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Proposing an enhanced continous norming approach for non-normal data and nonlinear trends in adapting the WISC-V to the Basque language

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Oral presentation

Proposing an enhanced continous norming approach for non-normal data and nonlinear trends in adapting the WISC-V to the Basque language

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Abstract

The Wechsler Intelligence Scale for Children (WISC-V) is widely recognized as one of the best instruments for assessing the intellectual abilities of children aged 6 to 16 years, playing a central role in psychopedagogical assessments and school evaluations.

However, until now, no adaptation existed for Euskera—the primary language used in schools throughout the Basque Country. Consequently, children in this region are disadvantaged when taking the Spanish version of the test, as their Spanish proficiency is generally less developed than their Euskera counterpart. Using a sample of 660 children and adolescents who had Basque as their mother tongue, we adapted the WISC-V to the Basque culture by conducting reliability and validity analyses that largely replicated the factor reliabilities and structure of the Spanish version. Additionally, we developed norm tables for 33 distinct age groups. Given that each age group included only about 20 participants, we used the full sample to derive norm scores through a process known as continuous norming. The simplest form of continuous norming involves regressing the first two moments (mean and variance) of the raw scores on age using polynomial models. This process yields theoretical distributions from which quantiles can be extracted, allowing norms to be established that follow a normal distribution with a specified mean and standard deviation. However, this approach has two significant shortcomings. First, polynomial regression is susceptible to either overfitting or underfitting. Second, assuming a normal distribution is problematic when ceiling and floor effects are present or when the distribution of scores deviates from a Gaussian shape. To address these issues, we propose an enhanced continuous norming approach that significantly improves the fit of the first three moments—including skewness. This method employs a more robust regression technique that accounts for nonlinearities through the use of splines and also accommodates deviations of the normal distribution with a truncated skew-normal distribution. Based on this proposal, a comparison of results with the traditional and improved continuous norming approaches in these WISC-V data is discussed.

Keywords

Continous norming, WISC-V

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