

# Reflecting attention to auditory and visual working memory in older adults with cochlear implants

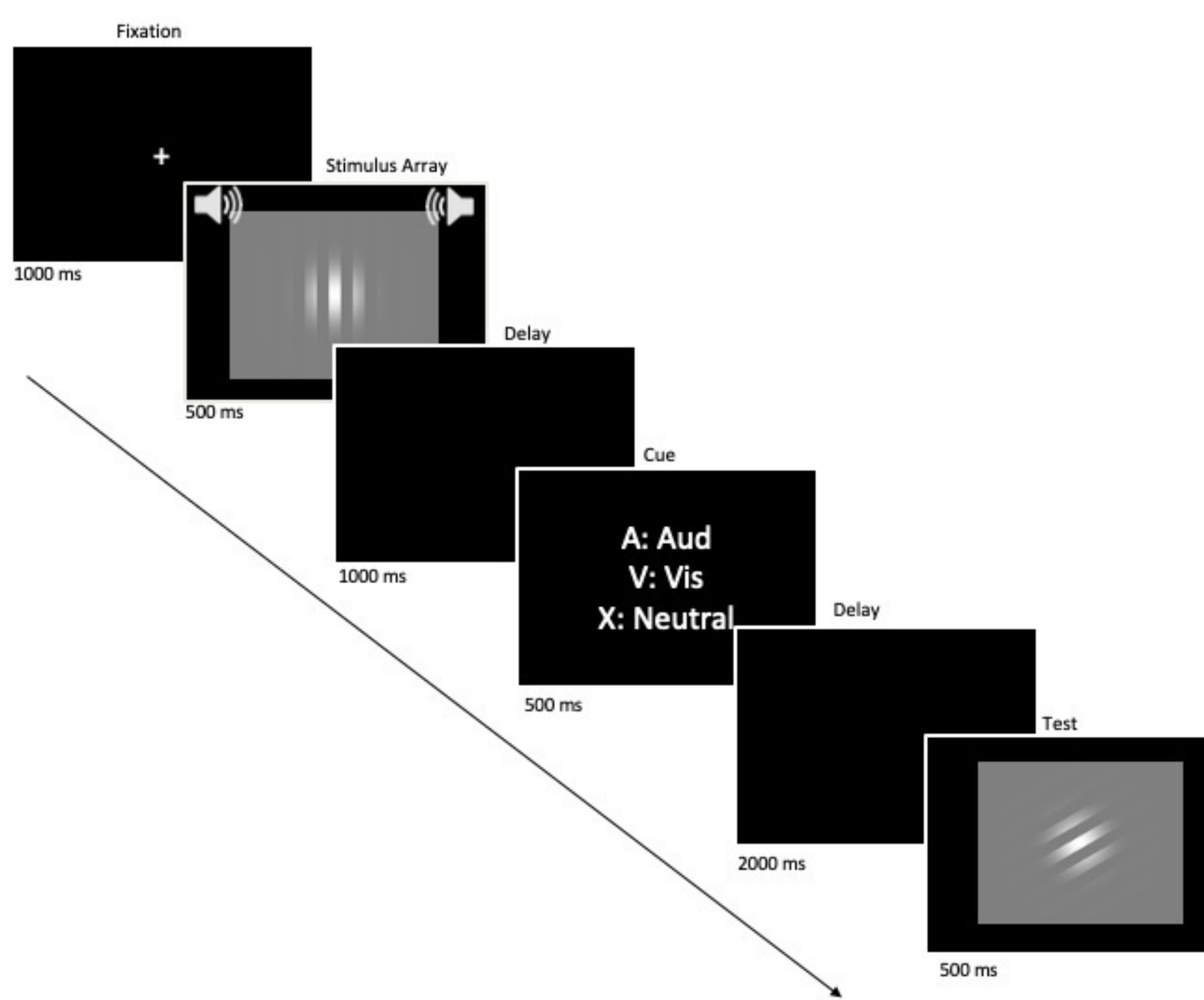
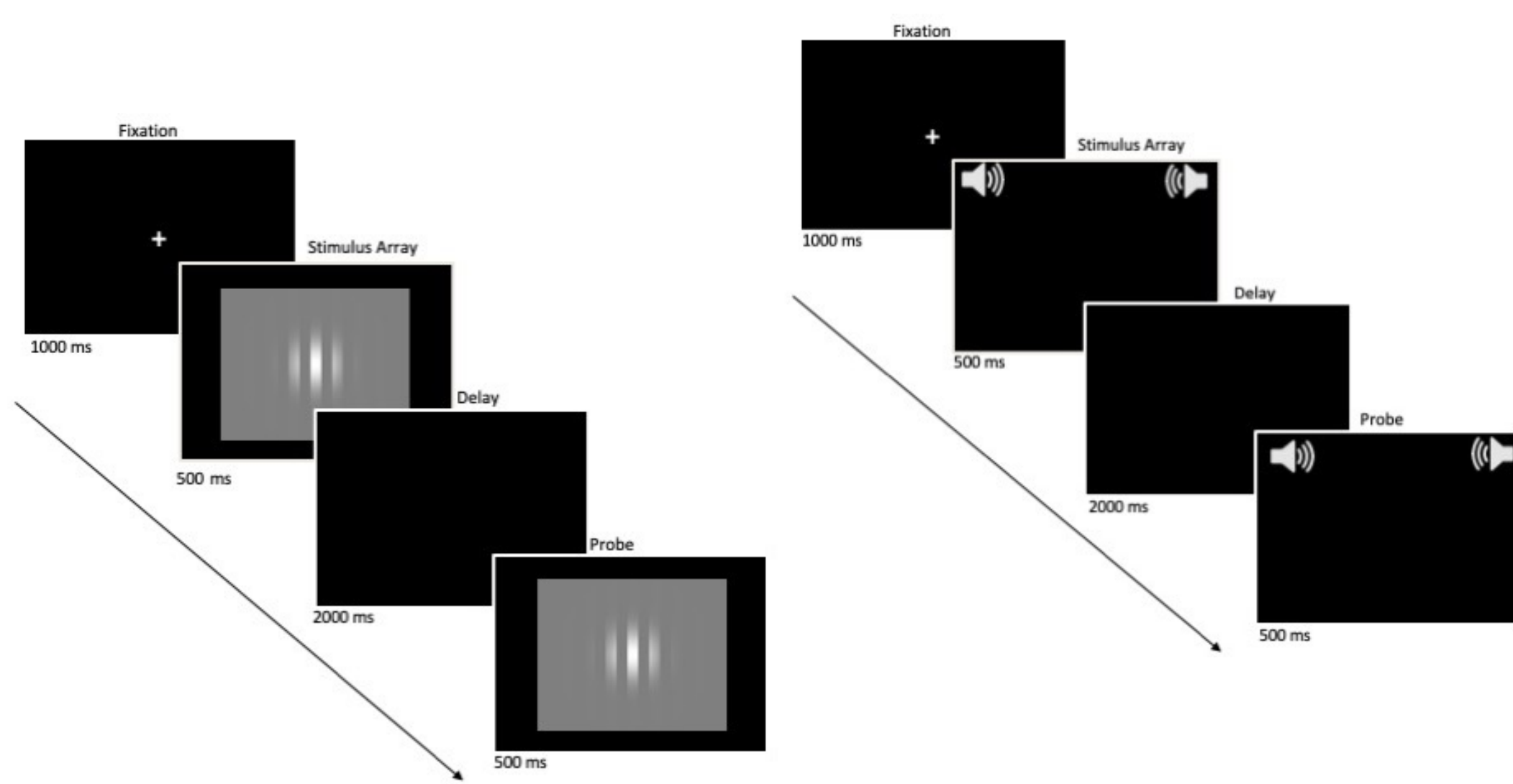
## Introduction

**Sensory Deprivation theory:** Hearing loss may lead to cognitive decline

- Reflective attention: attending to items in memory
- Hearing loss may be associated with a decline in auditory reflective attention<sup>1</sup>
- Cochlear implants (CI) restore hearing but its impact on cognition is not well understood<sup>2</sup>

**Hypothesis:** CI users compared to healthy adults would have greater difficulties with auditory reflective attention. This ability would improve with the number of years of CI use.

## Method



Delayed match-to-sample paradigm with retro-cues to direct attention to memory

## Results

### Result 1

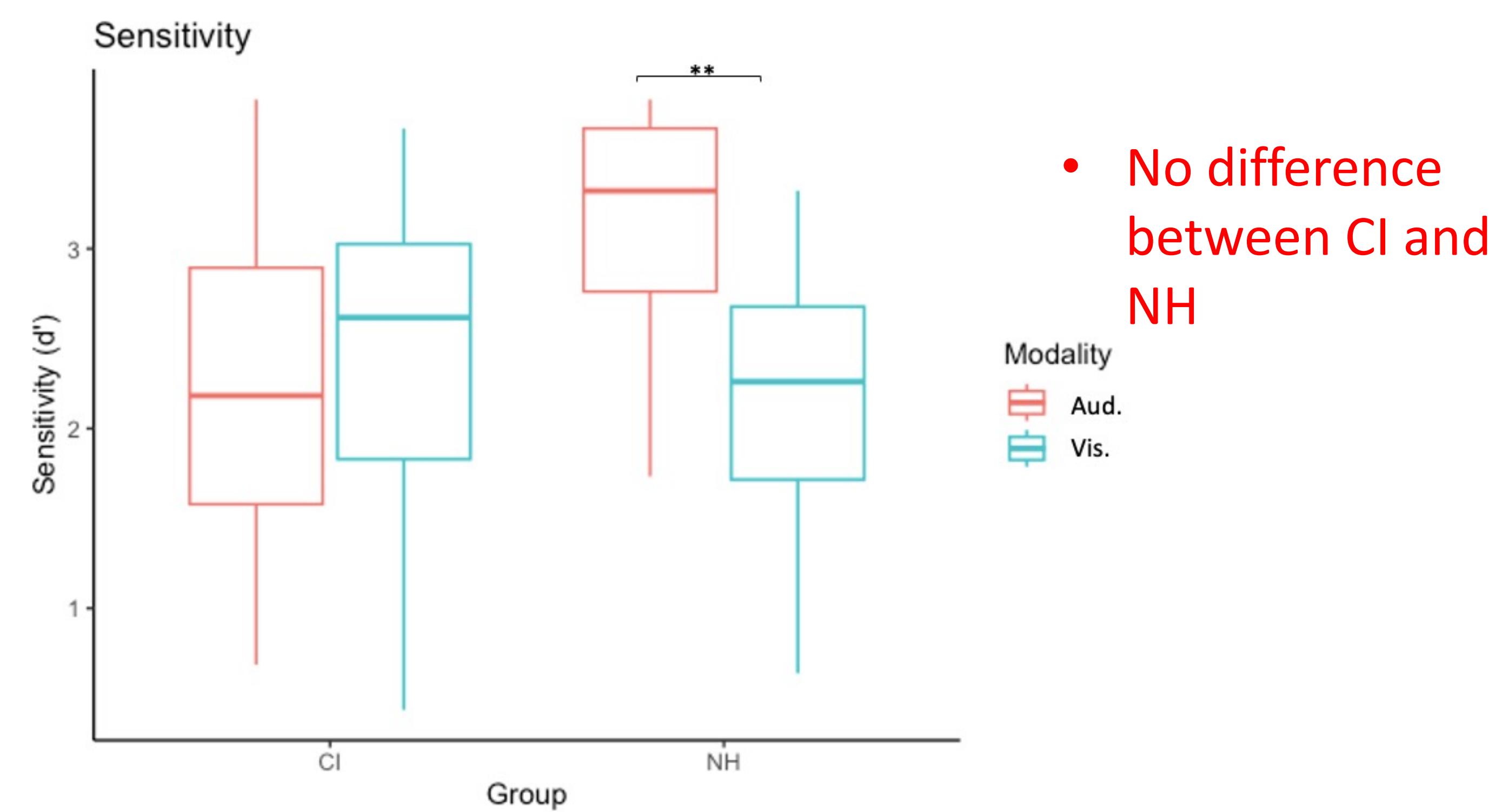


Fig 1. Performance in the audiovisual delayed match-to-sample.

### Result 2

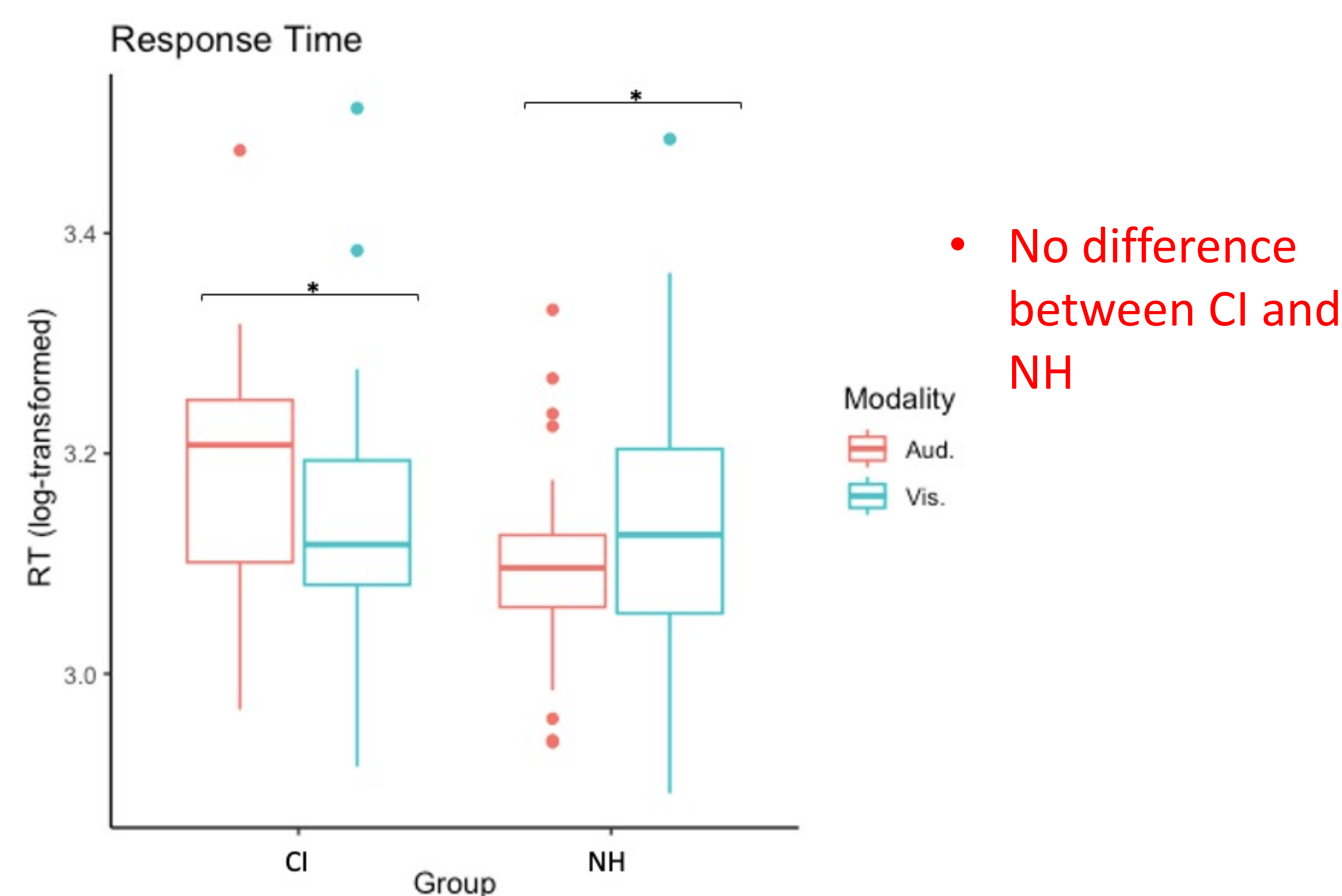


Fig 3. Response time in the audiovisual delayed match-to-sample.

### Result 3

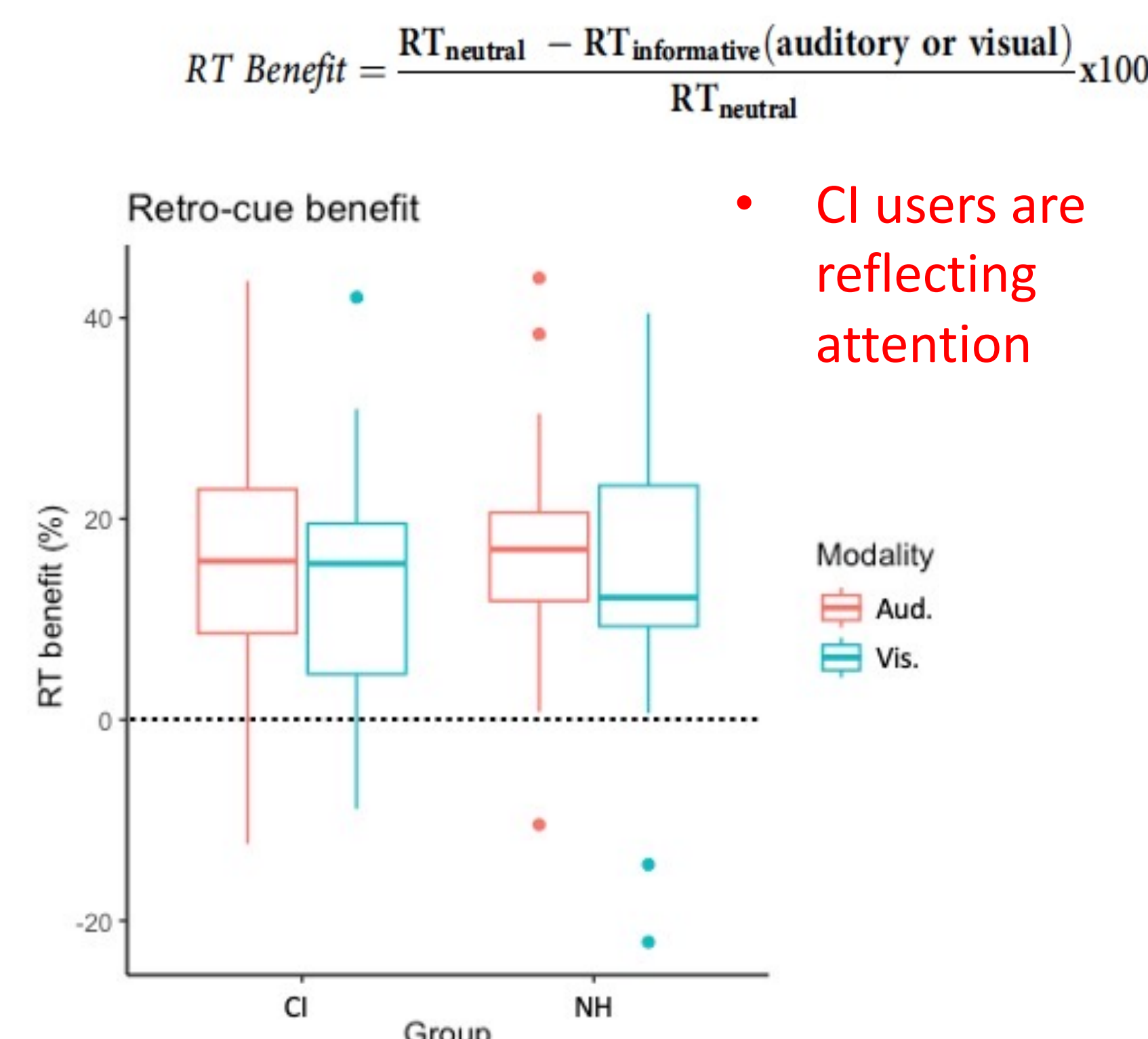


Fig 3. Benefit of an informative retro-cue.

### Result 4

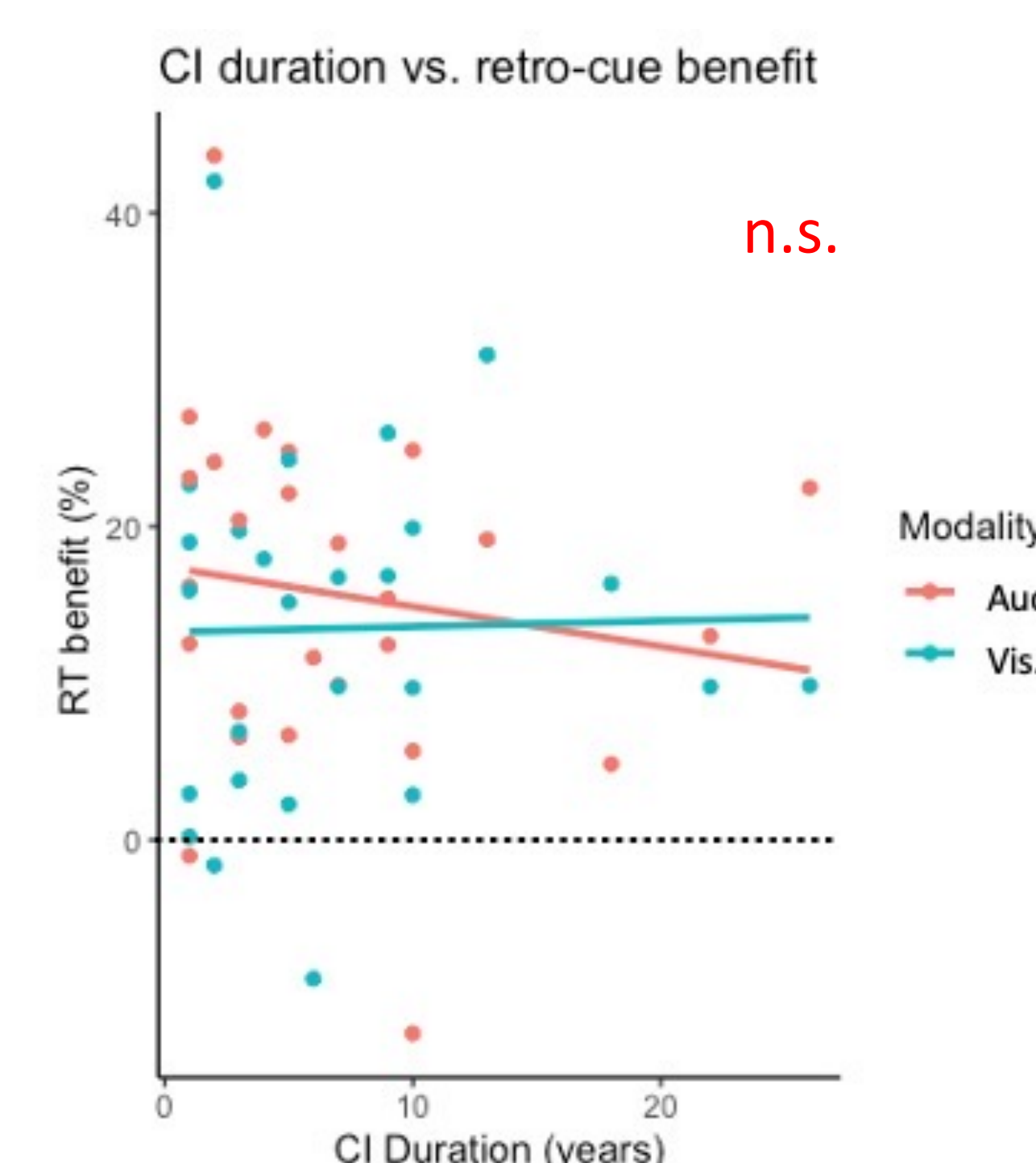


Fig 4. CI duration and retro-cue benefit.

## Discussion

- CI users can reflect attention at the level of normal hearing
- Reflective attention remains stable after one year of CI use
- Future studies should increase set size to explore selection process of reflective attention
- Electrophysiological evidence should also be explored
- Sample of children with CI could also be explored

## References

- <sup>1</sup>Garami, L., Chow, R., Fakuade, A., Swaminathan, S., & Alain, C. (2020). Orienting Attention to Auditory and Visual Short-term Memory: The Roles of Age, Hearing Loss, and Cognitive Status. *Experimental aging research*, 46(1), 22-38.
- <sup>2</sup>Mertens, G., Andries, E., Claes, A. J., Topsakal, V., Van de Heyning, P., Van Rompaey, V., Calvino, M., Sanchez Cuadrado, I., Muñoz, E., Gavilán, J., Bieńkowska, K., Świerniak, W., Skarżyński, P. H., Skarżyński, H., Tapper, L., Killan, C., Ridgwell, J., McGowan, J., Raine, C., ... Lassaletta, L. (2020). Cognitive Improvement After Cochlear Implantation in Older Adults With Severe or Profound Hearing Impairment: A Prospective, Longitudinal, Controlled, Multicenter Study. *Ear and Hearing*.

## Acknowledgments



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