

# Pamäťový test pre bilingválnu detskú populáciu s materinským jazykom maďarským: overenie psychometrických charakteristík

Memory Test for Bilingual Children with Hungarian as Their First Language: psychometric characteristics assessment

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OF OSTRAVA

**Abstrakt** Cieľom štúdie je overiť reliabilitu, konvergentnú a divergentnú validitu Pamäťového testu pre bilingválnu detskú populáciu s materinským jazykom maďarským (PTB). Štruktúra PTB a jeho administrácia vychádza z Pamäťového testu učenia, nie je však jeho prekladom. Obsahová validita testu bola overená expertmi. Výskumný súbor tvorilo 224 respondentov, 118 dievčat a 106 chlapcov s priemerným vekom 11,84 (SD = 1,93). Každý respondent bol testovaný individuálne nasledujúcimi výskumnými metódami: PTB, Reprodukcia bezvýznamných slov (RBS) a Wechslerova inteligenčná škála (WISC-IV). Reliabilita PTB vyjadrená koreláciou paralelných foriem testu je 0,79, hodnota Cronbachovej alphy je 0,7–0,77. Korelácia výkonu v PTB a RBS odrážajúca konvergentnú validitu je slabá až stredne silná. Medzi indexmi verbálneho porozumenia a pracovnej pamäti z WISC-IV a PTB sa potvrdila iba veľmi slabá až slabá korelácia, poukazujúca na divergentnú validitu PTB. Reliabilita testu je dostatočná, kým konvergentná a divergentná validita čaká na opätovné overenie. Výsledky práce môžu tvoriť východiskový bod pre doplňujúce psychometrické postupy.

**Kľúčové slová:** bilingvizmus, pracovná pamäť, psychodiagnostika.

**Abstract Objective:** Despite the broad scientific interest in bilingual advantage/disadvantage in the domain of cognitive and executive functions, little attention is paid to the actual language of applied psychodiagnostic tools. However, the performance of bilingual clients may be lessened by the absence of match between their first language and the language of the psychological questionnaire. When bilinguals take verbal working memory tests in their second language, the operation of phonological loop is paired with language code switching, making the performance more difficult. In Slovakia, an estimated 9% of the population claim Hungarian to be their first language; however, adequate psychodiagnostic tools are not available for their psychological evaluation. The aim of the present study was to prepare a Memory test for bilingual children with Hungarian as their first language (PTB) and to verify its reliability, convergent and divergent validity.

*Methods:* The PTB resembles the Auditory Verbal Learning test (Pamäťový test učenia) as it consists of 15 words for memorizing (set A) and 15 words for interference as well as 15 words for retest (set B). One has to memorize and recall set A for five times after it is read out by the administrator, then memorize and recall the words for inference (after being read out) and for the sixth time recall the words from set A without them being read out. Finally, after 30 minutes, one has to recall once again the words from set A without them being previously read out. The PTB is not a translated form of the Auditory Verbal Learning test. It consists of new, updated words frequently used by Slovak citizens with Hungarian as their first language in a specific geographical region. The content validity of the PTB was verified by experts. The research group comprised 224 respondents, 118 girls and 106 boys, with the average age of 11,84 (SD = 1,93). Each respondent was tested individually by the following research methods: the PTB, reproduction of meaningless words, and the Wechsler intelligence scale for children (WISC-IV) in Hungarian. The reproduction of meaningless words requires the activity of phonological loop, being active also during memory tasks similar to the PTB. For this reason, a comparison of results obtained by these two methods can clarify the convergent validity of the PTB. While declaring discriminant validity we compared the achievement in the PTB with the verbal comprehension index and the working memory index from WISC-IV. According to the factor analysis, verbal subtests such as similarities, vocabulary, information and digit span loaded a different factor from The Rey Auditory-Verbal Learning Test that is very similar to the PTB.

*Results:* The reliability of the PTB as a correlation between the two forms of tests is 0,79 ( $p=0,01$ ), Cronbach's alpha for set A is 0,7, while it is 0,77 for set B. Also, weak to moderate positive correlations (0,21–0,44;  $p=0,01$ ) were found between the PTB and the reproduction of meaningless words; weak positive correlations were found between the PTB and the verbal comprehension index (0,06–0,18;  $p=0,01$ ) and the working memory index (0,08–0,29;  $p=0,01$ ).

*Discussion and conclusion:* The obtained results of reliability are comparable to the reliability of The Rey Auditory-Verbal Learning Test (0,6–0,77) and are considered sufficient. The rates of the other reliability indicators are acceptable; however, they are little lower than those obtained during The Rey Auditory-Verbal Learning Test. The rate of correlation between the PTB and the reproduction of meaningless words indicating conver-

gent validity is acceptable as a significant difference being detected between the memorizing capacity and the accuracy of meaningful and meaningless words. Lack of correlation between the PTB and the verbal comprehension index is in line with the factor analysis of Ryan, Rosenberg and Mittenberg (1984), and thus ratifies the discriminant validity of the PTB. The weak correlation between the PTB and the working memory index may be unexpected as both measure hypothetically the same domains. However, in a spectre of research results, the ability of memorizing a digit span may differ from the ability of memorizing verbal spans. Indicators of reliability, convergent and divergent validity of the PTB are sufficient but further reassessment is needed.

**Keywords:** bilingualism, working memory, psychodiagnostics.