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LETTER TO THE EDITOR

Letter to Editor: "Neuroanatomical changes associated with age-related hearing loss and listening effort"

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To the Editor:

We read with interest the article that was recently published by Rosemann and Thiel (2020) in the Brain Structure and Function in September 2020. The purpose of this study was to investigate the neuroanatomical correlates of age-related hearing loss. A total of 71 elders were enrolled and divided into two groups (hard-of-hearing group, $n = 38$; normal-hearing group, $n = 33$) according to high-frequency hearing loss. The authors illuminated the correlation of self-rated listening effort and structural brain changes using an 11-point listening effort questionnaire and functional MRI, respectively (Rosemann and Thiel 2020).

We congratulate the authors for their valuable work, but we would like to comment some issues. First, the authors investigated significantly lower grey matter volume in the middle frontal cortex in age-related hearing loss participants comparing to normal hearing elders, but we do not agree completely, because the study has a bias in the dividing group of participants, it is complicated to exclude other risk factors that may also lead to the increase of thresholds at high frequencies. Second, many other risk factors associated with hearing loss, such as noise exposure, should be excluded in this study, because noise exposure can also lead to high-frequency hearing loss and the interaction of the effects of noise and aging is not fully understood (Yamasoba et al. 2013). Second, linear regression analysis investigating the effect of self-rated listening effort on grey matter volume and cortical thickness was performed in this study (Fig. 2b, Fig. 3), linear regression analysis demands that the dependent variable is continuous (Hess and Hess 2017), but the dependent variable in this study was listening effort rating (0–7 grade), which is a ranked data.

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