Atomoxetine could improve intra-individual variability in drug-naïve adults with attention-deficit/hyperactivity disorder comparably with methylphenidate: A head-to-head randomized clinical trial.

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Abstract
OBJECTIVE:
Intra-individual variability in reaction time (IIV-RT) is common in individuals with attention-deficit/hyperactivity disorder (ADHD). It can be improved by stimulants. However, the effects of atomoxetine on IIV-RT are inconclusive. We aimed to investigate the effects of atomoxetine on IIV-RT, and directly compared its efficacy with methylphenidate in adults with ADHD.

METHODS:
An 8-10 week, open-label, head-to-head, randomized clinical trial was conducted in 52 drug-naïve adults with ADHD, who were randomly assigned to two treatment groups: immediate-release methylphenidate (n=26) thrice daily (10-20 mg per dose) and atomoxetine once daily (n=26) (0.5-1.2 mg/kg/day). IIV-RT, derived from the Conners’ continuous performance test (CCPT), was represented by the Gaussian (reaction time standard error, RTSE) and ex-Gaussian models (sigma and tau). Other neuropsychological functions, including response errors and mean of reaction time, were also measured. Participants received CCPT assessments at baseline and week 8-10 (60.4±6.3 days).

RESULTS:
We found comparable improvements in performances of CCPT between the immediate-release methylphenidate- and atomoxetine-treated groups. Both medications significantly improved IIV-RT in terms of reducing tau values with comparable efficacy. In addition, both medications significantly improved inhibitory control by reducing commission errors.

CONCLUSION:
Our results provide evidence to support that atomoxetine could improve IIV-RT and inhibitory control, of comparable efficacy with immediate-release methylphenidate, in drug-naïve adults with ADHD. Shared and unique mechanisms underpinning these medication effects on IIV-RT awaits further investigation.