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Attention Deficit/Hyperactivity Disorder (ADHD) is the most common developmental disorder of childhood, affecting 3-5% of children in the United States, and often continuing into adulthood. ADHD is associated with multiple serious complications, including poor school achievement, substance abuse, and automobile accidents. The symptoms of ADHD are manifestations of disruption of self-regulation, including dysregulation of inhibition and attention. These manifestations are observed across various domains and time frames, and are considered to be separate components of the underlying disorder. These components are assessed by various tests, each with a different sensitivity and specificity. Currently, there is no single objective procedure to diagnose and quantify ADHD. In addition, there is no objective way to determine what medication and doses are optimally effective, or whether the condition is changing with maturation.

We present several recently developed computational procedures that have been shown to improve the assessment of ADHD. We illustrate the procedures using data from several studies conducted at the University of Virginia and Sweet Briar College. (Received September 18, 2007)