Musical chills

Effects of stimulus properties, stylistic preference and familiarity

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Pleasurable moments in music

- Behavioural, physiological & computational methods

- Chills
  - Considered as pleasurable
  - Widespread, memorable, observable

- Expectancy
  - Linked with emotional responses to music
  - Hanslick, Meyer, Huron, Juslin, etc.

Objectives

- Causal link between chills and musical content
  - Dynamics, texture, melody, harmony, rhythm, instrumentation
  - Correlational evidence

→ Are some songs more likely to cause chills than others?

→ Are chills experienced at specific moments for these songs?

Y Predict occurrences based on objective musical properties

N Indicator of individualised emotion responses to music

Objectives

- Hypothesised underlying factors
  - Songs should cause chills for others
  - Songs should be in a liked genre
  - Songs should be familiar
  - Passages should be pleasurable

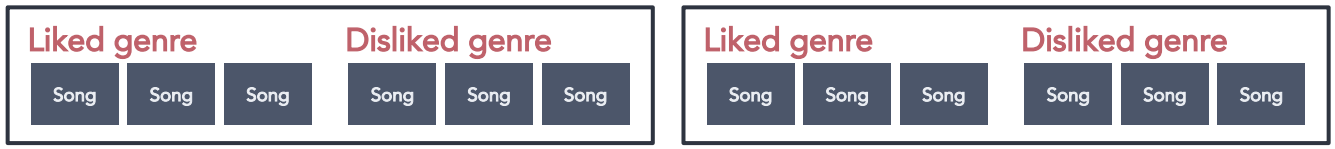
→ Can we identify songs/moments which are likely to cause chills?

Design considerations

- Ecological validity
  - Existing pieces of music
- Causality
  - Controlled, longitudinal design
- Demand characteristics
  - Subjective responses
  - Continuous, objective measures

Methods

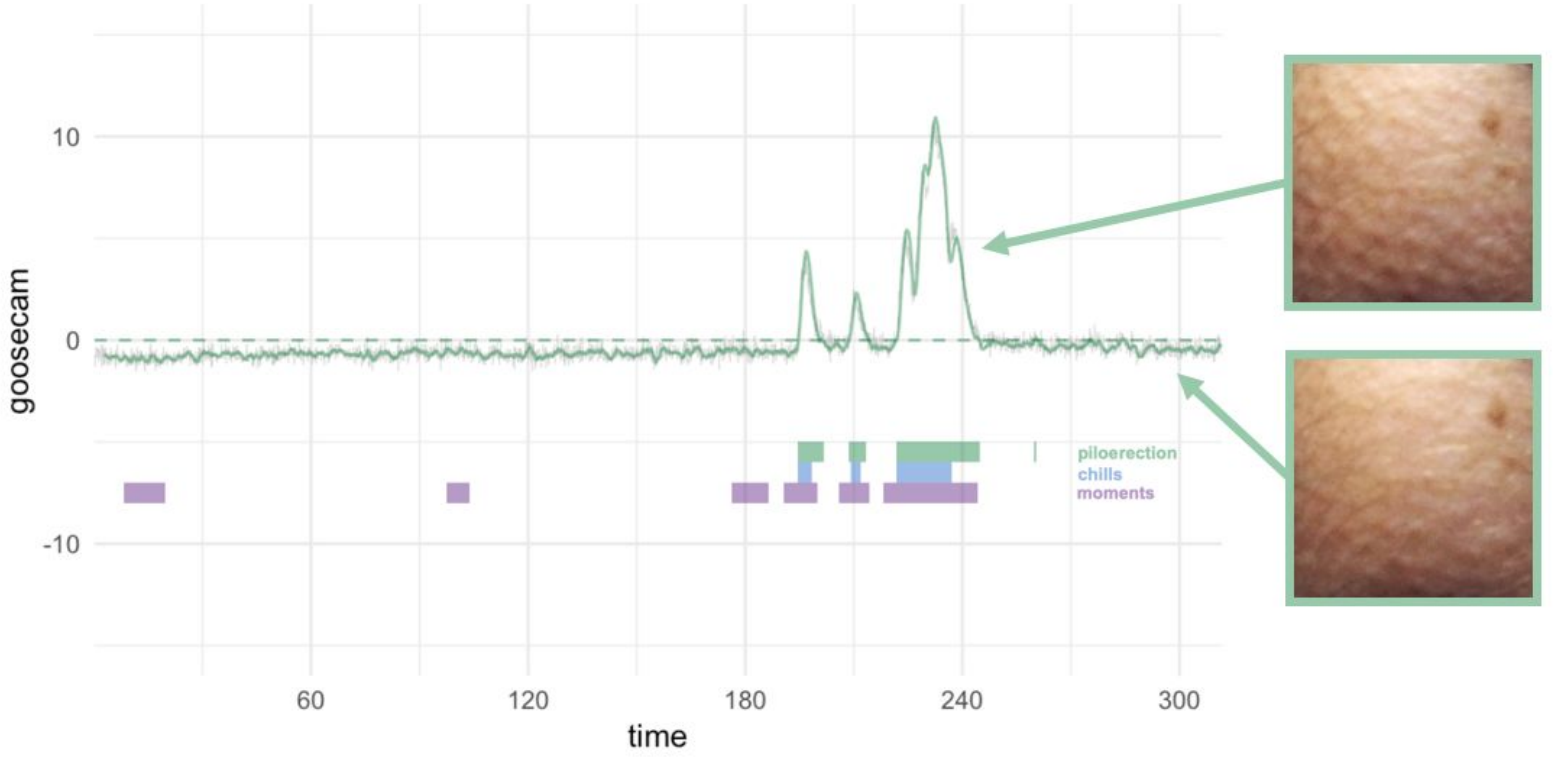
Stimuli



Procedure

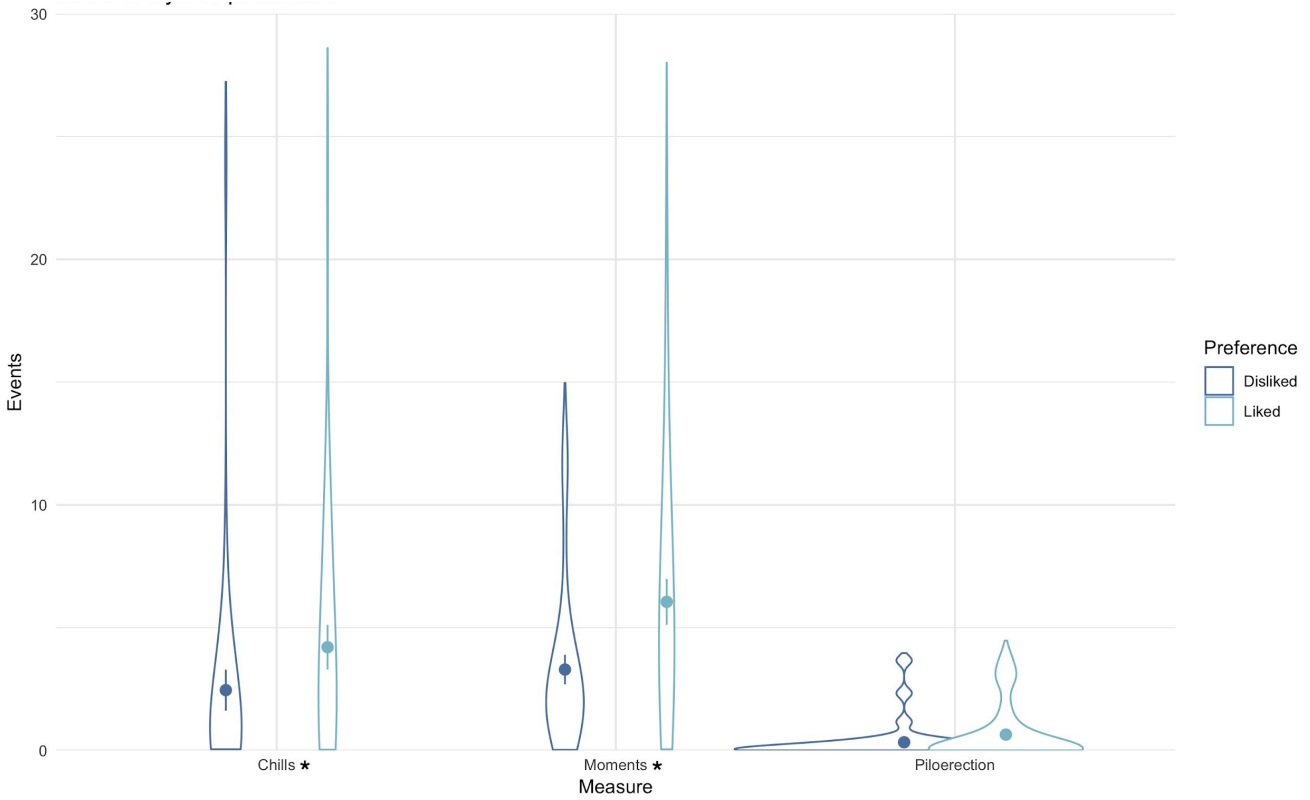
Online	80 x 15s excerpts Familiarity and stylistic preference ratings Set of 12 unfamiliar songs for each participant
Lab 1	12 songs Self-reported **chills**, **pleasurable moments** and **liking** Objective **piloerection**
Longitudinal	12 songs x 8 repetitions to increase **familiarity** Self-reported **chills** and **liking**
Lab 2	Similar to Lab 1 Qualitative feedback on causes of chills

Methods


10
0
-10
goosecam
60
120
180
240
300
time
piloerection
chills
moments

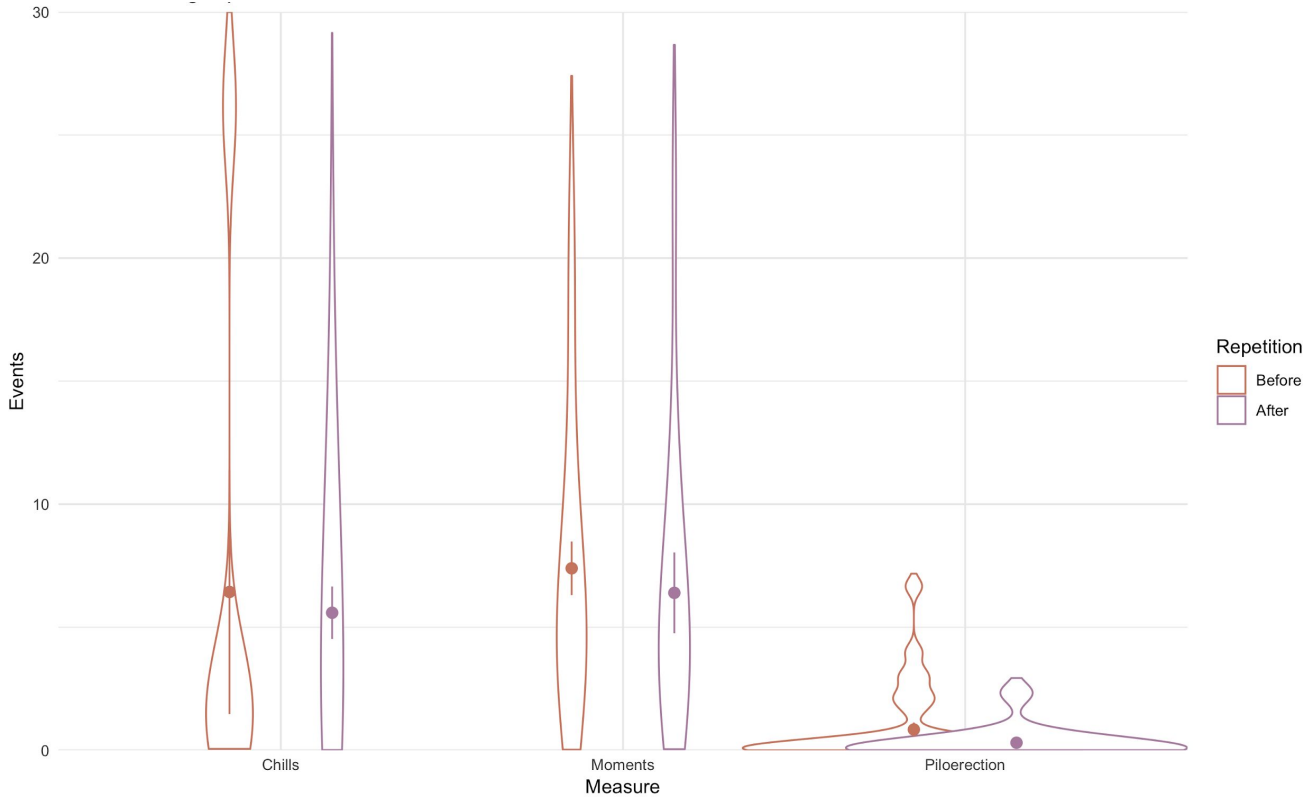
Results

- Chills and pleasurable moments more likely in preferred genres



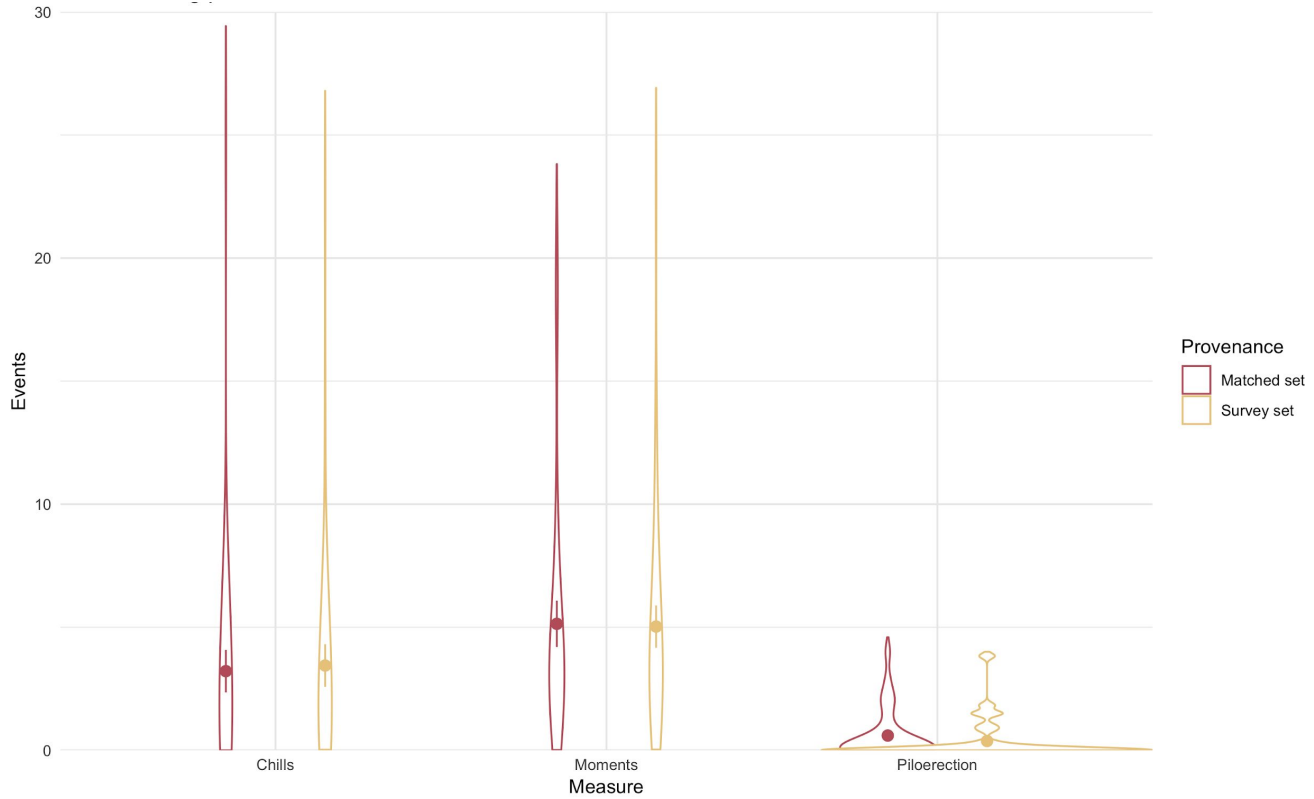
Results

- No effect of repetition



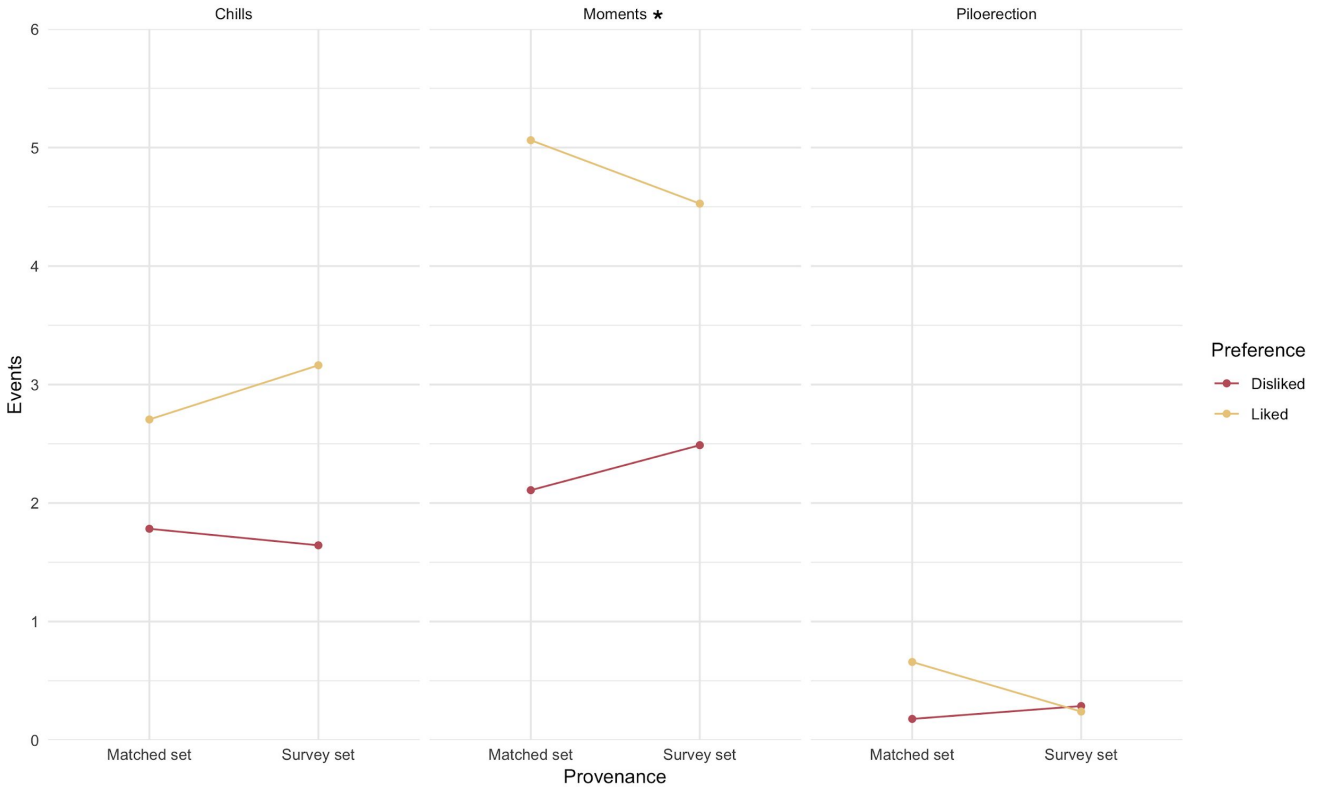
Results

- No effect of provenance

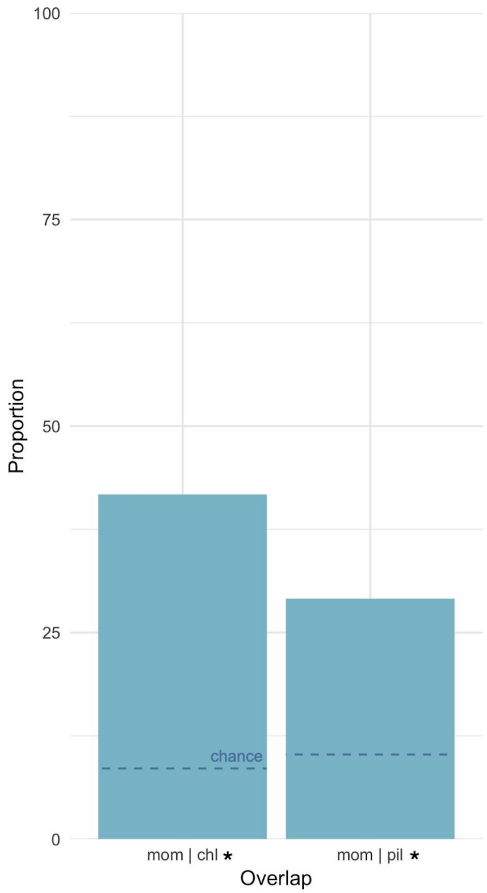


Results

- Provenance:Preference interaction for pleasurable moments

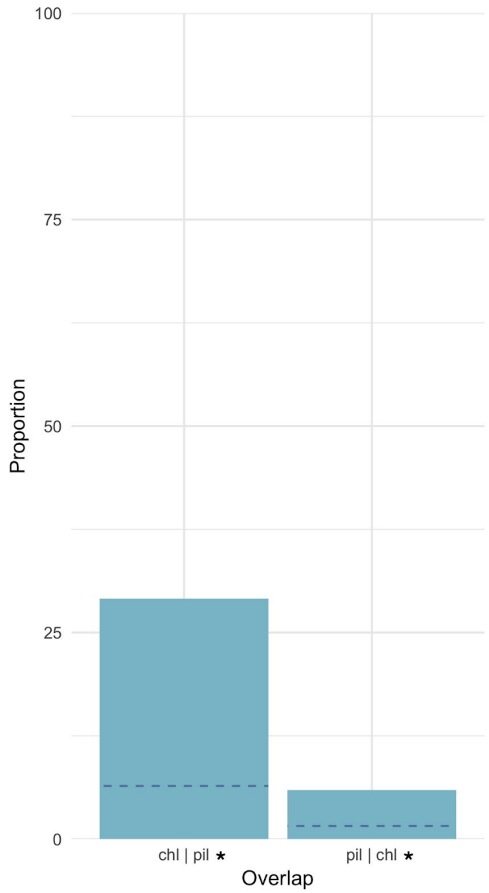


Results



- 42% of self-reported chills overlapped with pleasurable moments
- 29% of piloerection events overlapped with pleasurable moments
    - Both more likely than chance

Results



- 29% of piloerection events overlapped with self-reported chills
- 6% of self-reported chills overlapped with piloerection events
  - Both more likely than chance

Summary

- Association between chills and pleasurable moments
- Association between self-reported chills and piloerection
  - But observable piloerection remains rare
- Causal link between chills and stylistic preference
- Interaction between stylistic preference and stimulus-driven properties for pleasurable moments

Next steps

- More data cleaning!

- Further data analysis
  - Are time-stamps for chills consistent across participants?
  - Does familiarity increase the probability of experiencing pleasurable moments before chills?

- Predict when chills happen based on objective musical properties
  - Acoustic features, structural features