

Predictive Markers of Developmental Delay in Four-Year Children in Russia

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Abstract

Diagnosis of problems in mental development of children is the most actual at the early age. The sooner there is clarity about developmental delay (DD), the more effective is rehabilitation. The aim of the study was to identify predictive markers (PM) of DD in four-year-olds, according to following criteria. PM should be based on easily diagnosed indicators, should represent the prediction model of development with high accuracy in differential diagnosing, should help with identifying the pathogenesis of DD. Test tasks (236 items) were proposed by experts due to its proved practical effectiveness: from motor skills to cognitive and social development. Sample: 628 children (aged 1461 - 1827 days) - 575 with normal development, 53 with DD, diagnosed by an independent expert commission. Data analysis: discriminant analysis (DA), factor analysis (FA), reliability analysis (α -Cronbach's), structural equation modeling (SEM). 48 of 236 items are indicators of 6 factors which optimally distinguish groups (Norm, DD). Reliability of corresponding scales: $\alpha=.711-.873$. DA (predictors: 6 scales, age), accuracy: 97.2% Norm, 96.2% DD. SEM: all scales are indicators of the g-factor, the only predictor of Diagnosis, $R^2=.80$; age affects 3 of 6 scales, except Diagnosis and g-factor. The prediction model has got extremely high accuracy. The most powerful predictors are (in descending order of contribution): motor development; social intelligence and verbal-conceptual thinking. Such a high level of accuracy indicates the existence of dramatic gaps between the groups by these factors. Obviously, the explanation of results lies in belated diagnosis of developmental problems of children in Russia.

Keywords: childhood, development delay, g-factor, four-year children