



# You get what you need: individual differences in visually-induced amplification of the auditory mismatch negativity

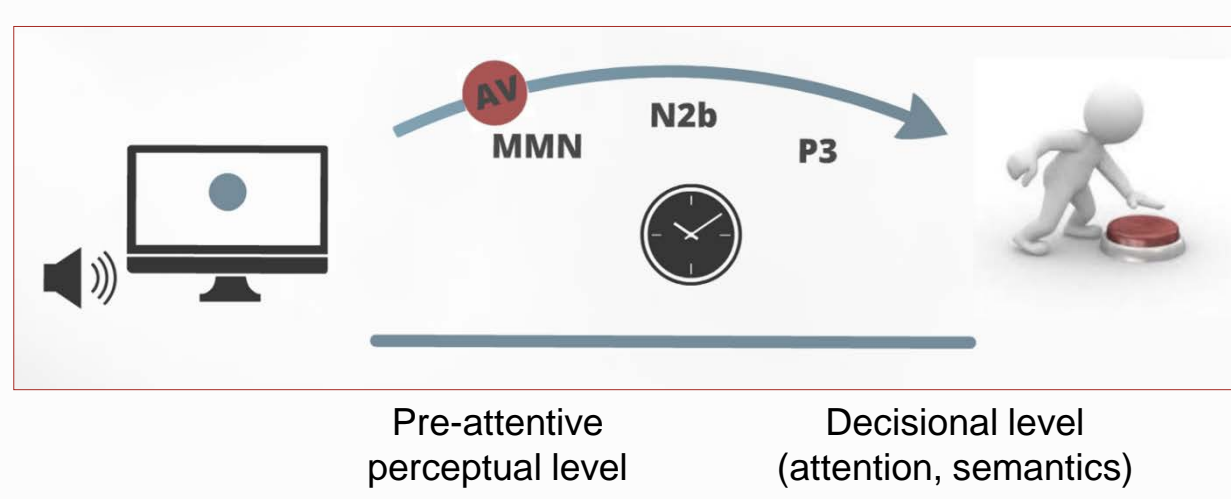
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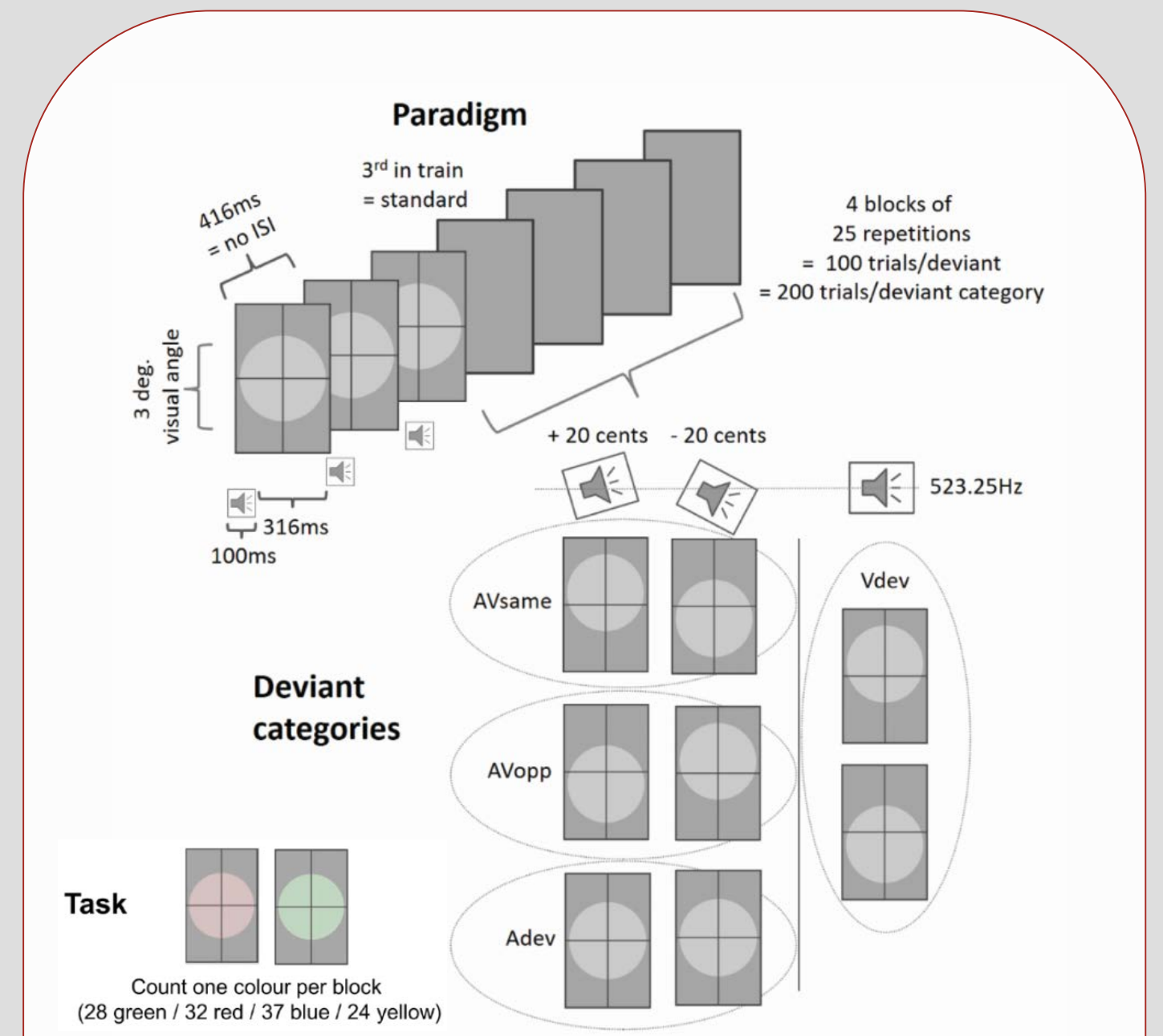
**Multisensory processing** facilitates perception of objects and events surrounding us<sup>1</sup>

This study is a continuation of our recent study showing behavioural evidence of visually induced gains in auditory pitch discrimination<sup>2</sup>

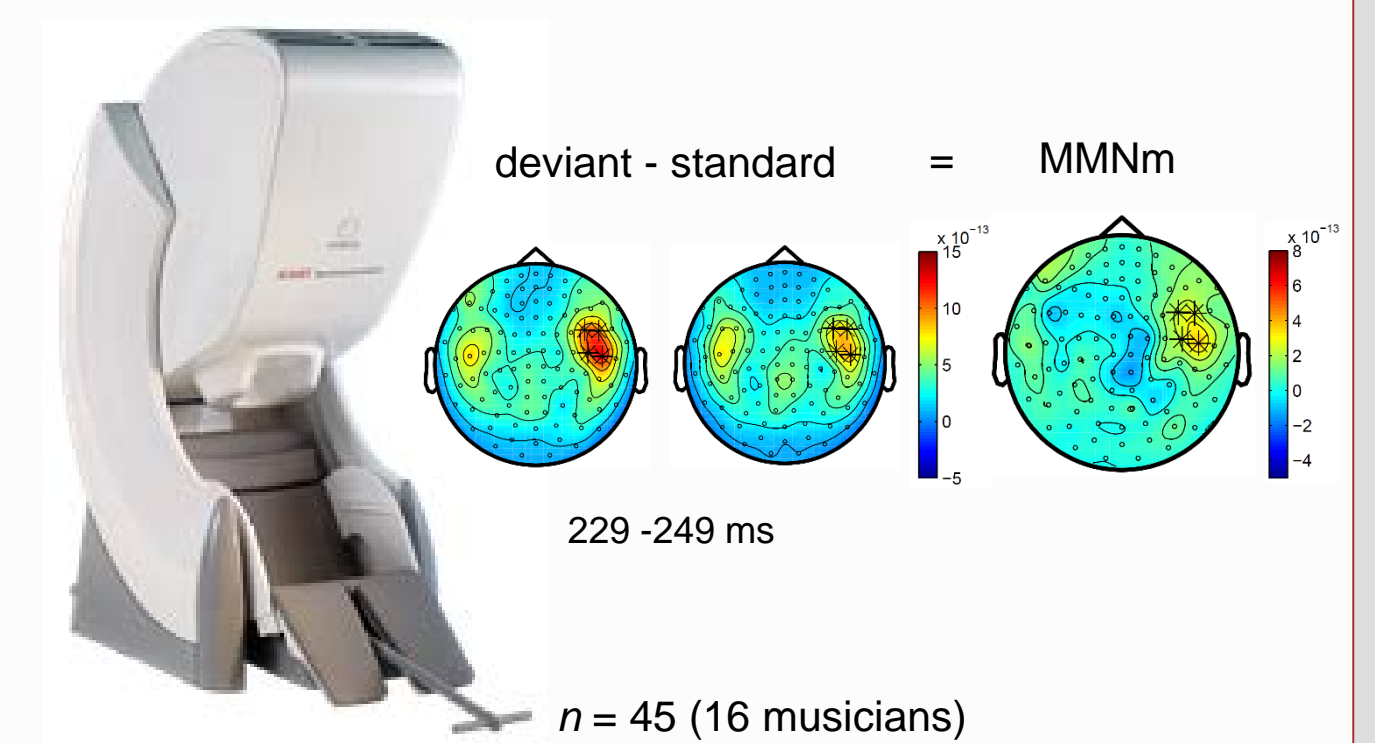
**At which level of processing does this perceptual amplification take place?**



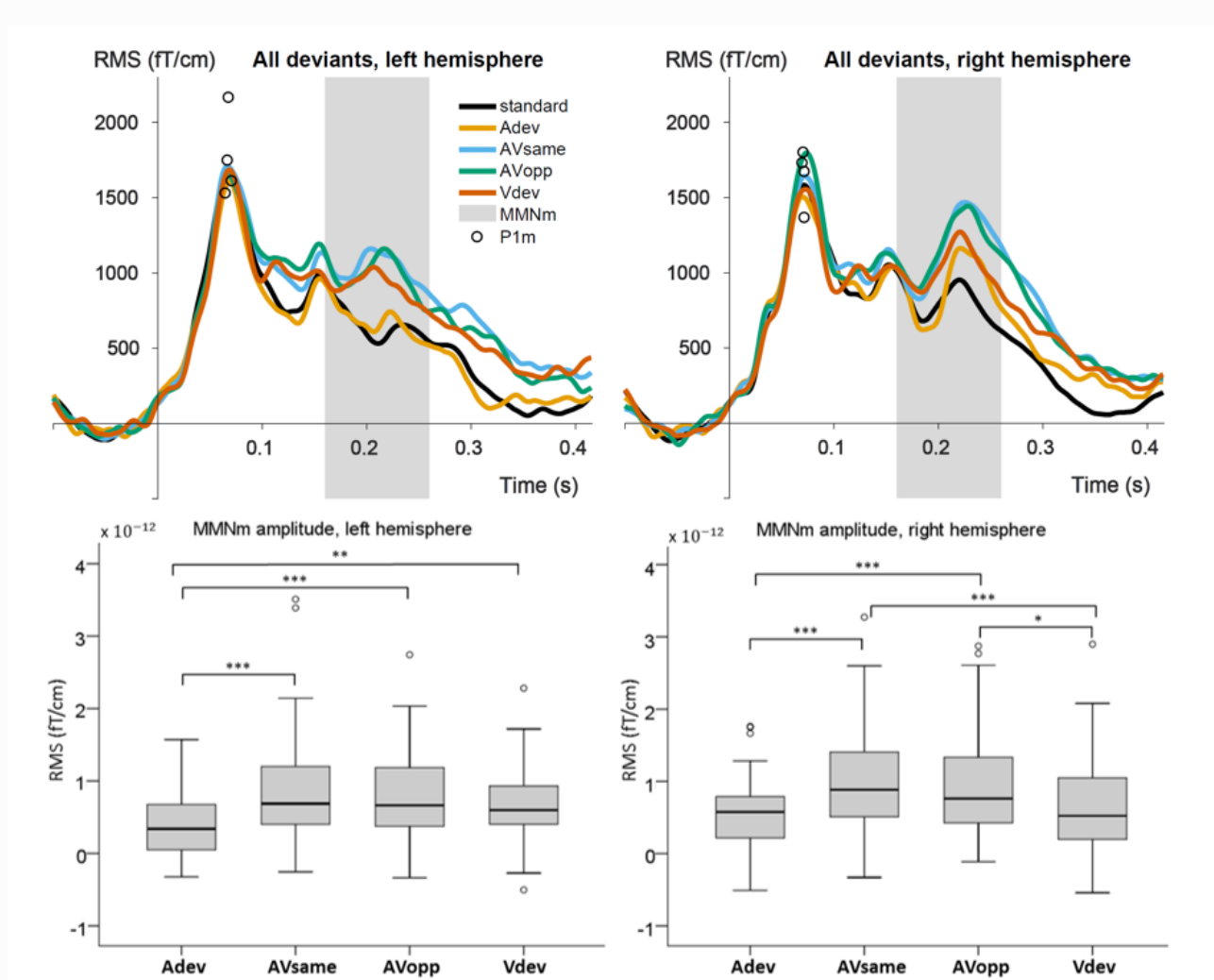
## Visual information boosts auditory sensitivity at an early stage of neural processing ...



**MEG: sensor-space gradiometer analysis**



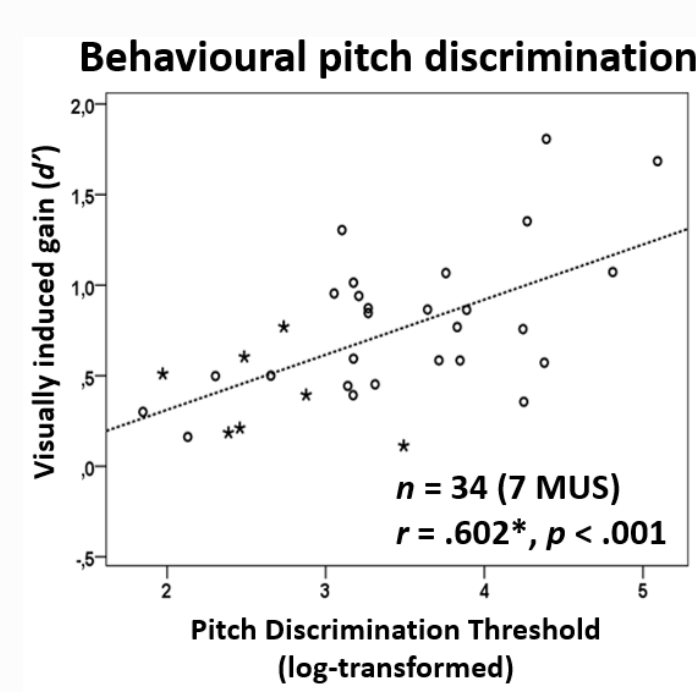
**MMNm amplitude: an index of auditory sensitivity**



According to the multisensory principle of inverse effectiveness<sup>3</sup>,

*the multisensory gain is maximal when responses to the unisensory constituents of the stimuli are weak*

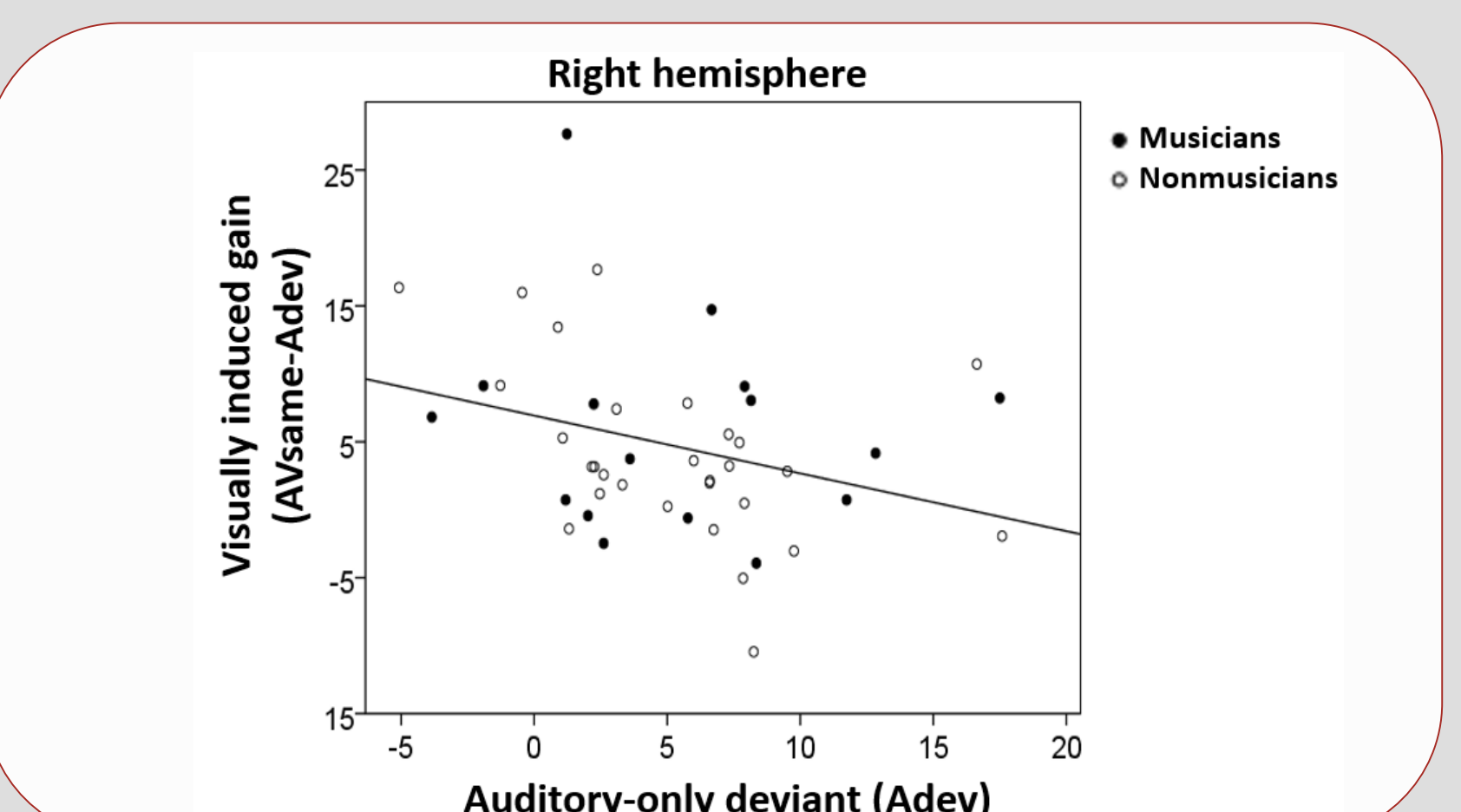
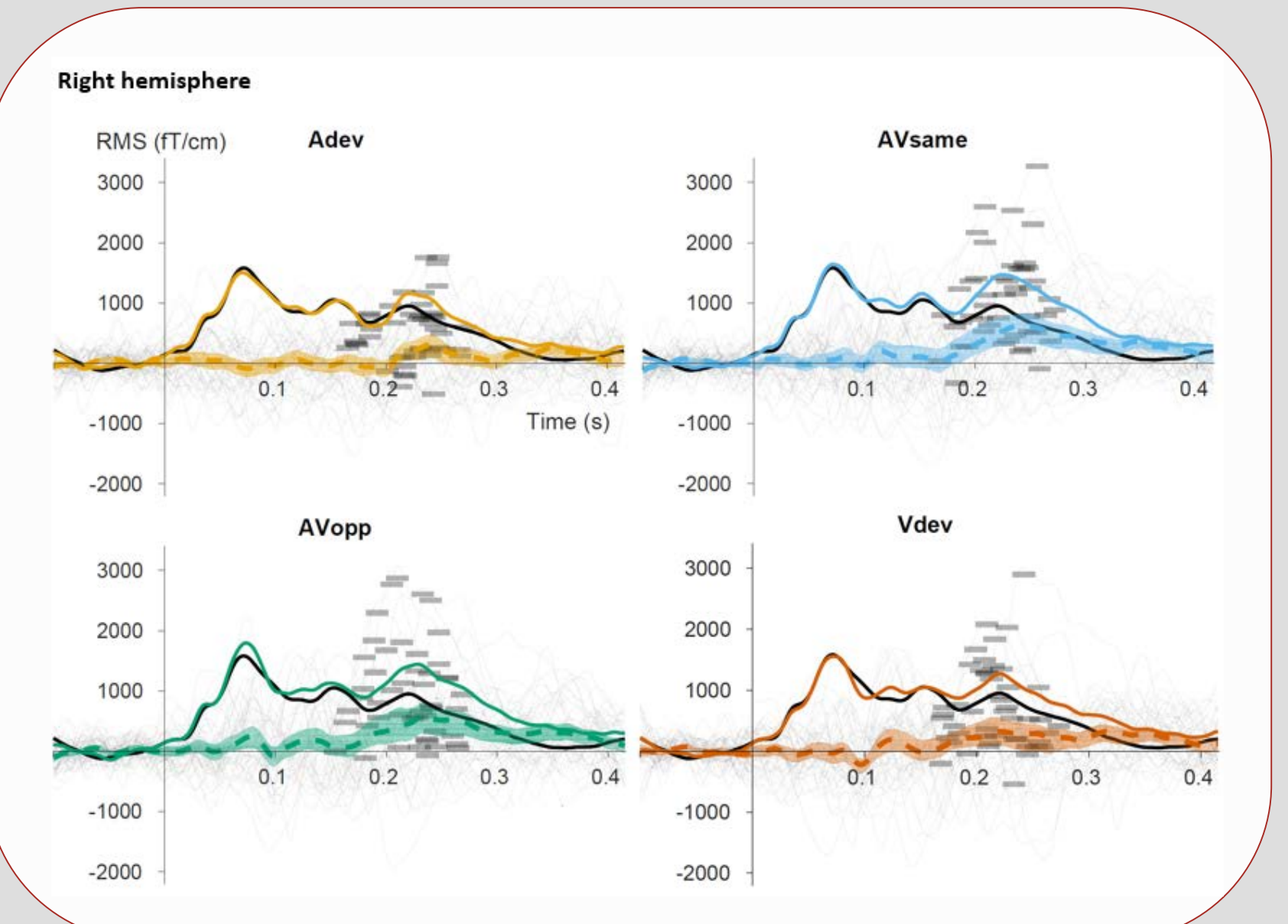
We have reported behavioural data in support of an inter-individual interpretation of this principle<sup>2</sup>



**Is a similar pattern of individual differences in multisensory processing evident at the neural level?**

## ...and is more beneficial to people with lower auditory sensitivity

Preprint at bioRxiv



<sup>1</sup> Calvert, G., Spence, C., & Stein, B. E. (Eds.). (2004). The handbook of multisensory processes. Cambridge: MIT Press.

<sup>2</sup> Møller, C., Højlund, A., Bærentsen, K. B., Hansen, N. C., Skewes, J. C., & Vuust, P. (2018). Visually induced gains in pitch discrimination: Linking audio-visual processing with auditory abilities. *Atten Percept Psychophys*(2018) 80: 999.

<sup>3</sup> Stein, B. E., & Meredith, M. A. (1993). The merging of the senses. Cambridge, Mass: MIT Press.

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