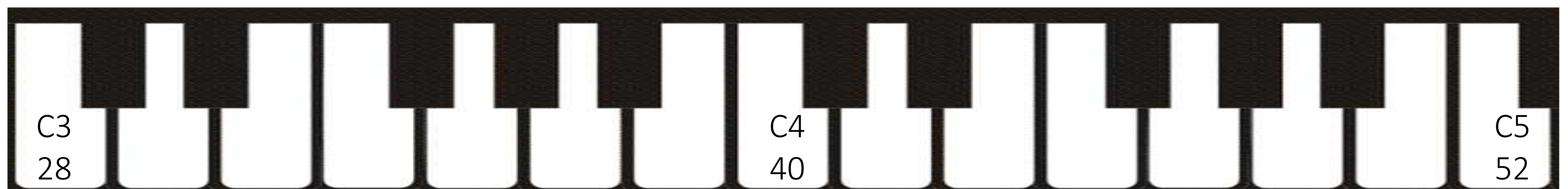
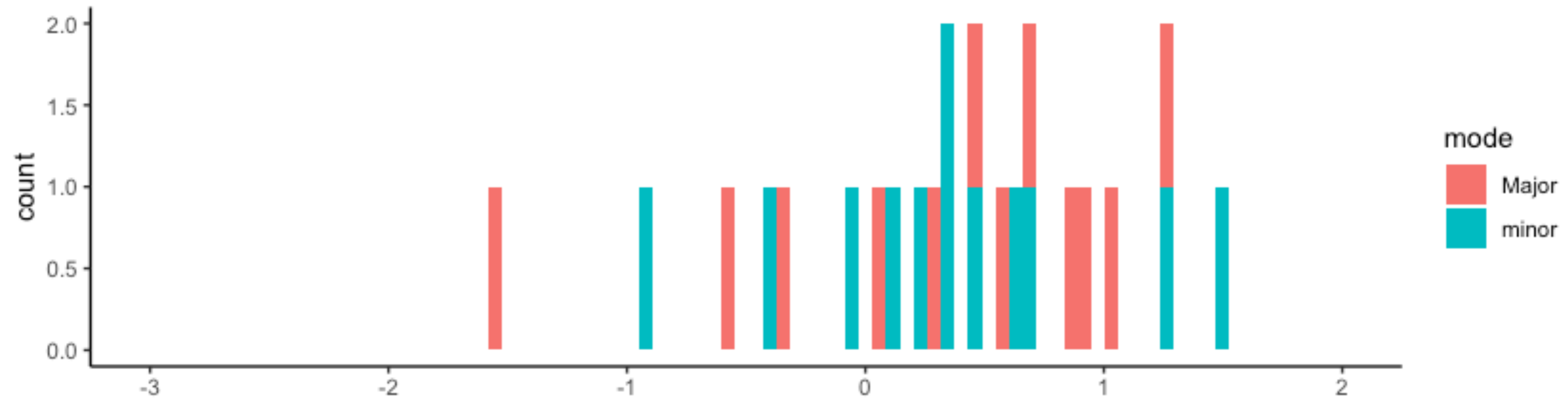
- When examining Bach data and comparing it to Chopin data, we see the changes in cues throughout history.
- Cluster analysis based on cues show that clusters are broken down differently between each composer. For Bach, mode and timing are the dominant cues in terms of clustering, whereas for Chopin, pitch height, timing, and loudness dominate.
- This change in clustering suggests that the roles of these cues changed between these composers, and perhaps over time.



### Chopin Pitch Height Histogram

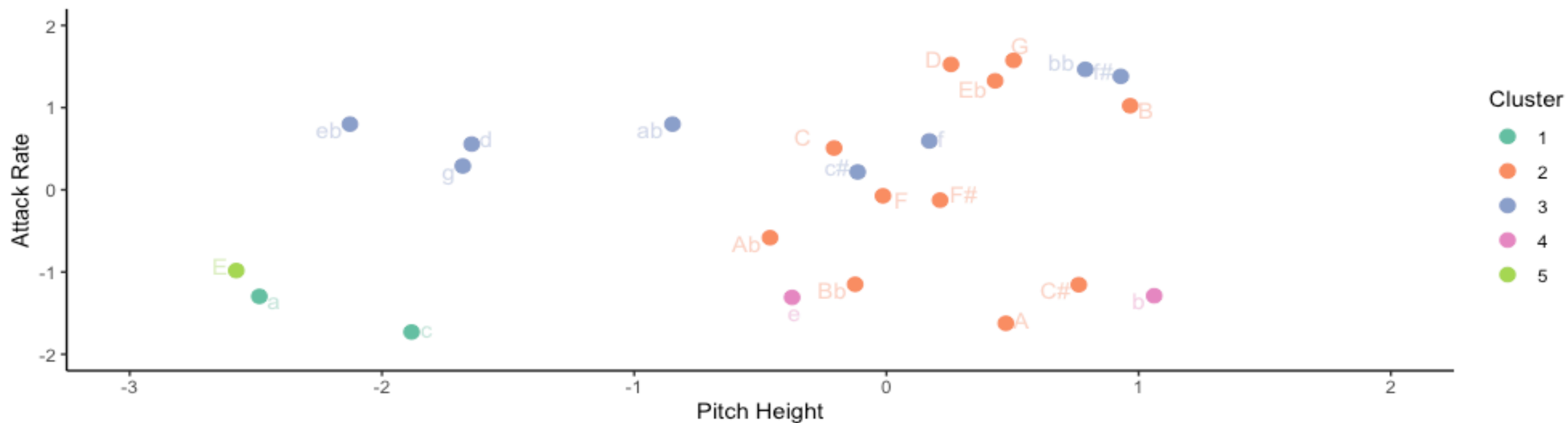


### Bach Pitch Height Histogram

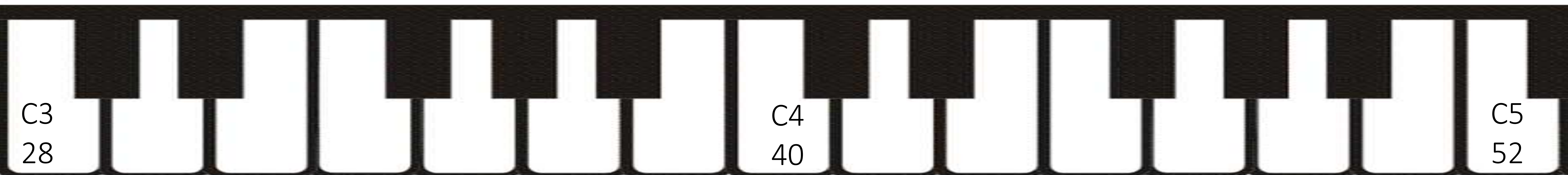
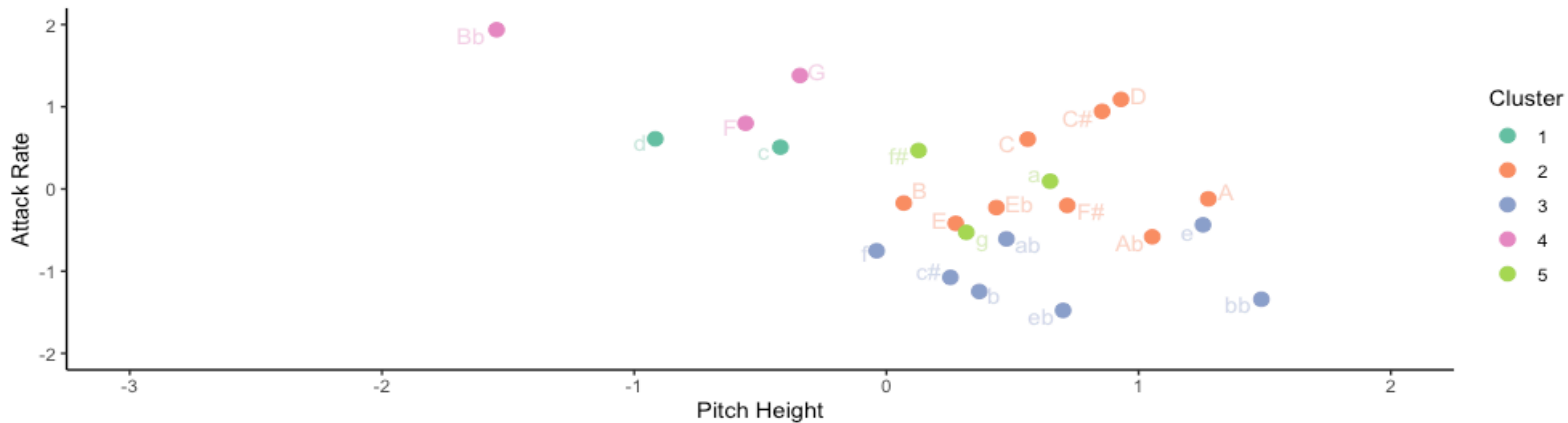




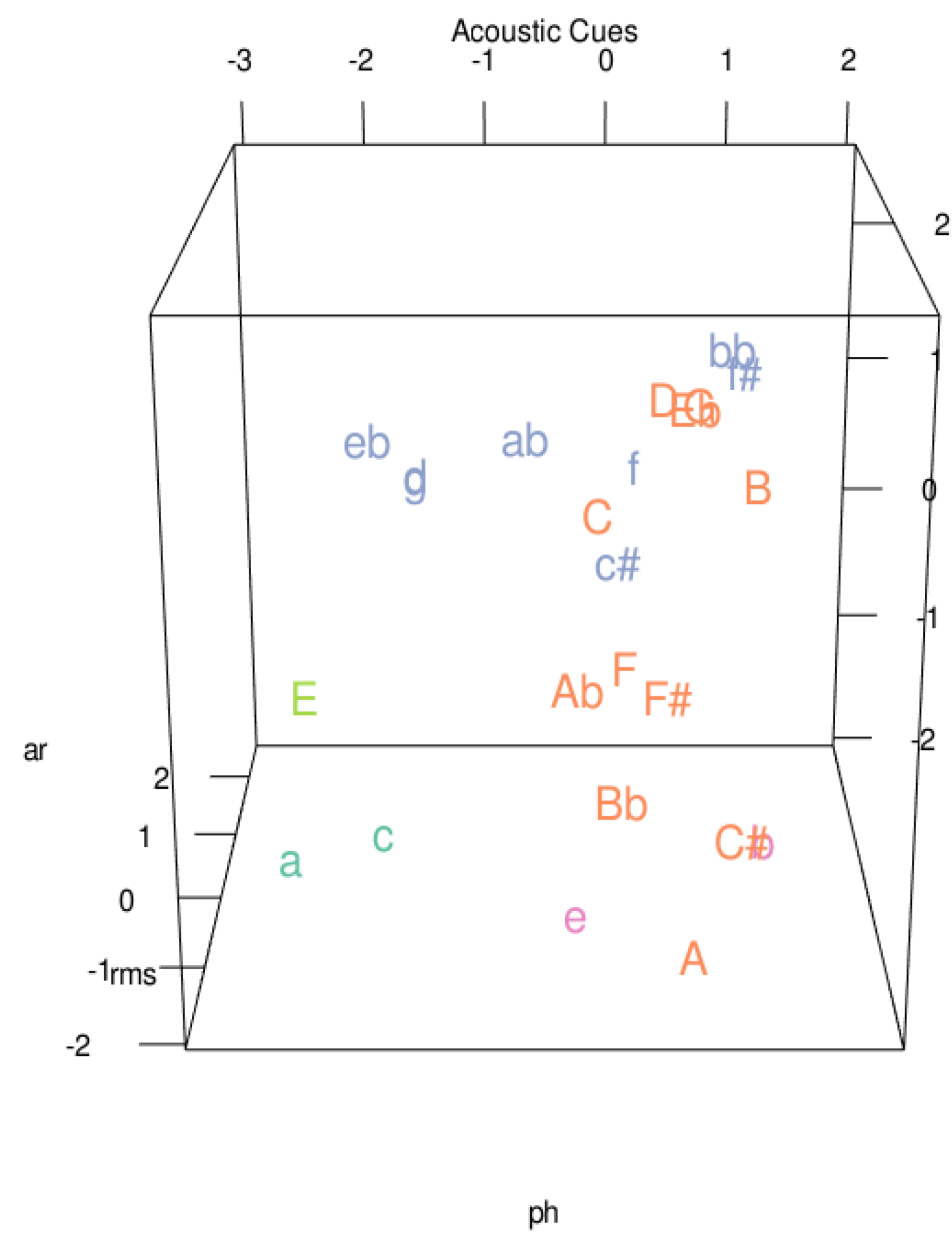
### Chopin Pitch Height vs Attack Rate



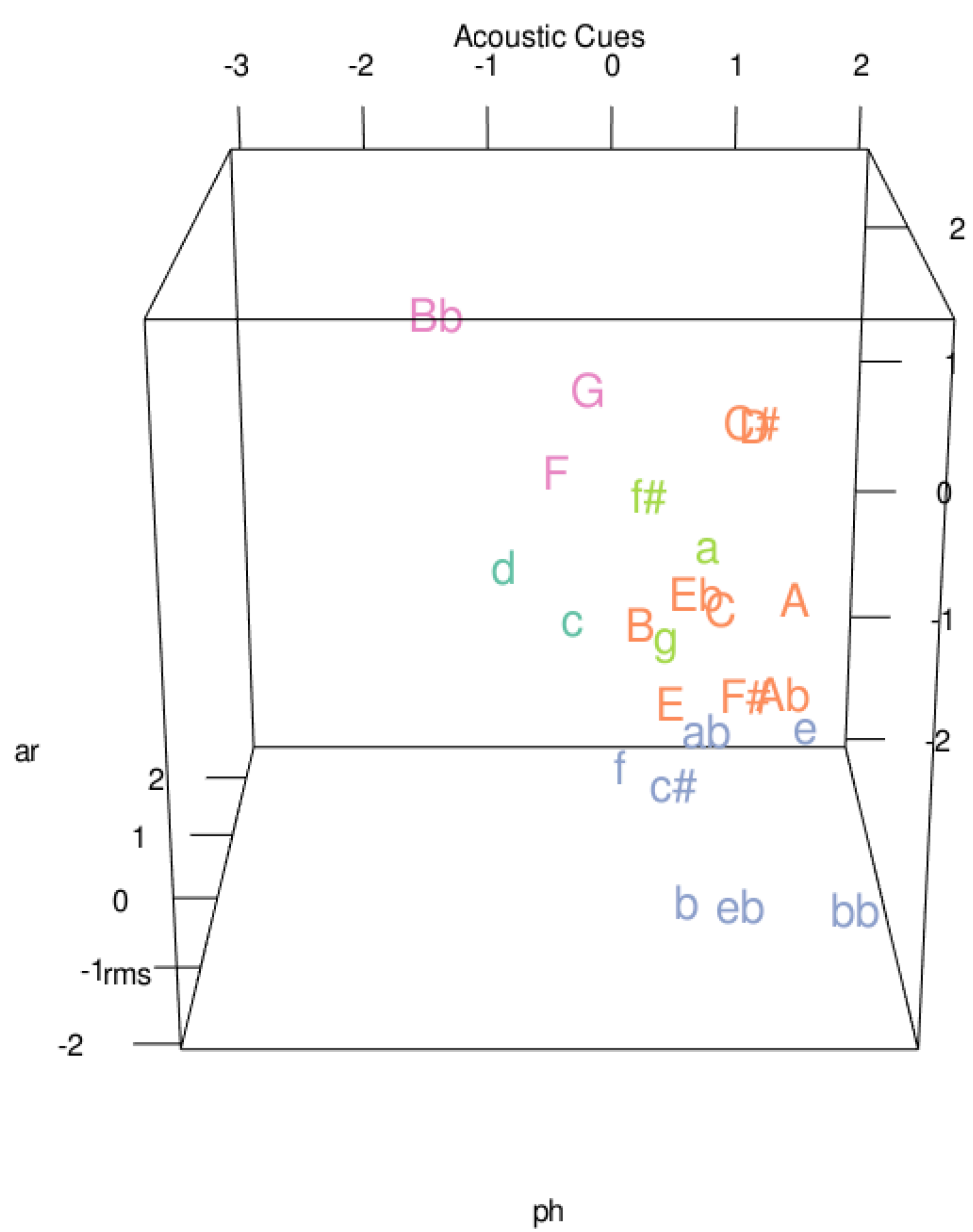
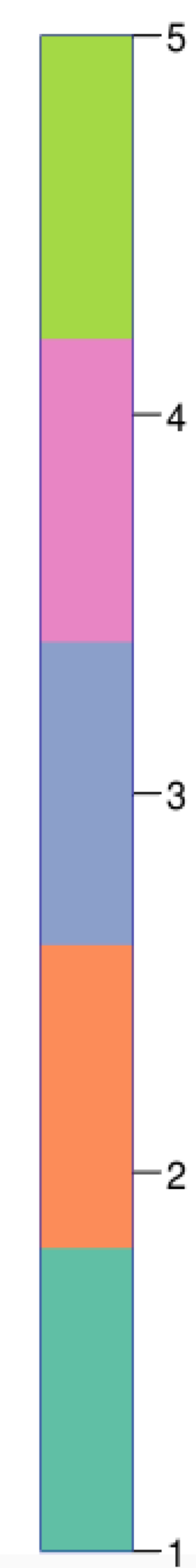
### Bach Pitch Height vs Attack Rate







cluster



cluster

