Brain imaging study looks into the differences in children with ADHD

New findings, published in The Clinical Neuropsychologist, have begun to uncover some of the differences in brain activity and development in children with attention deficit hyperactivity disorder (ADHD). The preliminary study in question utilized MRI to view differences in brain structure in 26 preschool children (13 with ADHD and 13 normal controls), 4–5 years of age. The children selected were diagnosed using the standard DSM-IV criteria.

The results demonstrated that children with ADHD had a significantly smaller sized caudate nucleus. Typically, this region of the brain has been associated with threshold control and learning.

“When one considers how much of an impact ADHD can have upon a child’s normal development, it is clear that a greater understanding of the disorder is an important step in unraveling this complex problem.”

When speaking to Neuropsychiatry Mark Mahone, first author of the paper and a researcher at the Kennedy Krieger Institute (Baltimore, USA) said “By the age of 4 years, as many as 40% of children have sufficient problems with attention to be of concern to parents and preschool teachers, and ADHD has become the most commonly diagnosed form of psychopathology in the preschool years. Since ADHD is a disorder that by definition has its onset prior to age 7 years, it is critical to examine children prior to that age to better understand the neurobiological course of the disorder. However, virtually all of the neuroimaging studies of children with ADHD have included only children of school age (i.e., age 6 years and older).”

Whilst other studies have looked at the metabolism of the caudate nucleus and ADHD, this study has focused on the structural component of the caudate nucleus. In addition to having a reduced volume, the researchers were also able to demonstrate that the size of the nucleus in these individuals correlated with parental ratings of hyperactivity and impulsive symptoms for their respective children.

“The findings from our study revealed early anomalies (reduced volumes) in the development of the caudate nucleus among preschool children presenting with symptoms of ADHD, and a strong association between bilateral caudate volumes and severity of hyperactive/impulsive (but not inattentive) symptoms.” explained Mahone.

When asked about the future impact of the work, Mahone replied “The present findings highlight insights gained by examining early brain development among children with ADHD, and how findings among younger children...
New study looks into the prevalence of self-induced vomiting in adolescents for the purpose of weight loss

A new observational study looking at the prevalence of self-induced vomiting in adolescents aged 10–18 years, published in the Journal of Clinical Nursing, has revealed that almost 13% of the group induced vomiting to control their weight. The study looked at 120 schools with a total of over 16,000 students in Taiwan, demonstrating that the problem was affecting children as young as 10 years of age.

“Self-induced vomiting is an early sign that children could develop eating disorders and serious psychological problems, such as binge eating and anorexia.”

The study has revealed some surprising statistics about the incidence of this problem in school children, leading to the researchers warning that this form of behavior can lead to the development of serious psychological disorders, including anorexia and binge eating. Speaking to Neuropsychiatry, Yiing Mei Liou, first author of the paper and Associate Professor at National Yang-Ming University (Taipei, Taiwan), commented on the importance of the work, “Self-induced vomiting is an early sign that children could develop eating disorders and serious psychological problems, such as binge eating and anorexia. Those who use self-induced vomiting have the associated features of sleeping less, a more sedentary behavior and skipping breakfast.”

The research, carried out on behalf of the Taiwan’s Ministry of Education, looked at 8673 girls and 7043 boys in 120 schools. The results also demonstrated that self-induced vomiting was more prevalent in younger children aged 10–12 years (who had a prevalence of 16%) and less so in 16–18 year olds (who had a prevalence of 8%). Males displayed a higher overall prevalence of 16% compared with females at 8%.

With ADHD being the most commonly diagnosed behavioral problem in children, it is important to continue research into the fundamentals of the disease. When one considers how much of an impact ADHD can have upon a child’s normal development, it is clear that a greater understanding of the disorder is an important step in unraveling this complex problem.


When considering what impact these results had, Liou explained “These results reinforce the need for public health campaigns that stress the negative impact that vomiting can have on their health and encourage them to tackle any weight issues in a healthy and responsible way.”

It is important to note that the researchers also found increased correlations between the act of self-induced vomiting and numerous other activities. These included ingestion of fried food, looking at a computer screen for more than 2 h a day and having less than 8 h sleep. Whilst observational studies lack evidence to provide causality, the data remain an important source of information when looking into the progression of eating disorders in children.

“These results reinforce the need for public health campaigns that stress the negative impact that vomiting can have on their health...”

When asked about the clinical importance of this study, Liou replied to Neuropsychiatry “Families, schools, and health professionals should attempt to identify and mitigate these behaviors as soon as possible. It may be possible to introduce strategies to prevent self induced vomiting, such as sleeping more than 8 hours and having breakfast every day.”
A new study published in *Neuroimage* has looked into the effectiveness of mild brain stimulation on inhibitory control. In the investigation, led by Chi-Hung Juan of the Institute of Cognitive Neuroscience, National Central University in Taiwan (Taipei, Taiwan), the researchers looked at the effect of passing a weak electrical current over the frontal scalps of participants on impulsivity control.

Numerous impulse control disorders exist, including attention deficit hyperactivity disorder (ADHD), which can result in difficulties in concentration, and Tourette’s syndrome, a neuropsychiatric disorder that predominantly affects younger children with hallmark features of motor and vocal tics, which can be highly disruptive to normal life for the patient.

“The message we need to get out is that pregnancy is a particularly difficult time, due to the numerous hormonal and body changes, along with the major lifestyle and social changes that are associated with having a child. Thus, this period is a potentially high-risk time for depression in these mothers. However, Meltzer-Brody also believes that pregnancy could be a key time to intervene, “Pregnancy is a time when people are really motivated to make changes and get treatment, because that can have serious consequences for how you do and for how your children do”.