

Impact of Emotional Responses to Non-Speech Sounds on Emotional Communication in Hearing, Pleasantness of Everyday Listening Situations, and Mental Well-Being

→ INTRODUCTION

- Hearing loss affects more than speech - it impacts emotional well-being, relationships, and social participation.
- Social withdrawal and loneliness are common outcomes, driven by communication challenges and emotional strain.
- Both social withdrawal and loneliness are recognized as significant threats to physical and mental health.
- Emotional responses to sound have been linked to loneliness (Picou & Buono, 2018) and may play a key role in the broader well-being effects of hearing loss.

→ STUDY AIMS

- Compare well-being outcomes - including affect in daily life, emotional communication in hearing, perceived pleasantness of everyday listening situations, and mental well-being - across three hearing groups:
 - Self-reported normal hearing
 - Self-reported normal hearing, but some situational hearing difficulties
 - Hearing aid users
- Investigate whether emotional responses to sound (valence and arousal) can predict the collected well-being outcomes

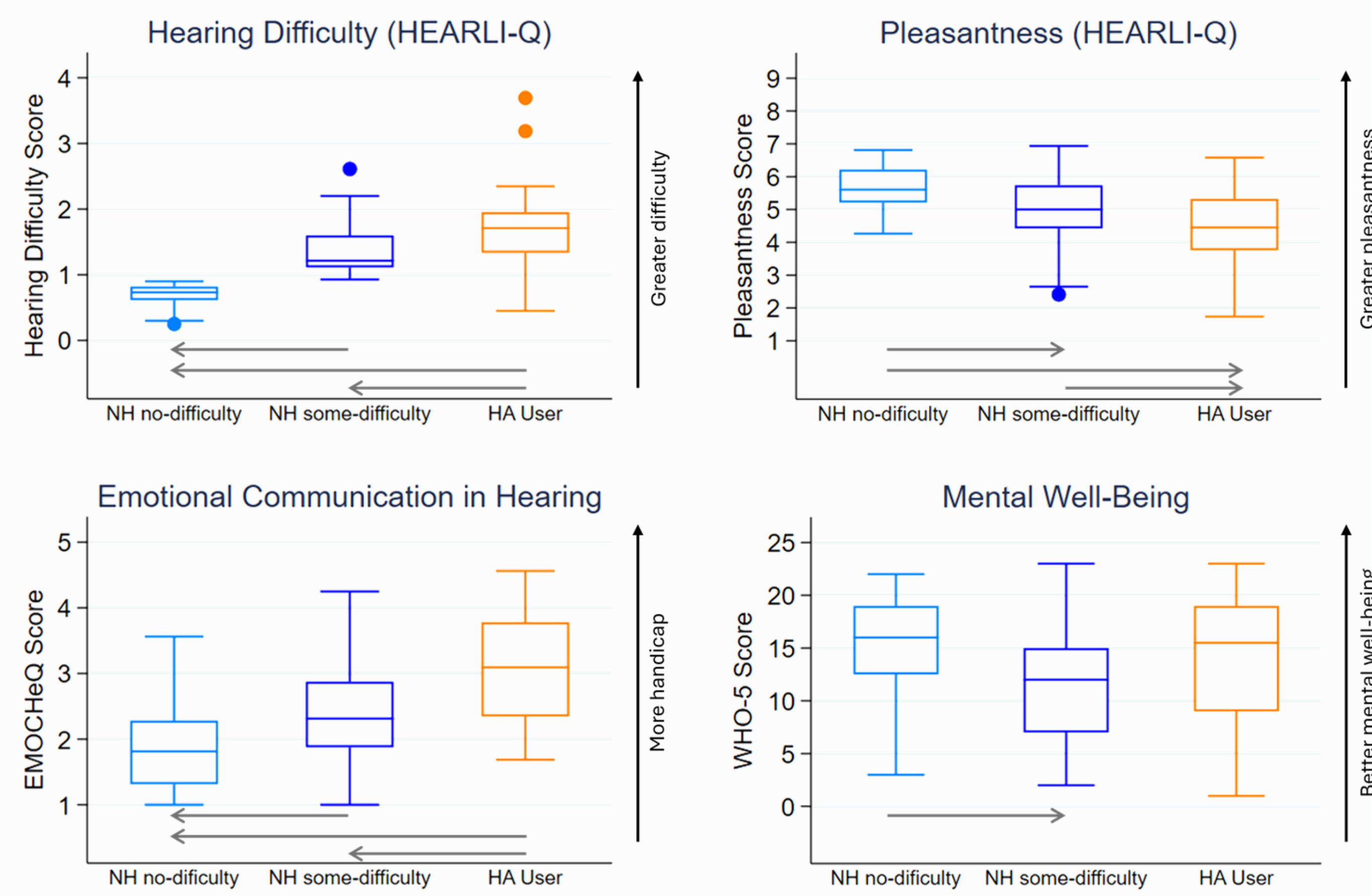
→ METHOD

- 96 participants with self-reported normal hearing (age: 54 ± 9 years, 56 women) and 40 hearing aid users (age: 62 ± 8 years, 20 women) completed the study.
- The experiment was created with PsychoPy (Peirce et al., 2019), deployed via Pavlovia (<https://pavlovia.org/>), and conducted online via the Prolific platform (www.prolific.com).
- Participants rated 120 environmental sounds from the Marcell database on valence and arousal using a 1–9 scale (unpleasant/calm to pleasant/arousing).
- Participants also completed questionnaires on affect in daily life (PANAS), emotional communication in hearing (EMOCHeQ), hearing related lifestyle (HEARLI-Q), and mental well-being (WHO-5 mental well-being index).

→ REFERENCES

- Picou, E. M. & Buono, G. H. (2018). Emotional Responses to Pleasant Sounds Are Related to Social Disconnectedness and Loneliness Independent of Hearing Loss. *Trends in Hearing*.
- Peirce, J., Gray, J. R., Simpson, S., MacAskill, M., Höchenberger, R., Sogo, H., Kastman, E., & Lindeløv, J. K. (2019). PsychoPy2: Experiments in behavior made easy. *Behavior Research Methods*.

RESULTS: GROUP COMPARISONS

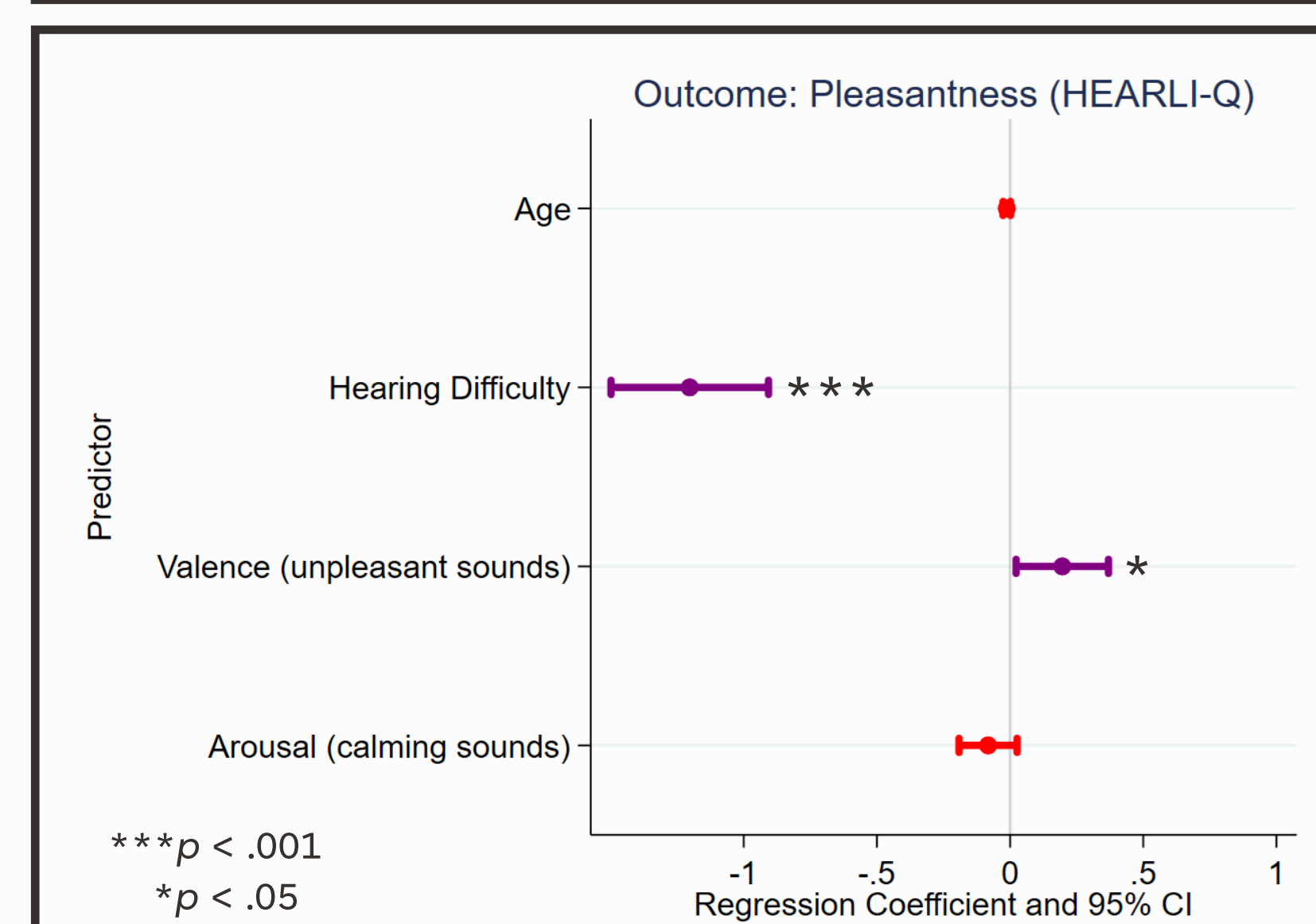
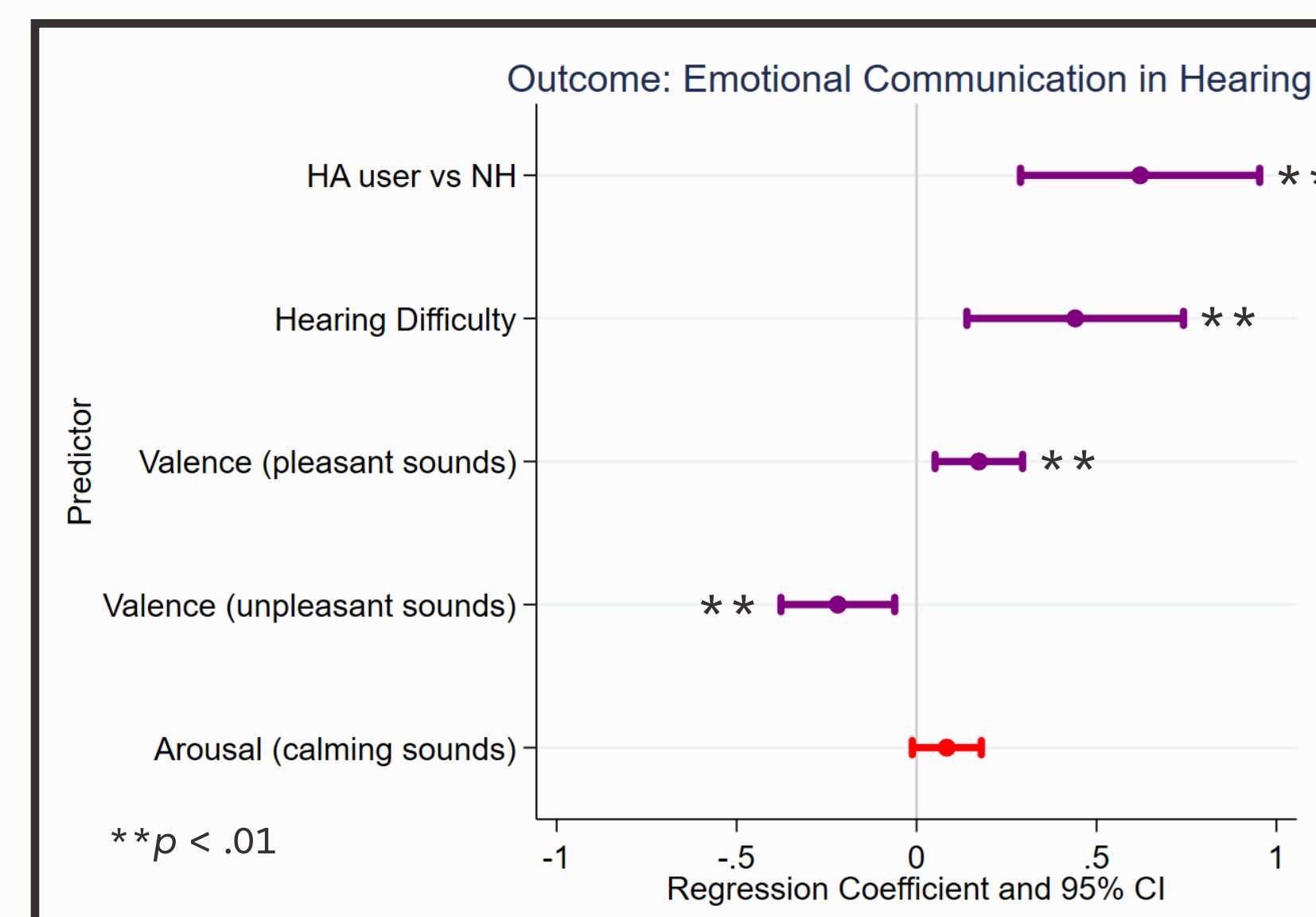


Arrows indicate significant differences between groups. The arrowhead points to the group with a lower score compared to the group from which the arrow originates.

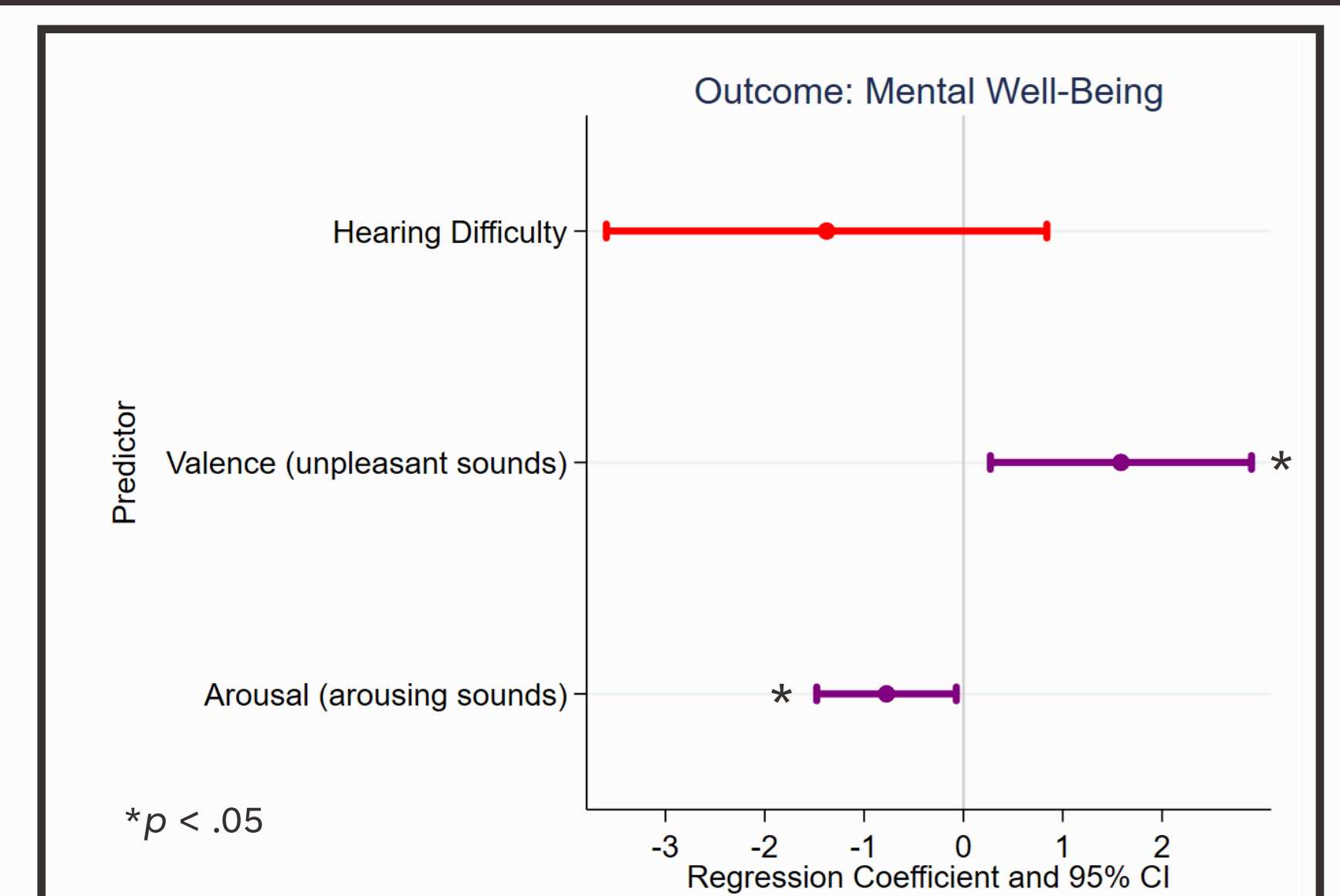
Abbreviations: HEARLI-Q – hearing-related lifestyle questionnaire; EMOCHeQ – emotional communication in hearing questionnaire; WHO-5 – World Health Organization well-being index; NH – normal hearing; HA – hearing aid.

- The normal hearing group was divided based on the HEARLI-Q **hearing difficulty** scores:
 - NH no-difficulty: Participants with a score < 0.9 ($N = 36$; age = 54 ± 9 years; 26 women)
 - NH some-difficulty: Participants with a score ≥ 0.9 ($N = 54$; mean age = 53 ± 9 years; 27 women)
- No significant differences were found between the groups in valence or arousal ratings.
- No significant differences were observed in positive or negative affect in everyday life across groups.
- Participants in the NH some-difficulty and HA user groups reported greater challenges in emotional communication related to hearing and perceived everyday listening situations as less pleasant.
- Participants in the NH some-difficulty group indicated poorer mental well-being compared to the NH no-difficulty group.
- Compared to the NH some-difficulty group, HA users showed even greater difficulty in emotional communication and rated everyday listening situations as less pleasant.

RESULTS: EMOTIONAL RESPONSES TO SOUND AS PREDICTORS



- Three regression models tested whether emotional responses to sound predicted well-being outcomes, using a top-down selection approach with AIC/BIC optimization to refine predictors.
- Higher sensitivity to both positive and negative emotional sounds may lead to greater emotional communication difficulties.
- A more positive perception of typically negative sounds was associated with a more pleasant experience in everyday listening situations.
- Individuals who respond more positively to negative auditory stimuli and less intensely to arousing sounds may report better overall mental well-being.



→ CONCLUSIONS

- Individuals who are more emotionally reactive to sound may experience challenges in decoding or expressing emotional cues in auditory contexts.
- Those who can reframe or diminish the impact of unpleasant sounds tend to enjoy everyday listening experiences more and may demonstrate stronger emotional resilience, contributing to improved psychological well-being.
- Altogether, our findings highlight the potential value of incorporating emotional response training or sound-based emotional regulation strategies into hearing rehabilitation programs.
- Interventions that promote positive engagement with environmental sounds - such as sound therapy, auditory mindfulness, or techniques adapted from misophonia treatment - may enhance emotional communication, enjoyment of everyday listening situations, and mental well-being, particularly for individuals with hearing difficulties.