Objective
Clinically impairing irritability affects 25-45% of children with attention-deficit/hyperactivity disorder (ADHD). Yet we know little about what interventions are effective in treating children with ADHD and co-occurring irritability. We use data from the Multimodal Treatment Study of Children with Attention Deficit Hyperactivity Disorder (MTA) study to address three aims: 1) to establish whether irritability in children with ADHD can be distinguished from other symptoms of oppositional defiant disorder (ODD); 2) to examine whether ADHD treatment is effective in treating irritability; and 3) to examine how irritability influences ADHD treatment outcomes.

Method
Secondary analyses of data from the MTA included multivariate analyses, and intent-to-treat random-effects regression models were used.

Results
Irritability was independent from other ODD symptoms. For treating irritability, systematic stimulant treatment was superior to behavioral management but not to routine community care; combining stimulants and behavioral treatment was superior to community care and to behavioral treatment alone, but not medication alone. Irritability did not moderate the impact of treatment on parent- and teacher-reported ADHD symptoms in any of the four treatment groups.

Conclusion
Treatments targeting ADHD symptoms are helpful at improving irritability in children with ADHD. Moreover, irritability does not appear to influence the response to treatment of ADHD.

Clinical trial registration information
Multimodal Treatment Study of Children with Attention Deficit and Hyperactivity Disorder; http://www.clinicaltrials.gov; NCT00000388.