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Cognitive functioning in children with learning problems.

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Summary: Several cognitive deficits associated with reading and mathematics problems have been identified. However, only few studies assessed the impact of these variables in children with combined problems in reading and arithmetics, and none of these studies included children with low IQ. This longitudinal study was designed to assess the impact of different cognitive variables as well as socioeconomic status on literacy and mathematics development of elementary school children with different kinds of learning problems and IQ levels over the course of 2 years. A total of six subgroups was selected from a total sample of 929 second-grade children, with the subgroups differing according to their IQ level and the type of learning disorder. The subgroups consisted of initially 24 reading disabled, 22 mathematics disabled, 35 combined, and 29 low- and 28 overachieving children, as well as 28 typically developing children. Participants were repeatedly assessed in regard to their literacy, mathematics, IQ as well as specific and general cognitive variables. Overall, reading problems were linked to deficits in phonological awareness, while mathematics problems were linked to memory and attention deficits. Children with combined problems showed additive deficits in phonological awareness and attention. The same applied for low-achieving children who were additionally characterized by low socioeconomic status. Good phonological awareness served as a protective factor in overachieving children. The correlation of cognitive variables and group membership was more pronounced at the end of elementary school than in grade 2. Our results confirm an additive approach of cognitive deficits in children with combined learning problems. Phonological awareness constitutes not only a risk factor for learning problems but also a protective factor for good academic achievement in children with low IQ.

Classification: C43 C33

Keywords: reading problems; mathematics problems; learning disabilities; overachiever

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