

Introduction

- Rhythmic music can evoke pleasure and a motivation to move by activating the reward system¹ and motor regions². Music pleasure and wanting to move (WTM) share mechanisms, such as arousal (relaxing-stimulating),^{1,3,4} familiarity⁴, and acoustic parameters (dissonance and pulse clarity)⁵.
- Despite the growing literature on the pleasure-WTM relation⁴, it is still unclear if this relation is influenced by the movement type. Only a few studies have examined music pleasure in a movement task, finding:
 - No significant difference of music pleasure while tapping or standing still⁷;
 - Higher music pleasure after a running session vs a tapping session⁸;
 - Higher music pleasure while dancing vs standing still⁹.
- This suggests that music pleasure may differ depending on the accompanying movement type, with a greater pleasure for more complex and embodied movements.

OBJECTIVES

- In an online music listening study, compare the pleasure-WTM relations by movement type (tapping, dancing, walking, running).
- Test the moderation effect of the mechanisms (i.e. arousal, familiarity, pulse clarity and roughness) on the pleasure-WTM relation.

Method

PARTICIPANTS (N = 480)

- Age: $M = 32.6$, $SD = 16.1$, 18 - 83
- 396 females (76%);
- 149 musicians (31%); 97 dancers (18%)

SOUND MATERIAL (264 SONGS)

- Popular songs, stable tempo 134 - 170 bpm ($M = 152$, $SD = 10$ bpm).

ONLINE TASK PROCEDURE (BRAMS OTP)

- Participants listened to a randomly selected block of 24 songs and rated each one for **arousal**, **pleasure**, **familiarity** and **WTM** for different movements (**general**, **tapping/head nodding**, **walking**, **running**, **dancing**).

MEASURES

- Visual analog scales (0-100).
- Pulse clarity and roughness were extracted using MIRtoolbox¹⁰.

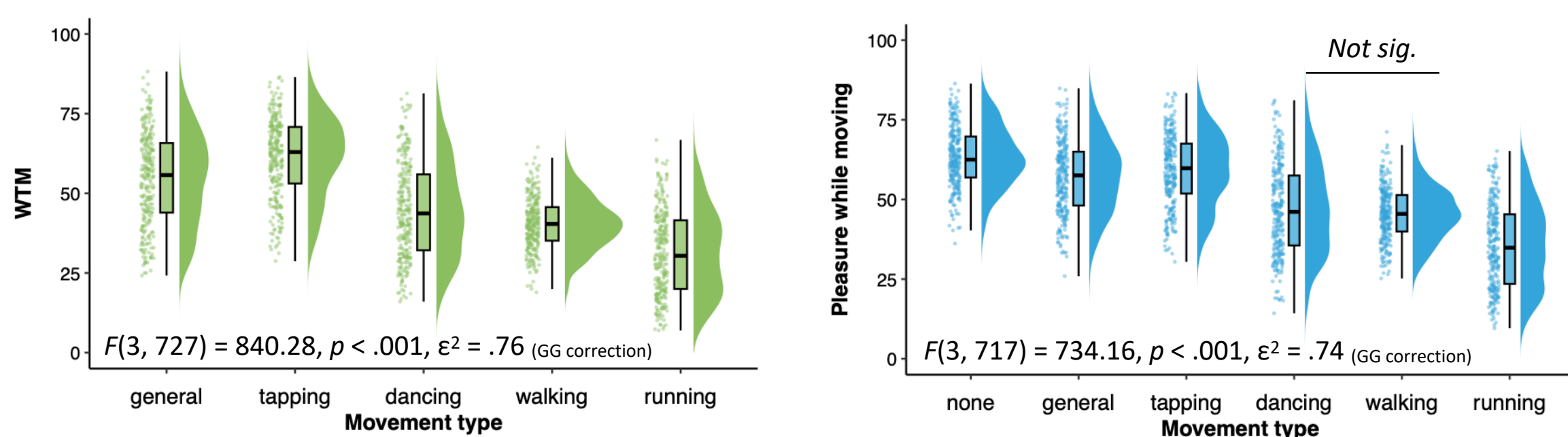
DATA MANAGEMENT AND ANALYSES

- Scores were averaged by songs.
- ANOVA (bonf corr); regressions; linear mixed-effects models.

Results

MOVEMENT TYPE

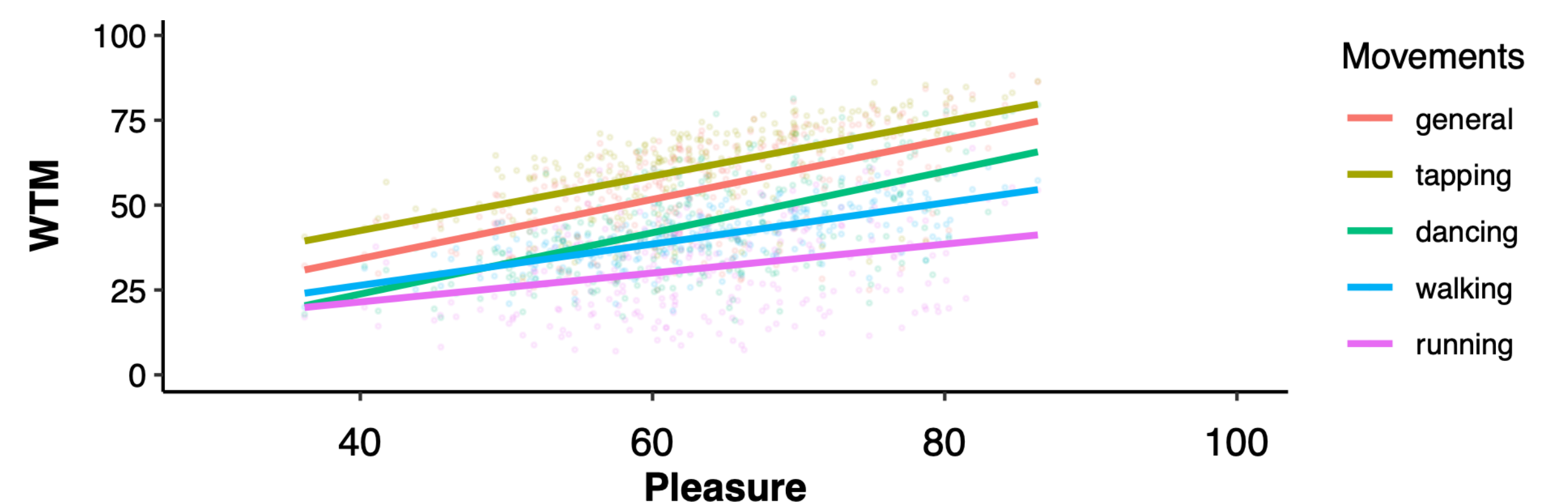
- Pleasure and WTM decreased as a function of the intensity of the motor activities.
- Tapping had the closest pleasure values to "movement in general".



Note. All pairwise comparisons were significant ($p < .001$), except *dancing* and *walking* when comparing pleasure while moving ($p = .59$).

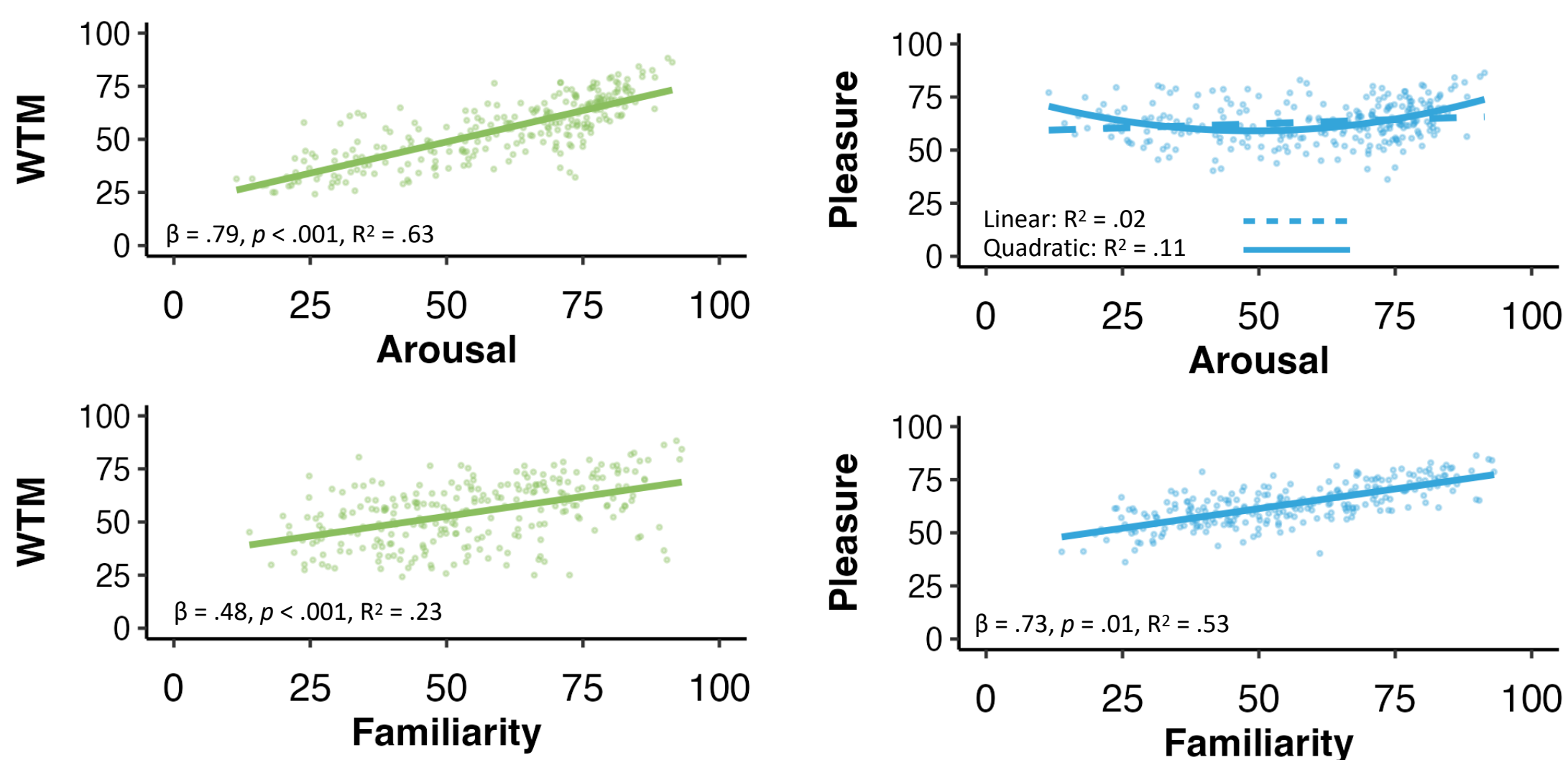
EFFECT OF MOVEMENT TYPE ON THE PLEASURE-WTM RELATION

- Pleasure and WTM was positively correlated ($\beta = .57, p < .001, R^2 = .32$).
- The moderation of movement type was significant ($F(4, 56514) = 309.21, p < .001$).
- Moving in general, tapping and dancing had the highest slopes ($B = 0.71, B = .69$ and $B = .68$), followed by walking ($B = .50$) and running ($B = 0.40$).



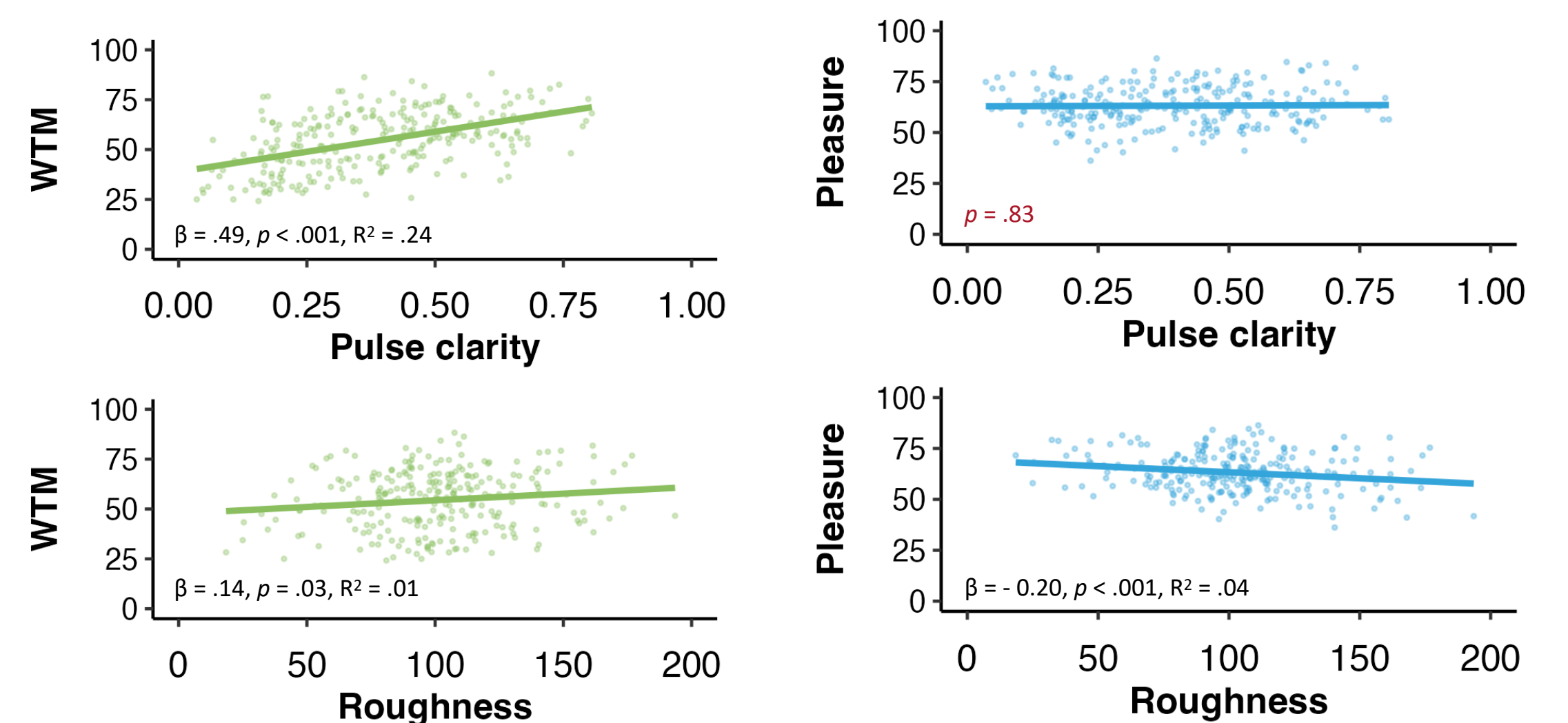
AROUSAL AND FAMILIARITY

- Familiarity was positively correlated with pleasure and WTM.
- There was a linear relation between arousal and WTM, but there was a U-shape relation with pleasure.



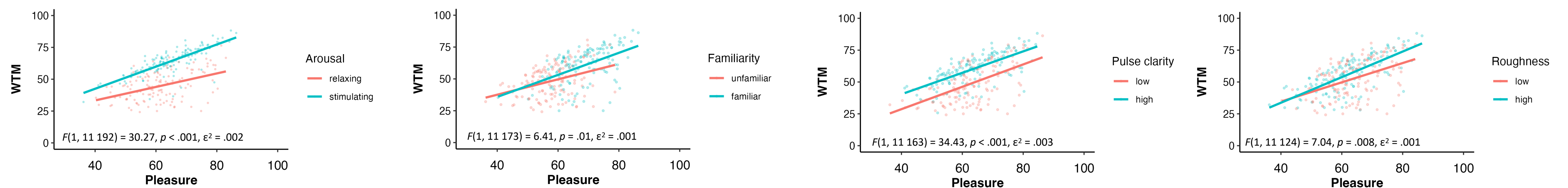
ACOUSTIC PARAMETERS

- Pulse clarity was linked to WTM, but not to pleasure.
- Roughness was positively linked to WTM, and negatively linked to pleasure.



EFFECT OF MUSIC VARIABLES AND ACOUSTIC PARAMETERS ON THE PLEASURE-WTM RELATION

- There were small but significant moderation effects of arousal, familiarity, pulse clarity and roughness on the pleasure-WTM relation.
- The pleasure-WTM relation was stronger when the songs were stimulating, familiar, dissonant and when they had a higher pulse clarity.



Discussion

MOVEMENT TYPE

- The pleasure-WTM relation varies by movement type, indicating the need to consider this aspect in future research.
- As a similar relationship was found with tapping and movement in general, this suggests that tapping may be a good behavioural model to study the neural mechanisms underpinning WTM and embodied pleasure.

MECHANISMS

- Arousal, familiarity and acoustic parameters predicted both WTM and pleasure, which is consistent with the literature⁵.
- The mechanisms underlying music pleasure might be different for relaxing music (e.g. stress reduction).

NEXT STEP

- Adopt a multivariate approach to better understand the relations between the variables explaining the wanting to move to music.

References

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