

# Short-Term Effects of Methylphenidate on Math Productivity in Children with Attention-Deficit/Hyperactivity Disorder are mediated by Symptom Improvements: Evidence From a Placebo-Controlled Trial.

Kortekaas-Rijlaarsdam AF, Luman M, Sonuga-Barke E, Bet PM, Oosterlaan J.

J Clin Psychopharmacol. 2017 Jan 31.

doi: 10.1097/JCP.0000000000000671. [Epub ahead of print]

Abstract

## BACKGROUND:

Although numerous studies report positive effects of methylphenidate on academic performance, the mechanism behind these improvements remains unclear. This study investigates the effects of methylphenidate on academic performance in children with attention-deficit/hyperactivity disorder (ADHD) and the mediating and moderating influence of ADHD severity, academic performance, and ADHD symptom improvement.

## METHODS:

Sixty-three children with ADHD participated in a double-blind placebo-controlled crossover study comparing the effects of long-acting methylphenidate and placebo. Dependent variables were math, reading, and spelling performance. The ADHD group performance was compared with a group of 67 typically developing children.

## RESULTS:

Methylphenidate improved math productivity and accuracy in children with ADHD. The effect of methylphenidate on math productivity was partly explained by parent-rated symptom improvement, with greater efficacy for children showing more symptom improvement. Further, children showing below-average math performance while on placebo profited more from methylphenidate than children showing above-average math performance.

## CONCLUSIONS:

The results from this study indicate positive effects of methylphenidate on academic performance, although these were limited to math abilities. In light of these results, expectations of parents, teachers, and treating physicians about the immediate effects of methylphenidate on academic improvement should be tempered. Moreover, our results implicate that positive effects of methylphenidate on math performance are in part due directly to effects on math ability and in part due to reductions in ADHD symptoms.