Differential long-term medication impact on executive function and delay aversion in ADHD.

Rubio Morell B, Hernández Expósito S.


Abstract

The objective was to compare long-term effects of methylphenidate (MPH) and atomoxetine (ATX) on executive functions (EF) and delay aversion (DAv) in ADHD. A randomized controlled trial was conducted. A comprehensive neuropsychological battery was administered at three moments (Naive, Post-1, Post-2). ADHD participants who showed deficits in the naive evaluation (n = 26) were randomized to receive either MPH (n = 13; Mage = 11 ± 1, MIQ 96 ± 8) or ATX (n = 13; Mage = 10 ± 1, MIQ 106 ± 16.5) optimal dosages. Parallel test forms were administered after three (Post-1) and six months (Post-2) of treatment. A control group (n = 19; Mage = 11 ± 1; MIQ = 106 ± 16.5) performed the neuropsychological battery similarly. Both MPH and ATX significantly improved scores in verbal working memory (vWM) (Naive: p < 0.0001, d = 0.75; Post-1: p = 0.71, d = 0.12), spatial working memory (sWM) (Naive p < 0.0001, d = 0.63; Post-2 p = 0.44; d = 0.03), planning (Naive p < 0.0001, d = 0.54; Post-2 p = 0.6, d = 0.18), decision making (Naive p < 0.001 d = 0.28; Post-1 = 0.06 d = 0.12) and inhibition (Naive <0.0001, d = 0.66; Post-2 p = 0.08, d = 0.00), reaching an improved treatment response after three months of treatment in vWM and after six months in sWM, planning, and inhibition. No beneficial effect on DAv and risk taking was found with MPH and neither with ATX. Long-term treatment in range of optimal clinical dosages with either MPH or ATX improves EF, but not DAv in children with ADHD.