Processing speed can monitor stimulant-medication effects in adults with attention deficit disorder with hyperactivity.

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Abstract

BACKGROUND:
Treatment responses to methylphenidate by adults with ADHD are generally monitored against DSM-IV/DSM-V symptomatology, rating scales or interviews during reviews.

AIMS:
To evaluate the use of single- and dual-dimension processing-speed and efficiency measures to monitor the effects of pharmacological treatment with methylphenidate after a short period off medication.

METHODS:
A Quick Test of Cognitive Speed (AQT) monitored the effects of immediate-release methylphenidate in 40 previously diagnosed and medicated adults with ADHD. Processing speed was evaluated with prior prescription medication, without medication after a 2-day period off ADHD medication, and with low-dose (10/20 mg) and high-dose (20/40 mg) methylphenidate hydrochloride (Medikinet IR).

RESULTS:
Thirty-three participants responded to the experimental treatments. One-way ANOVA with post-hoc analysis (Scheffe) indicated significant main effects for single dimension color and form and dual-dimension colour-form naming. Post-hoc analysis indicated statistical differences between the no- and high-dose medication conditions for color and form, measures of perceptual speed. For colour-form naming, a measure of cognitive speed, there was a significant difference between no- and low-dose medication and between no- and high-dose medications, but not between low- and high-dose medications.

CONCLUSIONS:
Results indicated that the AQT tests effectively monitored incremental effects of the methylphenidate dose on processing speed after a 2-day period off medication. Thus, perceptual (color and form) and cognitive speed (two-dimensional colour-form naming) and processing efficiency (lowered shift costs) increased measurably with high-dose medication. These preliminary findings warrant validation with added measures of associated behavioral and cognitive changes.