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Musical chills: Stimulus properties, stylistic preference & familiarity

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***Abstract*— Little is known about the effects of stimulus-driven properties, stylistic preference, and familiarity on the occurrence of musical chills. In the present study, participants listened to 12 unfamiliar songs in liked and disliked musical genres. Half were taken from a dataset of songs previously reported as causing chills, while the other half were matched with these songs by artist and popularity. Objective measurements of piloerection and continuous self-reports of the occurrence of chills and intensely pleasurable moments were taken in two lab sessions, separated by a two-week longitudinal phase during which participants listened to the full set of songs another eight times. Preliminary results taken from the first lab session are discussed, in terms of occurrence of chills and intensely pleasurable moments across all conditions.**

I. BACKGROUND

Musical chills consist of a pleasurable tingling sensation, sometimes accompanied by piloerection, and represent an emotionally intense physiological reaction to music [1]. They 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 [2–4], but few studies have looked at the causal influence of such factors [5]. 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.

Chills are likely due to an interaction of top-down (e.g. development of expectations) and bottom-up (e.g. fulfillment of these expectations) processes [6]. This would suggest potential effects of stylistic preference and familiarity, but such effects have been sparsely explored as of yet.

The present work therefore aimed to investigate the causal influence of stimulus-driven properties, stylistic preference, and familiarity on the occurrence of musical chills, in a longitudinal study using real music.

II. METHODS

A subset of 93 songs was extracted from a previous survey study in which 221 participants reported 671 songs during which they often experience chills. Inclusion criteria were song duration (less than 5 min.), and absence of sung lyrics within 10 s. from each reported instance of chills. Each song was then matched with three similarly popular songs (as assessed by number of plays on Spotify), from the same artist.

Participants in the present study 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 3 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 participants listened to the full set of songs another eight times. In each lab session, piloerection was measured using a wearable optical device [7], and participants continuously reported the occurrence of chills and of intensely pleasurable moments using button presses.

III. RESULTS

The proposed poster will examine data obtained in the first lab session, with particular attention given to the effects of stimulus-driven properties and stylistic preference on the occurrence of musical chills.

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