Tingle-eliciting properties of pleasant, calming and potentially socially relevant audiovisual stimuli: the Autonomous Sensory Meridian Response (ASMR)

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Introduction

Autonomous Sensory Meridian Response (ASMR)

- A phenomenon where sensory inputs, such as whispering or tapping, produce salient positive affective responses including increased relaxation and reduced stress[1,2].
- Often coupled with "tingle" sensations which begin in the head and spread to other parts of the body[1,2].

Little is known about how we process specific sensory stimuli in affective terms. ASMR may provide clues as to how **multisensory information acquires a social and affective character**[3].

Aims

- **Identification** of an ASMR-responsive population
- **Validation** of ASMR stimuli for future use
- **Exploration** of social and non-social features of audiovisual "trigger" stimuli in ASMR

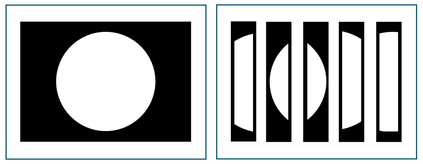
Methods

Self-reported tingle sensations were evaluated during video-rating tasks of ASMR-stimuli.

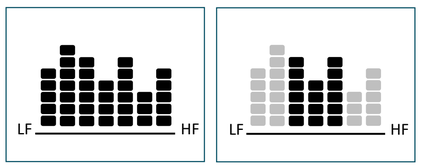
Study I. (Controls n=80, ASMR n=75). ASMR videos with **intact** or **scrambled** content. Stimuli included social and non-social target features (humans or objects) and sound (speech or no speech).

Study II. (Controls n=25, ASMR n=38). ASMR videos with **crisp** or **blunted** sound. Stimuli included social and non-social target features (humans or objects) and attentional focus (actions occurring "inside" the screen, or implied attention directed towards the viewer).

ASMR video conditions



Intact or scrambled stimuli



Crisp or blunted (bandpass filtered) audio

Ratings of tingle elicitation

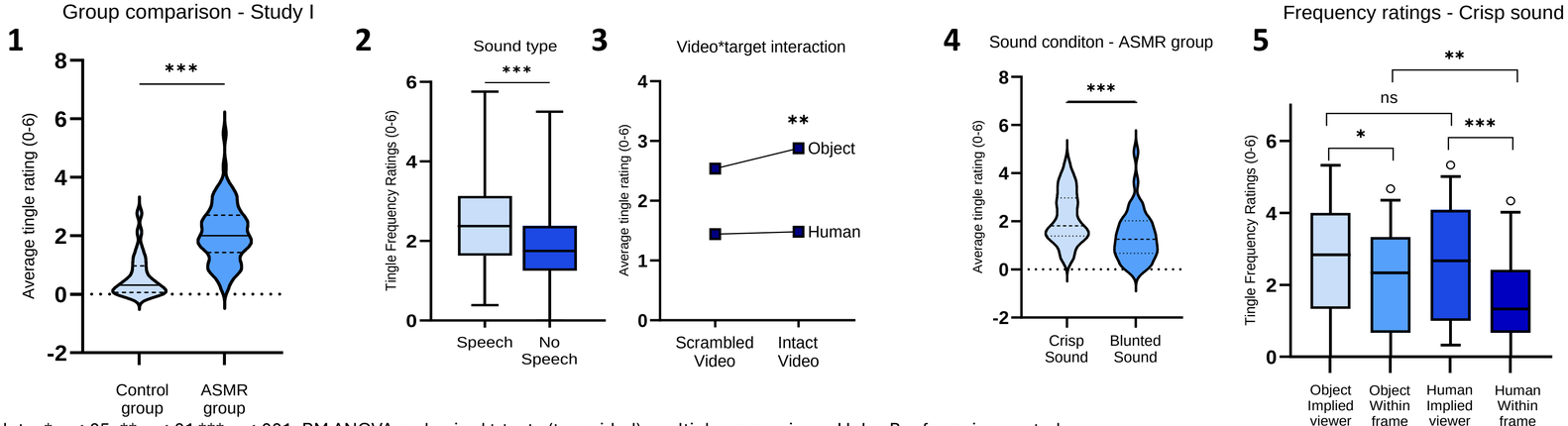
Results

Significant group differences identified a **population of ASMR responders** (Mann Whitney U, study 1: $U = 616.000$, $p = < .001$ (*fig. 1*); study 2: $U = 155.500$, $p = < .001$).

I. Speech and object features most successfully elicit tingles. Significant main effects of sound, with a preference for speech (p<0.001; d=.51) (*fig. 2*), video, and target condition and a significant video*target interaction (*fig. 3*). Interaction is driven by the increased tingle ratings in intact object conditions compared to their scrambled counterparts (p=0.01; d=.33).

II. Crisp sounds increase tingle elicitation *(fig. 4)*. Within categories, implied attention videos preferred over within frame videos in human (p<.001; d=.77) and object (p=.022; d=.39) targets. Object targets preferred over humans in within frame (p=.008; d=.5) but with no effect in implied attention videos (p=.74) (*fig. 5*).

Group comparison - Study I



Note: *=p<.05, **=p<.01,***=p<.001. RM ANOVA and paired t-tests (two-sided), multiple comparisons Holm-Bonferroni corrected

Conclusions

Identification of ASMR population, with high inter-individual variability.

Stimulus validation. Videos reliably elicited tingles in the ASMR groups compared to controls. Intact sound is necessary for tingles, while scrambled stimuli only partially affected tingle elicitation.

Exploration. No clear evidence for a socially-driven function of ASMR.

- Results could speak for the importance of close, **body-proximate** information in ASMR, with sounds that do not carry over distances such as soft speech, directed attention and delicate object manipulation.

Future directions

Mapping physiological and neural mechanisms of ASMR such as heart rate variability, affective processing by facial muscle activity, and investigating a potential role for temporo-prefrontal pathways in the **integration of multisensory and affective information** by using fMRI.

References

[1]Barratt, E. L., & Davis, N. J. (2015), [2]Poerio, G. L., Blakey, E., Hostler, T. J., & Veltri, T. (2018), [3]Villena-Gonzalez M. (2023).

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