

Response to Letter to the Editor



Response to Letter to the Editor Regarding “Development and Evaluation of the Persian Version of the Multiple Auditory Processing Assessment”

Ensieh Ebadi[✉], Farnoush Jarollahi^{*✉}

Department of Audiology, School of Rehabilitation Sciences, Iran University of Medical Sciences, Tehran, Iran



Citation: Ebadi E, Jarollahi F. Response to Letter to the Editor Regarding “Development and Evaluation of the Persian Version of the Multiple Auditory Processing Assessment”. *Aud Vestib Res.* 2025;34(1):1-2.

<https://doi.org/10.18502/avr.v34i1.17263>

Article info:

Received: 21 Nov 2024

Accepted: 01 Dec 2024

* Corresponding Author:

Department of Audiology, School of
Rehabilitation Sciences, Iran University
of Medical Sciences, Tehran, Iran.
jarollahi.f@iums.ac.ir

We appreciate the interest and the comments by Dr. Mohammadreza Parhizgar about our article titled “Development and evaluation of the Persian version of the multiple auditory processing assessment” We think that these comments and responses will be a guide for future studies.

In 2000, Domitz and Schow, administered a battery of Auditory Processing Disorder (APD) tests to school-aged children. They named their test battery the Multiple Auditory Processing Assessment (MAPA) [1]. The MAPA protocol consists of five subtests within three domains of auditory processing, including monaural–low redundancy; Monaural Separation Closure (MSC), temporal Auditory Pattern Temporal Ordering (APTO) and binaural–dichotic speech; Binaural Integration/Binaural Separation (BIBS). The tests include the monaural Selective Auditory Attention Test (mSAAT), the Tap test, the Pitch Pattern Test (PPT), the Dichotic Digits Test (DDT) and the Competing Sentences Test (CST) [1]. In mSAAT, it requires the subject to listen for a word selected from the monosyllabic word list that is embedded in competing background noise of high-interest speech (e.g. a story). In the Tap test, three series of taps are presented to the listener. After each series the listener must indicate the number of taps heard. The MAPA pitch pattern test, introduces high and low pitches binaurally in a four-tone series, and the subject identifies the pattern by verbalizing, (e.g. high-high-low-high). The MAPA dichotic digits employed number triplets presented dichotically, the subject repeats items from the right ear first, then from the left. In the MAPA competing sentences test, two sentences are presented dichotically, and the subject repeats both sentences.

In 2016 in Iran, no studies had been done on the prevalence of central APD in school children. Considering high prevalence and effects of some skills including communication and academic and social skill, identifying children



at the risk for auditory processing disorders should be a priority, as it enables early intervention, treatment and rehabilitation and reduces their learning difficulties in educational centers [2, 3]. Therefore, in a study, we tend to create the Persian version of MAPA which had been introduced as a new test battery for central auditory processing assessment, and to evaluate the Persian version of MAPA for 9–12-year-old school children [4].

We used the Persian version of the mSAAT which have been developed and evaluated in Iran University of Medical Sciences [5]. We also developed the three pair DDT and the quadruple PPT based on Beta I II version of the MAPA [6].

The MAPA Pitch Patterns Test is derived from Pinheiro [7]. This test introduces high and low pitches binaurally in a four-tone series, and the subject identifies the pattern by verbalizing (e.g. high-high-low-high). The four-tone sequence was used instead of Pinheiro's original three-tone sequence because of a ceiling effect identified by Neijenhuis et al. [6]. A four-tone pattern avoids the ceiling effect observed using the three-tone pattern and results in the same factor structure as the three-tone pattern test. Nonetheless, the additional tone is likely to exert greater demands on memory and reversals are scored correctly to avoid a floor effect. Pitch Patterns Test is a pattern or temporal ordering task to the APTO domain and can be performed monaurally and binaurally with diotic presentation and even in free field. In some researches, it has been performed binaurally [6, 8] There are several modes of responses: verbal (repeat the pattern), humming the pattern, or pointing to high and low visual displays. It is important that we make sure that is understood the task [9].

The MAPA DDT employed number triplets presented dichotically, similar to that of Neijenhuis et al. (2000). The subject repeats items from the right ear first, then from the left, following Moncrieff and Musiek (2002) [10]. Again, it is important to note that while loading on the same factor suggests that double-digit and triplet pairs both provide a measure of similar processes the triplet MAPA double-digit (DD) probably involves memory to a greater extent than the DD. The Persian

version of MAPA DD was developed and performed in the same way.

The MAPA has been modified several times. The Persian version of the MAPA that has been introduced in this article [4], is the first Persian version in Iran. Therefore, it can be modified too.

References

1. Domitz DM, Schow RL. A new CAPD battery--multiple auditory processing assessment: factor analysis and comparisons with SCAN. *Am J Audiol.* 2000;9(2):101-11. [DOI:10.1044/1059-0889(2000/012)]
2. Rocha-Muniz CN, Zachi EC, Teixeira RA, Ventura DF, Befi-Lopes DM, Schochat E. Association between language development and auditory processing disorders. *Braz J Otorhinolaryngol.* 2014;80(3):231-6. [DOI:10.1016/j.bjorl.2014.01.002]
3. Rosen S, Cohen M, Vanniasegaram I. Auditory and cognitive abilities of children suspected of auditory processing disorder (APD). *Int J Pediatr Otorhinolaryngol.* 2010;74(6):594-600. [DOI:10.1016/j.ijporl.2010.02.021]
4. Ebadi E, Jarollahi F, Tahaei AA, Ahadi M, Hosseini AF. Development and evaluation of the Persian version of the multiple auditory processing assessment. *Aud Vestib Res.* 2016;25(2):75-81.
5. Aarabi S, Jarollahi F, Jalaie S. Development and determination of the validity of Persian version of monaural selective auditory attention test in learning disabled children. *Aud Vestib Res.* 2016;25(1):49-54.
6. Conlin L. Form equivalency on the Beta III version of Multiple Auditory Processing Assessment (MAPA). [Unpublished master's thesis]. Pocatello: Idaho State University; 2003.
7. Schow RL, Seikel JA. Screening for (central) auditory processing disorder. In: Musiek FE, Chermak GD, editors. *Handbook of (Central) Auditory Processing Disorder: Auditory Neuroscience and Diagnosis.* Vol. 1. San Diego: Plural Publishing; 2007. p. 137-59.
8. Tai C. Multiple Auditory Processing Assessment as a tool to quantify hidden hearing loss (T). University of British Columbia. 2021. Retrieved from <https://open.library.ubc.ca/collections/ubctheses/24/items/1.0401903>
9. Musiek FE. The frequency pattern test: A guide. *Hear J.* 2002;55(6):58. [DOI:10.1097/01.HJ.0000293280.99394.dd]
10. Schow RL, Domitz Vieira DM. Multiple Auditory Processing Assessment MAPA-2. 2020. www.isu.edu/audiology/resources/research/research-in-practice/multiple-auditory-processing-assessment/