

Musical chills

Effects of stimulus properties,
stylistic preference and familiarity



Background

Musical chills: Stimulus properties, stylistic preference and familiarity

Rémi de Fleurian and Marcus T. Pearce

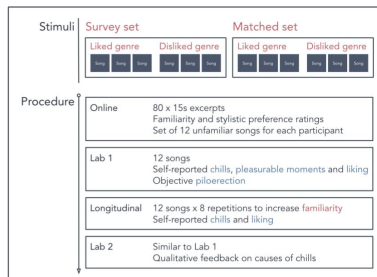
Abstract

Musical chills give a convenient insight into what makes music pleasurable because they are widespread, memorable, and observable. Changes in dynamics, texture, melody, harmony, rhythm, and instrumentation have been linked to chills, but few studies have looked at the causal influence of such factors. More specifically, it is unclear whether chills can be felt when listening to any piece of music, or whether they require a specific combination of stimulus-driven properties. Potential effects of stylistic preference and familiarity have also been proposed, but sparsely explored as of yet.

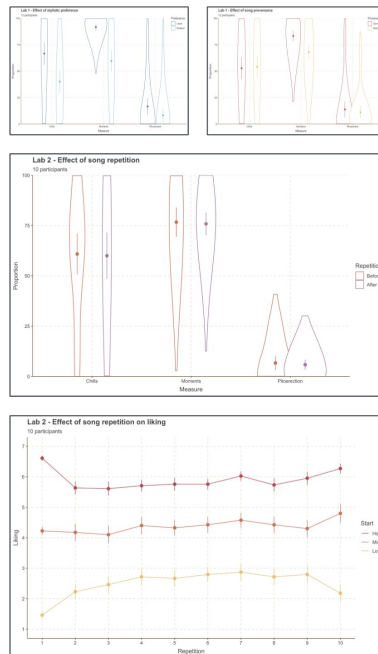
In the present study, 93 songs were extracted from a previous survey study in which 221 participants reported songs during which they often experience chills. Each song was then matched with three similarly popular songs from the same artist. Participants took an online test in which they listened to randomly selected 15 s excerpts for 40 songs and their associated matches, and rated them on liking for the genre of each excerpt and familiarity, resulting in an individual set of 12 unfamiliar songs for each participant, containing three songs for each combination of song provenance (survey or matched) and liking for the genre (liked or disliked). Participants listened to the 12 songs in two lab sessions, separated by a two-week longitudinal phase away from the lab, during which they listened to the full set of songs another eight times. In each lab session, piloerection was measured using a wearable optical device, and participants continuously reported the occurrence of chills and of intensely pleasurable moments using button presses.

While data collection is still ongoing, preliminary results suggest that the likelihood of experiencing chills, intensely pleasurable moments or piloerection is higher for songs in liked genres. Songs from the survey dataset are also more likely to cause pleasurable moments compared to songs from the matched dataset, but the other effects of songs provenance and familiarity are much less clear for now.

Methods



Results



Summary

- Songs in preferred genres were more likely to lead to self-reports of chills and pleasurable moments, and to cause piloerection.
- The effect of provenance was less clear, with only pleasurable moments being more likely for songs from the survey dataset.
- Increasing familiarity with the songs through repeated listening had no clear effect on these three variables.
- Liking, however, was moderately affected by familiarity.

It is worth noting that the proportion of songs in which chills were reported was unexpectedly high. Considering total occurrences for each variable might shed more light on these relationships.

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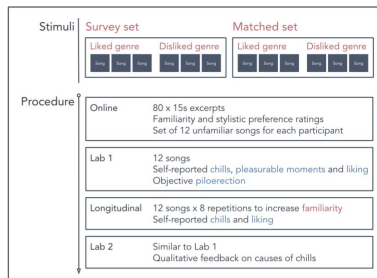
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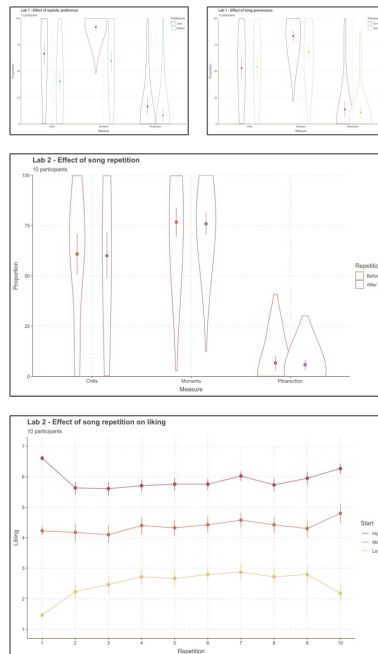
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Plotted statistics: mean and standard error

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 - Causes of chills

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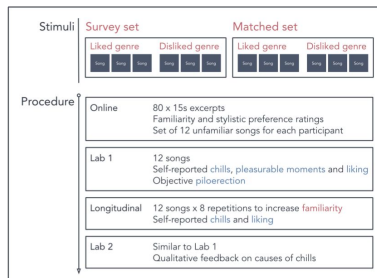
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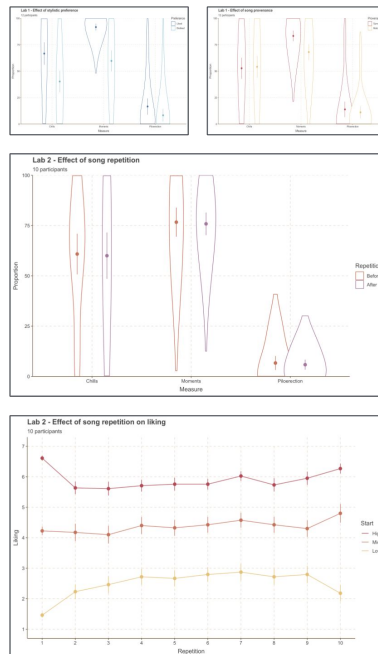
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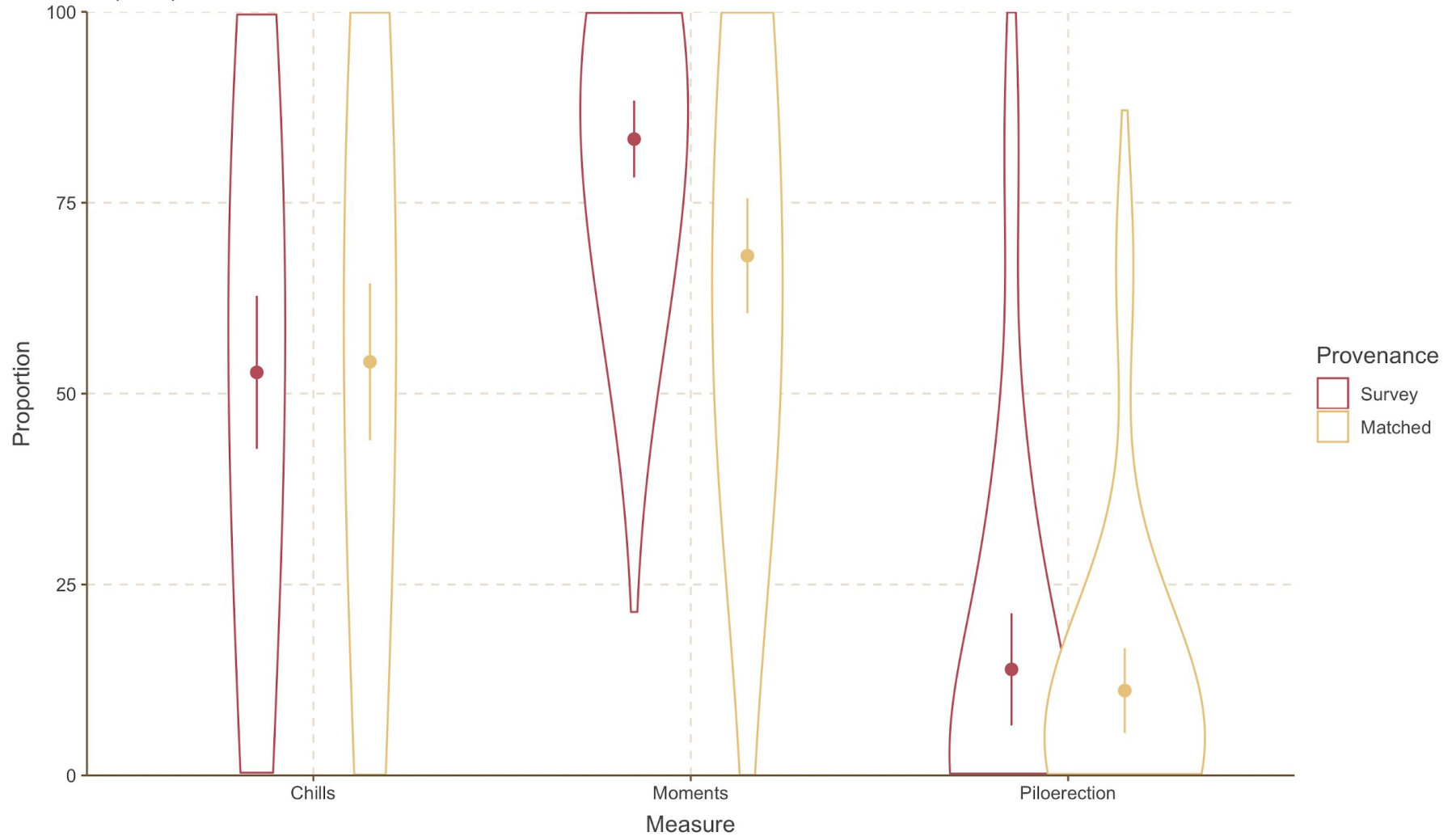
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- Objectives
 - Causes of chills
- Study
 - Longitudinal
 - Unfamiliar songs
 - Piloerection
 - Self-reports

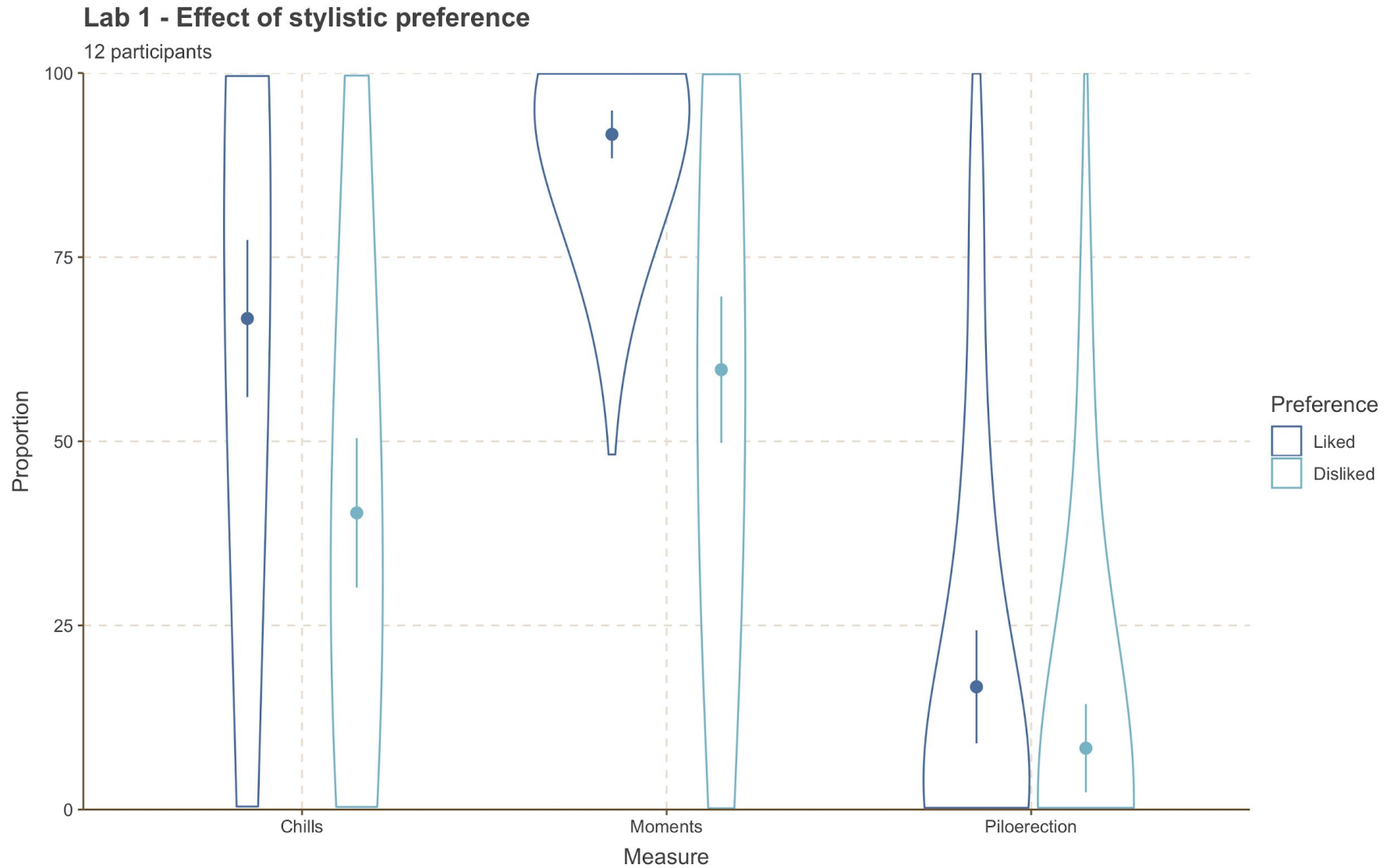
Stimulus properties

Lab 1 - Effect of song provenance

12 participants



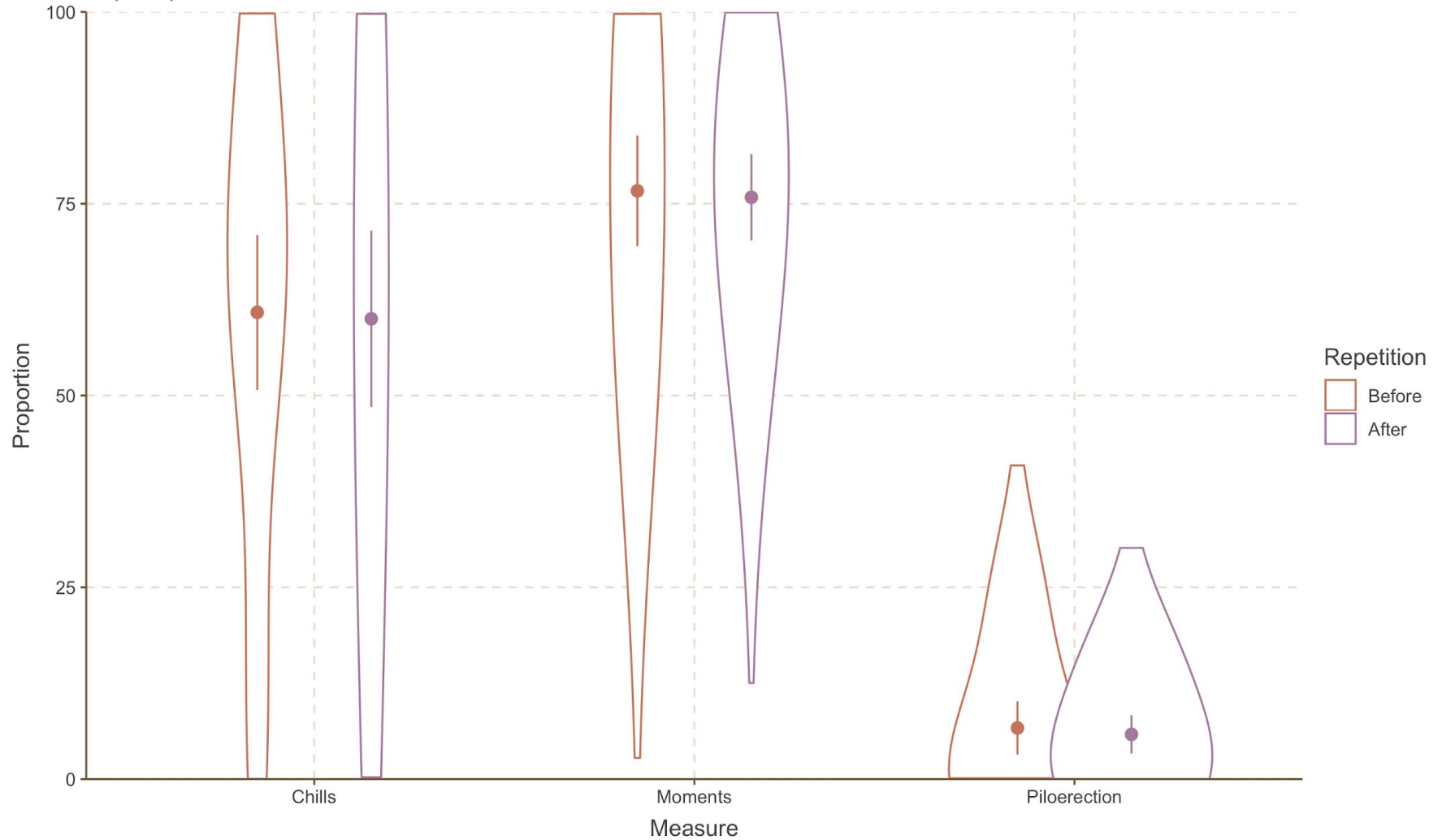
Stylistic preference



Familiarity

Lab 2 - Effect of song repetition

10 participants



Further analysis

- Self-reported chills and piloerection
 - Individual participants? Qualitative data?
- Proportion of songs which cause chills
 - Total occurrences?
- Complex study design
 - Mixed effect model? Interaction effects?
- Time-stamped data
 - Overlap within/across participants?