Construction, Reliability and Practical Utility of the WISC-III Forward and Backward Digit Span

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Abstract

The purpose of this study was to examine the construction and reliability of forward and backward digit span, and to establish adequate norms and base rates for practical utility. The sample used was the WISC-III Taiwan standardization sample; a total of 1,100 children, aged 6 to 16, were included in this study. The major findings were as follows: (1) Split-half reliabilities for forward and backward digit span are both around 0.80. (2) Both forward and backward digit span have fair g loadings, roughly around 0.60. Also, both indices show significant correlations with all WISC-III IQ and subtest scaled scores. The strongest correlation is with Arithmetic, Information, Block Design and Similarities subtests. (3) Compared to forward digit span, backward digit span has a significantly higher correlation with Block Design and Similarities subtests. (4) Based on semi-partial correlation analysis, it is clear that after eliminating the effect of forward digit span, the backward digit span residual still shows a higher than 0.30 g loading, which also correlates significantly with all WISC-III scores. (5) According to the base rate information, a 3-point or larger scaled score difference deserves our attention; a difference of more than 4 points is quite rare for normal Taiwanese kids. (6) The correlation between forward and backward span found in this study is higher than that reported in foreign studies. Both the limitations of this research and suggestions for future research are discussed.

Keywords: Digit Span Forward, Digit Span Backward, WISC-III, Taiwan Norm, Base Rate