Basic numerical processing, calculation, and working memory in children with dyscalculia and/or ADHD symptoms.

Kuhn JT, Ise E, Raddatz J, Schwenk C, Dobel C.

DOI: 10.1024/1422-4917/a000450

Abstract

OBJECTIVE:
Deficits in basic numerical skills, calculation, and working memory have been found in children with developmental dyscalculia (DD) as well as children with attention-deficit/hyperactivity disorder (ADHD). This paper investigates cognitive profiles of children with DD and/or ADHD symptoms (AS) in a double dissociation design to obtain a better understanding of the comorbidity of DD and ADHD.

METHOD:
Children with DD-only (N = 33), AS-only (N = 16), comorbid DD+AS (N = 20), and typically developing controls (TD, N = 40) were assessed on measures of basic numerical processing, calculation, working memory, processing speed, and neurocognitive measures of attention.

RESULTS:
Children with DD (DD, DD+AS) showed deficits in all basic numerical skills, calculation, working memory, and sustained attention. Children with AS (AS, DD+AS) displayed more selective difficulties in dot enumeration, subtraction, verbal working memory, and processing speed. Also, they generally performed more poorly in neurocognitive measures of attention, especially alertness. Children with DD+AS mostly showed an additive combination of the deficits associated with DD-only and A_Sonly, except for subtraction tasks, in which they were less impaired than expected.

CONCLUSIONS:
DD and AS appear to be related to largely distinct patterns of cognitive deficits, which are present in combination in children with DD+AS.