

Quantitative and Non-Quantitative Functions Underlying Achievements and Difficulties in Learning Mathematics

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Abstract

The objective of the present study is to identify cognitive functions that underlie achievements in mathematics, and to examine how deficiencies in these functions may predict mathematics learning disability (MLD). Identification of such functions will assist in finding the core deficits of MLD, establishing a more valid diagnosis of MLD, and identifying children at-risk for MLD. To achieve these objectives, the performance of 112 fifth graders was studied in seven quantitative and non-quantitative tests, and a standard mathematics test. Results indicated that the most significant functions for the prediction of MLD were computational automaticity and number-line representation. Deficiency in these functions, as well as in quantity comparison, working memory and reading, is significantly correlated with the frequency of failure in standard mathematics tests. The implications of the results for the diagnosing of MLD are discussed.