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RESPONSE TO LETTER

The Hearing Test App for Android Devices: Distinctive Features of Pure-Tone Audiometry Performed on Mobile Devices [Response to Letter]

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Dear editor

The objective of this response is to gratefully acknowledge the significant points raised in the Letter to the Editor by T. Triwiyanto (hereafter referred to as *the Letter*) regarding the article "The Hearing Test App for Android Devices: Distinctive Features of Pure-Tone Audiometry Performed on Mobile Devices" and to further emphasize these points to provide additional insight for the readers of the article.[1,2] The following response addresses calibration methods, the impact of ambient noise on test results, and the importance of user education when performing the test and interpreting results.

The article presents several possible calibration techniques of mobile devices for the purpose of mobile audiometry and discusses their advantages and disadvantages. For instance, calibration in a laboratory setting (eg using a head simulator) is the most accurate but very challenging to perform at home, while calibration by a normal hearing person is very easy to perform but potentially biased. *The Letter* suggests that future research should explore more advanced calibration techniques that can adapt to different devices and headphones used by consumers. An optimal solution would be to provide users with an out-of-the-box app that does not require calibration. Currently, this is only the case for popular device-headphone sets, for which predefined calibration coefficients are calculated based on calibrations performed by other users of the same model. In the future, the standardization of the audio output of mobile devices via Bluetooth headphones, if introduced by manufacturers, may also provide a solution to this problem.

Ambient noise represents a significant challenge in the context of hearing testing conducted outside the sound booth. The article presents aspects of mobile audiometry in terms of its ability to control the impact of noise on test results. This includes noise monitoring with a built-in microphone, the use of headphones with Active Noise Cancelation, and the proper interpretation of test results with regard to ambient noise. Despite the aforementioned solutions, it is still not possible to perform mobile audiometry in noisy environments. As *the Letter* suggests, the further development of algorithms that can more effectively compensate for ambient noise will improve the accuracy of the test.

Educating users on the proper use of mobile hearing test applications and providing information on how to interpret test results was one of the main goals of this article. The conclusion of the article provides synthetic guidelines on these aspects that should be useful for professional audiologists as well as for users without audiological training. Improving user education is key to reducing misdiagnosis. This will not only ensure that mobile audiometry is a reliable tool for professional audiologists, as stated in *the Letter*, but will also enable mobile audiometry to serve as a reliable method of hearing screening and monitoring for users without audiological training.

Disclosure

The author declares no conflicts of interest in this communication.

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