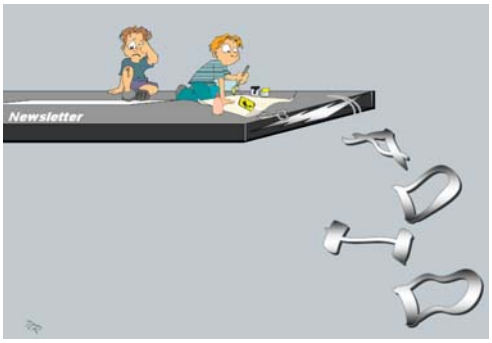

ADHD

ATTENTION DEFICIT HYPERACTIVITY DISORDER

Laboratorio per la Salute Materno Infantile

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NEWSLETTER **N. 27 anno III - Marzo 2010**

La Regione Lombardia, Assessorato alla Sanità, ha approvato il finanziamento del progetto **Condivisione di percorsi diagnostico-terapeutici per l'ADHD in Lombardia**, di durata triennale, che avrà come capofila la UONPIA della Azienda Ospedaliera "Spedali Civili di Brescia" e che coinvolgerà 18 dei Centri di Riferimento (UONPIA AO Bergamo, UONPIA AO Como; UONPIA AO Cremona; UONPIA Fondazione IRCCS "Cà Granda" Ospedale Maggiore Policlinico; UONPIA AO Fondazione IRCCS "Casimiro Mondino" Pavia, UONPIA AO Garbagnate, UONPIA AO Lecco, UONPIA AO Legnano, UONPIA AO Lodi, UONPIA AO Mantova, UONPIA AO Fatebenefratelli, UONPIA AO Niguarda, UONPIA AO San Paolo, UONPIA Vallecamonica e Sebino, UONPIA Valtellina, UONPIA AO Varese, IRCCS Istituto Eugenio Medea di Bosisio Parini (LC) riconosciuti in Lombardia) e l'Istituto Mario Negri di Milano.

Il progetto si articolerà in:

- Analisi dei percorsi esistenti in Lombardia per l'ADHD;
- Formazione e informazione;
- Definizione di percorsi diagnostico-terapeutici condivisi.

Gli obbiettivi sono:

- rilevare e analizzare in maggior dettaglio i percorsi diagnostico-terapeutici esistenti per tutti gli utenti con diagnosi di ADHD e non solo per quelli in trattamento farmacologico;
- mantenere un'attenta farmacovigilanza attiva;
- garantire la formazione specialistica per gli operatori dei Centri sugli interventi diagnostici e terapeutici, con particolare attenzione agli interventi di parent, child e teacher training;
- garantire una formazione e informazione adeguata a pediatri di famiglia, operatori dei servizi territoriali di NPIA, scuole e famiglie;
- sostenere la produzione e diffusione di materiali informativi;
- attivare incontri periodici di monitoraggio e confronto tra i Centri;
- strutturare percorsi diagnostici e terapeutici condivisi tra i Centri;
- realizzare un network stabile dei Centri di Riferimento per l'ADHD in Lombardia.

Per la ricerca degli articoli pubblicati nella letteratura scientifica nel mese in esame sono state consultate le banche dati Medline, Embase, PsycINFO e PsycArticle utilizzando le seguenti parole chiave (o i loro sinonimi): 'Attention deficit disorder', 'Attention deficit hyperactivity disorder', 'Infant', 'Child', 'Adolescent', 'Human'. Sono qui riportate le referenze considerate rilevanti e pertinenti.

J Am Acad Child Adolesc Psychiatry. 2009;48:1155-64.

A Candidate Gene Analysis of Methylphenidate Response in Attention-Deficit/Hyperactivity Disorder.

McGough JJ, McCracken JT, Loo SK, et al.

Objective: This study examines the potential role of candidate genes in moderating treatment effects of methylphenidate (MPH) in attention-deficit/hyperactivity disorder (ADHD).

Method: Eighty-two subjects with ADHD aged 6 to 17 years participated in a prospective, double-blind, placebo-controlled, multiple-dose, crossover titration trial of immediate release MPH three times daily. The subjects were assessed on a variety of parent and clinician ratings and a laboratory math test. Data reduction based on principal components analysis identified statistically derived efficacy and side effect outcomes.

Results: Attention-deficit/hyperactivity disorder symptom response was predicted by polymorphisms at the serotonin transporter (SLC6A4) intron 2 VNTR (p=.01), with a suggested trend for catechol-O-methyltransferase (COMT) (p=.04). Gene null dose interactions were noted on math test outcomes for the dopamine D4 receptor (DRD4) promoter (p=.008), DRD4 exon 3 VNTR (p=.006), and SLC6A4 promoter insertion/deletion polymorphism (5HTTLPR) (p=.02). Irritability was predicted by COMT (p=.02). Vegetative symptoms were predicted by 5HTTLPR (p=.003). No significant effects were noted for the dopamine transporter (SLC6A3) or synaptosomal-associated protein 25 (SNAP25).

Conclusions: This article confirms and expands previous studies suggesting that genes moderate ADHD treatment response. The ADHD outcomes are not unitary but reflect both behavioral and learning domains that are likely influenced by different genes. Future research should emphasize candidate gene and genome-wide association studies in larger samples, symptom reduction as well as side effects outcomes, and responses over full therapeutic dose ranges to assess differences in both gene and gene null dose interactive effects.

Chin J Contemp Pediatr. 2010;12:24-28.

A functional MRI study in ADHD children with impulsivity.

Li F, Li BJ, Su LY, et al.

Objective: Impulsivity is one of the core symptoms of children with attention deficit hyperactivity disorder (ADHD). In order to understand the neuromechanism of the impulsive behaviors in ADHD children, this study investigated the specific functional areas of the brain by functional MRI.

Methods: The subjects consisted of 10 ADHD children with impulsivity, 7 ADHD children without impulsivity and 9 normal children. A functional MRI examination was performed when the subjects were instructed to finish GO and STOP tasks with the GO-STOP impulsivity paradigm. The MRI data during the two tasks of GO and STOP were averaged and the corresponding activation regions between groups were compared.

Results: The data from the GO task revealed that the main activation regions of the normal children included frontal pole (superior frontal gyrus, middle frontal gyrus and medial frontal gyrus); the main activation regions of ADHD children without impulsivity were cerebellum (posterior lobe and anterior lobe bouton) and cingulated gyrus; those of ADHD children with impulsivity were medial globus pallidus and insula. The data from the STOP task showed that the main activation regions of normal children included superior frontal gyrus and middle frontal gyrus; those of ADHD children without impulsivity were middle frontal gyrus and cingulate gyrus; those of ADHD children with impulsivity were uncus and putamen. The activation regions of ADHD children with impulsivity were much fewer than the other two groups.

Conclusions: The behavior of impulsivity-control involves a number of specific functional areas in the cerebral cortex. Compared with normal children, ADHD children without impulsivity have weaker brain function and brain activation, and ADHD children with impulsivity demonstrate much fewer brain activation regions, worse brain function and little awareness of the cerebral cortex.

J Abnorm Psychol. 2010;119:186-96.

A Person-Centered Personality Approach to Heterogeneity in Attention-Deficit/Hyperactivity Disorder (ADHD).

Martel MM, Goth-Owens T, Martinez-Torteya C, et al.

Person-centered personality approaches are an underused means of illuminating clinical heterogeneity of attention-deficit/hyperactivity disorder (ADHD). In the present study, latent profile analysis was conducted with personality traits to identify homogeneous profiles within the ADHD population. Participants were 548 children ages 6-18 years (302 with ADHD). Personality traits were measured via parent report on the California Q-Sort (A. Caspi et al., 1992). Latent profile analysis was conducted on the Big 5 factors. A 6-profile solution best fit the data. Resulting groups were characterized as "disagreeable," "introverted," "poor control," "well adjusted," "extraverted," and "perfectionistic." External validation of this model using ADHD diagnosis, subtypes, and comorbid psychopathology suggested that children with ADHD could be parsed into 4 groups: (a) an introverted group with high rates of the ADHD-inattentive type, (b) a group characterized by poor control, with high rates of ADHD-combined type (ADHD-C) and comorbid disruptive behavior disorders, (c) an extraverted group, with ADHD-C and few associated comorbid disorders, and (c) possibly, a very rare "perfectionistic" group, exhibiting obsessive traits. A person-centered personality approach may be one promising way to capture homogeneous subgroups within the ADHD population.

Alcohol Alcohol. 2010;45:30-38.

A systematic review of continuous performance task research in children prenatally exposed to alcohol.

Dolan GP, Stone DH, Briggs AH.

Aims: The aim of this study was to review systematically, research investigating an association between the continuous performance task (CPT) in children and exposure to alcohol in utero, in order to identify any evidence of a specific deficit in performance.

Methods: Seven electronic databases and three websites were searched. Papers were selected in accordance with specific inclusion criteria and scored in terms of the methodological quality using the Newcastle-Ottawa score. Marked methodological heterogeneity limited the validity of any statistical meta-analysis and a descriptive synthesis was performed instead.

Results: A total of 14 papers were identified for inclusion. There was no consistent evidence of any association between prenatal alcohol exposure and correct responses, reaction time, commission or omission errors during CPT testing. Apparent trends in the reported results, however, suggest that a potential effect might have been missed.

Conclusions: Identifying a specific profile of CPT performance may assist in the detection and management of attention deficits amongst children with prenatal alcohol exposure. Future research with more consistent measures of exposure and outcome is, however, required before any valid generalizations about CPT performance can be made.

Neuropsychologia. 2010;48:1171-77.

Action monitoring in children with or without a family history of ADHD - Effects of gender on an endophenotype parameter.

Albrecht B, Brandeis D, Uebel H, et al.

Attention-deficit/hyperactivity disorder (ADHD) is a frequent and highly heritable disorder overrepresented in boys. In a recent study investigating boys only, we found that action monitoring deficits as reflected by certain behavioral and electrophysiological parameters were familially driven. As gender may also have an important impact, this was examined in the current study with nonaffected children aged 8-15 years having relatives suffering from ADHD (N=37, 21 (female)) and with age-matched controls without family history of ADHD (N=33, 11 (female)). Extending our previous findings that action monitoring is a potential endophenotype for boys with ADHD, familially driven deficits were confirmed independently of gender. Thus, despite sharing the phenotype with controls, nonaffected siblings showed ADHD-like impairments albeit of smaller magnitude. However, girls performed generally more accurately, which in turn may have produced the differences between nonaffected siblings and controls in affective error processing that were not present in our boys-only assessment.

Neurol Psychiatry Brain Res. 2009;16:49-52.
Acute effect of methylphenidate on salivary cortisol levels in prepubertal children with attention-deficit hyperactivity disorder.
Congologlu A, Turkbay T, Ciyiltepe M, et al.
We evaluated acutely salivary levels of cortisol before and after methylphenidate in children with attention-deficit hyperactivity disorder, and examined the change of cortisol after mental challenge task during MPH administration. 12 prepubertal boys with attention-deficit hyperactivity disorder-combined type were included into this study and diagnosed according to DSM-IV criteria. Three saliva samples from each subject were collected in days within and without methylphenidate at 08:00, 09:00, and 10:00 AM. In the period without methylphenidate treatment, the mean levels of salivary cortisol significantly decreased gradually in the course of time. In the period with methylphenidate treatment, there were no significant changes over time in the mean salivary cortisol levels. In conclusion, we suggest that methylphenidate significantly increases acute responses of salivary cortisol levels in children with attention-deficit hyperactivity disorder.

Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2010 Feb;38:149-61.
ADHD and working memory: The impact of central executive deficits and exceeding storage/rehearsal capacity on observed inattentive behavior.
Kofler MJ, Rapport MD, Bolden J, et al.
Inattentive behavior is considered a core and pervasive feature of ADHD; however, an alternative model challenges this premise and hypothesizes a functional relationship between working memory deficits and inattentive behavior. The current study investigated whether inattentive behavior in children with ADHD is functionally related to the domain-general central executive and/or subsidiary storage/rehearsal components of working memory. Objective observations of children's attentive behavior by independent observers were conducted while children with ADHD (n=15) and typically developing children (n=14) completed counterbalanced tasks that differentially manipulated central executive, phonological storage/rehearsal, and visuospatial storage/rehearsal demands. Results of latent variable and effect size confidence interval analyses revealed two conditions that completely accounted for the attentive behavior deficits in children with ADHD: (a) placing demands on central executive processing, the effect of which is evident under even low cognitive loads, and (b) exceeding storage/rehearsal capacity, which has similar effects on children with ADHD and typically developing children but occurs at lower cognitive loads for children with ADHD.

Z Psych Psychol Psychother. 2010;58:23-34.
ADHD in adolescence - Change of symptoms and consequences for research and clinical practice.
Tischler L, Schmidt S, Petermann F, et al.
The study presented examines whether symptoms of an adult ADHD play a role for adolescents affected by ADHD and therefore in consequence for clinical practice if ADHD is considered as a life-span disorder. A sample of N=140 boys and girls aged between 14 to 19 years was collected from representative data. Connections between ADHD symptoms of adults and life satisfaction and quality of life physical and mental symptoms of adolescents were examined with the questionnaires ADHS-E, SF-12, SWLS and PHQ-15 and PHQ-9. The study demonstrated that ADHD impairs life satisfaction and promotes depression in adolescents. Thus, for clinical practice a new perspective of life satisfaction of adolescents in general and additional mental strains for the adolescent form of ADHD in particular was shown.

Br J Psychiatry. 2010;196:235-40.
Adolescent clinical outcomes for young people with attention-deficit hyperactivity disorder.
Langley K, Fowler T, Ford T, et al.
Background: Attention-deficit hyperactivity disorder (ADHD) is recognised as a common, disabling condition. Little information is available regarding the long-term outcomes for individuals with ADHD in the UK.
Aims: To examine the 5-year outcome for a UK cohort of children with diagnosed, treated ADHD and identify whether maternal and social factors predict key outcomes.

Method: One hundred and twenty-six school-aged children (mean age 9.4 years, s.d.=1.7) diagnosed with ADHD were reassessed 5 years later during adolescence (mean age 14.5 years, s.d.=1.7) for ADHD, conduct disorder and other antisocial behaviours.
Results: Most adolescents (69.8%) continued to meet full criteria for ADHD, were known to specialist services and exhibited high levels of antisocial behaviour, criminal activity and substance use problems. Maternal childhood conduct disorder predicted offspring ADHD continuity; maternal childhood conduct disorder, lower child IQ and social class predicted offspring conduct disorder symptoms.
Conclusions: The treatment and monitoring of ADHD need to be intensified as outcomes are poor especially in offspring of mothers with childhood conduct disorder symptoms.

Am J Med Genet Part B Neuropsychiatr Genet. 2010;153:691-94.
Association studies of -3081(A/T) polymorphism of norepinephrine transporter gene with attention deficit/hyperactivity disorder in Korean population.
Joung Y, Kim CH, Moon J, et al.
Recent studies showing the improvement of ADHD symptoms obtained with the highly selective noradrenergic reuptake inhibitor, atomoxetine, demonstrate that the noradrenergic system plays the role of pathophysiology in this disorder. It is revealed that the norepinephrine transporter gene (SLC6A2) is a possible candidate gene directly related to ADHD. To determine possible roles of the SLC6A2 as a susceptibility gene for ADHD, we performed the genetic association study for a functional -3081(A/T) polymorphism, located in the promoter region of SLC6A2. For the present study of association between ADHD and the SLC6A2, 103 male patients withADHDand 103 normal male controls were randomly gathered. Significant differences were found in the allele frequencies ((chi)2=5.60, P=0.02) and the odds ratio for the allele T between theADHDand normal subjects was 1.59 (95% CI: 1.08-2.34) suggesting that T allele is critical to make the group difference. Significant group difference was also found in AA, AT, TT genotypes ((chi)2=7.1, P=0.02). The odds ratio for TT and AT genotypes was 4.57 (95% CI:2.56-8.15) and 1.96 (95% CI:0.96-3.78), respectively. Findings in the present study provided further evidence of association between ADHD and -3081(A/T) polymorphism of SLC6A2.

Child Adolesc Psychiatry Ment Health. 2009;3.
Atomoxetine for the treatment of Attention-Deficit/Hyperactivity Disorder (ADHD) in children with ADHD and dyslexia.
Sumner CR, Gathercole S, Greenbaum M, et al.
Background: The objective of this study was to assess the effects of atomoxetine on treating attention-deficit/hyperactivity disorder (ADHD), on reading performance, and on neurocognitive function in youth with ADHD and dyslexia (ADHD+D).
Methods: Patients with ADHD (n=20) or ADHD+D (n=36), aged 10-16 years, received open-label atomoxetine for 16 weeks. Data from the ADHD Rating Scale-IV (ADHDRS-IV), Kaufman Test of Educational Achievement (K-TEA), Working Memory Test Battery for Children (WMTB-C), and Life Participation Scale for ADHD-Child Version (LPS-C) were assessed.
Results: Atomoxetine demonstrated significant improvement for both groups on the ADHDRS-IV, LPS-C, and K-TEA reading comprehension standard and composite scores. K-TEA spelling subtest improvement was significant for the ADHD group, whereas the ADHD+D group showed significant reading decoding improvements. Substantial K-TEA reading and spelling subtest age equivalence gains (in months) were achieved for both groups. The WMTB-C central executive score change was significantly greater for the ADHD group. Conversely, the ADHD+D group showed significant phonological loop score enhancement by visit over the ADHD group. Atomoxetine was well tolerated, and commonly reported adverse events were similar to those previously reported.
Conclusions: Atomoxetine reduced ADHD symptoms and improved reading scores in both groups. Conversely, different patterns and magnitude of improvement in working memory component scores existed between ADHD and ADHD+D patients. Though limited by small sample size, group differences in relation to the comparable changes in improvement in ADHD symptoms could suggest that brain systems related to the therapeutic benefit of atomoxetine in reducing ADHD symptoms may be different in individuals with ADHD+D and ADHD without dyslexia.

Journal of Attention Disorders. 2010 Jan;13:391-400.
Atomoxetine versus stimulants in the community treatment of children with ADHD: An electronic diary study.
Whalen CK, Henker B, Ishikawa SS, et al.
Objective: To compare the morning and afternoon/evening functioning of children with ADHD treated in the community with either atomoxetine or long-acting stimulants and reported to be doing well.
Method: 109 8- to 12-year-olds and their mothers participated in one of three groups: stimulants (STIM, N=26), atomoxetine (ATMX, N=25), or comparison (COMP, N=58). Mothers completed morning and evening electronic diaries installed on personal digital assistants through-out an entire week, rating the child's behaviors and moods as well as their own moods and perceptions.
Results: There was no evidence that ongoing pharmacotherapy fully normalized the behaviors of children with ADHD: Mothers in both ADHD groups reported higher rates of child inattention, hyperactivity/impulsivity, oppositionality, and negative affect and lower levels of parenting efficacy and positive affect than did COMP mothers. Although the behavioral profiles were generally comparable for the STIM and ATMX groups, there were indications of better functioning in the ATMX group during mornings only.
Conclusion: Children treated in the community with either STIM or ATMX appear to have similar behavioral profiles, suggesting that medication decisions be guided by other factors such as comorbid disorders, child and parent preferences, and effects on nontargeted behaviors and moods.

J Neural Transm. 2010 Feb;117:259-67.
Attention-deficit/hyperactivity disorder phenotype is influenced by a functional catechol-O-methyltransferase variant.
Pálmason H, Moser D, Sigmund J, et al.
The catechol-O-methyltransferase gene (COMT) plays a crucial role in the metabolism of catecholamines in the frontal cortex. A single nucleotide polymorphism (Val¹58Met SNP, rs4680) leads to either methionine (Met) or valine (Val) at codon 158, resulting in a three- to fourfold reduction in COMT activity. The aim of the present study was to assess the COMT Val¹58Met SNP as a risk factor for attention-deficit/hyperactivity disorder (ADHD), ADHD symptom severity and co-morbid conduct disorder (CD) in 166 children with ADHD. The main finding of the present study is that the Met allele of the COMT Val¹58Met SNP was associated with ADHD and increased ADHD symptom severity. No association with co-morbid CD was observed. In addition, ADHD symptom severity and early adverse familial environment were positive predictors of lifetime CD. These findings support previous results implicating COMT in ADHD symptom severity and early adverse familial environment as risk factors for co-morbid CD, emphasizing the need for early intervention to prevent aggressive and maladaptive behavior progressing into CD, reducing the overall severity of the disease burden in children with ADHD.

Journal of Attention Disorders. 2010 Jan;13:386-90.
Attention deficit/hyperactivity disorder: A survey on prevalence rate among male subjects in elementary school (7 to 9 years old) in Iran.
Talaei A, Mokhber N, Abdollahian E, et al.
Objective: Because there have been a few studies on the prevalence of ADHD in Iran, assessment of its prevalence seems to have a great impact on the physicians approach toward its diagnosis and management.
Method: This study listed all the schools in Mashhad and chose 12, including 24 classes and 714 students by stratified cluster sampling. A total of 72 children were selected randomly for pilot study. Their parents and teachers filled the 10-item Conners' questionnaire for ADHD separately. Clinical interview was based on DSM-IV criteria. Students with the total scores higher than the cut-off point 23 were selected for interview.
Results: A total of 109 students out of 714 schoolboys had ADHD (15.27% ± 2.64%). The subgroups' prevalence rates were as follows: attention deficit (AD) = 4.62%, hyperactive impulsive (HI) = 5.32%, and combined type (CT) = 5.32%.
Conclusion: Frequency of ADHD among Iranian schoolboys is more than that in many countries.

Dev Med Child Neurol. 2010;52:e42-e47.
Attentional and executive impairments in children with spastic cerebral palsy .
Bottcher L, Flachs EM, Uldall P.
Aim: Children with cerebral palsy (CP) are reported to have learning and social problems. The aim of the present study was to examine whether children with CP have impairments in attention or executive function.
Method: We examined attention and executive function with standardized neuropsychological measures in a group of children with unilateral (n=15) or bilateral (n=18) spastic CP (14 females, 19 males, mean age 11y 4mo, SD 1y 1mo, range 9y 1mo-13y 7mo; Gross Motor Function Classification System level I n=22, II n=3, III n=6, and IV n=2). Performance was compared with test norms.
Results: Verbal cognitive functioning fell within the normal range, whereas sustained (p=0.001) and divided attention (p<0.001) were found to be impaired. Greater impairment was observed in executive function in general (p<0.001) and in inhibition (p=0.038) and shifting (p<0.001) in particular. No significant difference was found between types of CP (unilateral and bilateral). Performance of all timed tasks was slower than the test norm (p<0.00).
Interpretation: The finding of slower performances across tasks may indicate a general impairment in efficiency of information processing in relation to white-matter lesions. Impairments in attention and executive functions are present in children with CP and may help to explain why these children have increased social and learning problems.

J Am Acad Child Adolesc Psychiatry. 2009;48:1165-72.
Characteristics of Placebo Responders in Pediatric Clinical Trials of Attention-Deficit/Hyperactivity Disorder.
Newcorn JH, Sutton VK, Zhang S, et al.
Objective: Understanding placebo response is a prerequisite to improving clinical trial methodology. Data from placebo-controlled trials of atomoxetine in the treatment of children and adolescents with attention-deficit/hyperactivity disorder (ADHD) were analyzed to identify demographic and clinical characteristics that might predict placebo response in future clinical trials.
Method: Data were pooled across 731 placebo-treated pediatric patients who participated in 10 acute, randomized, placebo-controlled trials. Responder status was based on empirically derived thresholds of change on the total score of the ADHD Rating Scale with minimal and robust response defined as 25% or greater and 40% or greater decrease, respectively. Study design characteristics, including randomization ratio, dose, and titration strategy, and patient demographic and clinical characteristics were examined as potential predictors of placebo response.
Results: Inattentive subtype, lack of previous stimulant treatment, presence of comorbid tics and nonwhite ethnicity were associated with robust placebo response. A subset analysis of patients completing 6 weeks of treatment (to eliminate the effects of early dropout) identified inattentive subtype and lack of previous stimulant experience as significant predictors of robust placebo response.
Conclusions: Placebo response is less likely in subjects with combined-subtype ADHD who are not stimulant-naive. Limiting ADHD clinical trials to this more restricted subject group is likely to maximize treatment differences. However, because this is not always possible or desirable, identifying other methods of mitigating placebo response is essential.

European Child & Adolescent Psychiatry. 2010 Feb;19:159-66.
Co-morbidity and patterns of care in stimulant-treated children with ADHD in the Netherlands.
Faber A, Kalverdijk LJ, Jong-van den Berg L, et al.
This study aimed at investigating the use of psychosocial interventions and psychotropic co-medication among stimulant-treated children with attention-deficit hyperactivity disorder (ADHD) in relation to the presence of psychiatric co-morbidity. Stimulant users younger than 16 years were identified in 115 pharmacies and a questionnaire was sent to their stimulant prescribing physician. Of 773 questionnaires sent out, 556 were returned and were suitable for analysis (72%). The results are based on 510 questionnaires concerning stimulant-treated children for whom a diagnosis of ADHD was reported. Of the 510 children diagnosed with ADHD, 31% had also received one or more other psychiatric diagnoses, mainly pervasive developmental disorder or oppositional defiant disorder/conduct disorder. We found an association between the presence of co-morbidity and the use of psychosocial interventions for the child (P<0.001) and the parents (P<0.001). In the ADHD-only group, 26% did not receive any form of additional interventions,

while psychosocial interventions varied from 8 to 18% in children with ADHD and psychiatric co-morbidity. The presence of diagnostic co-morbidity was also associated with the use of psychotropic co-medication (overall, P=0.012) and antipsychotics (P < 0.001). Stimulant-treated youths with ADHD and psychiatric co-morbidity received more psychosocial interventions and psychotropic co-medication than children with ADHD-only. The type of psychosocial interventions and psychotropic co-medication received by the children and their parents, depended on the specific co-morbid psychiatric disorder being present.

J Am Acad Child Adolesc Psychiatry. 2010;49:229-38.

Cortical Gray Matter in Attention-Deficit/Hyperactivity Disorder: A Structural Magnetic Resonance Imaging Study.

Batty MJ, Liddle EB, Pitiot A, et al.

Objective: Previous studies have shown smaller brain volume and less gray matter in children with attention-deficit/hyperactivity disorder (ADHD). Relatively few morphological studies have examined structures thought to subserve inhibitory control, one of the diagnostic features of ADHD. We examined one such region, the pars opercularis, predicting a thinner cortex of the inferior frontal gyrus (IFG) in children with ADHD.

Method: Structural images were obtained from 49 children (24 control; 25 ADHD combined subtype) aged 9 though 15 years. Images were processed using a volumetric pipeline to provide a fully automated estimate of regional volumes of gray and white matter. A further analysis using FreeSurfer provided measures of cortical thickness for each lobe, and for 13 regions in the frontal lobe.

Results: Relative to controls, children with ADHD had smaller whole brain volume and lower gray matter, but not white matter, volumes in all lobes. An analysis of frontal regions showed a significant interaction of group by region. Planned contrasts showed bilateral thinner cortex in the pars opercularis in children with ADHD.

Conclusions: Children with ADHD showed both diffuse and regional gray matter abnormalities. Consistent with its putative role in response inhibition, the cortex of the pars opercularis was thinner in children with ADHD who, as expected, had significantly poorer inhibitory performance on a Go/No-go task. These differences held for both hemispheres raising the possibility that a developmental abnormality of IFG might drive development of inhibition difficulties.

Journal of Attention Disorders. 2010 Jan;13:369-73.

Cultural structures of the Persian parents' ratings of ADHD .

Ghanizadeh A, Jafari P.

Objective: The objective was to study the cultural structure of Farsi-speaking parents' ratings with diagnostic definitions of ADHD.

Method: The children with ADHD and their parents were interviewed. The parents rated their children on the Farsi-speaking parents' ADHD rating questionnaire.

Results: The principal components analysis extracted the two factors of inattention and hyperactivity–impulsivity. The items "often has trouble playing or enjoying leisure activities quietly," "Is often 'on the go' or often acts as if 'driven by a motor,'" and "Often talks excessively" were loaded on the impulsivity, not the hyperactivity factor.

Conclusion: The Farsi version of the items of the DSM-IV ADHD criteria consisted of two separate factors of hyperactivity–impulsivity and inattentiveness. In addition, the factor of hyperactivity–impulsivity consisted of two separate factors of hyperactivity and impulsivity. There are some differences in the items loading from previous studies in other cultures.

Res Dev Disabil. 2010;31:350-61.

Developmental coordination disorder and other motor control problems in girls with autism spectrum disorder and/or attention-deficit/hyperactivity disorder.

Kopp S, Beckung E, Gillberg C.

Examine the rate, predictors, and effect on daily life skills of developmental coordination disorder (DCD) and other motor control difficulties in school age girls with autism spectrum disorder (ASD) and/or attention-deficit/hyperactivity disorder (ADHD), in preschool age girls with ASD referred to a neuropsychiatric clinic,

and in a community sample of school age girls. The girls (131 in total) were examined with standardised test of motor function and parent interviews and questionnaires. The school girls were compared with 57 age-and IQ-matched girls from the community. DCD was diagnosed in 25% of clinic school girls with ASD, in 32% of those with ADHD, and in 80% of the clinic preschool girls with ASD. Parents reported more motor problems in the school age clinic group. Agreement between a brief motor screening test and a full comprehensive motor examination was moderate to good in the clinic group. Young age, autistic symptomatology, and low performance IQ predicted more motor coordination problems. Motor coordination problems were related to lower ability in daily life skills even when the effect of PIQ was controlled for. A large minority of school girls with ASD and/or ADHD, and a majority of preschool girls with ASD meet full diagnostic criteria for DCD. Their motor problems contribute to reduced activity in daily life even when the effects of IQ have been partialled out.

Dev Med Child Neurol. 2010;52:e67-e72.

Developmental coordination disorder, sex, and activity deficit over time: A longitudinal analysis of participation trajectories in children with and without coordination difficulties.

Cairney J, Hay JA, Veldhuizen S, et al.

Aim: Children with developmental coordination disorder (DCD) are known to participate in active play less than typically developing children. However, it is not known whether the activity deficit between children with and without DCD widens or diminishes over time.

Method: Data were obtained from a large, prospective cohort study of children (baseline n=2278, total n=2470). Motor coordination was assessed for 2083 students using the short form of the Bruininks-Oseretsky Test of Motor Proficiency. Participation in organized and free-play activities was assessed using a participation questionnaire on five occasions over 3 years. Mixed-effects modelling was used to examine differences in participation over time between children with probable DCD (pDCD, n=111, 46 males, 65 females) and their typically developing peers (n=1972, 1016 males, 956 females). The mean age for the whole sample was 9 years 11 months (SD 5mo) at assessment 1, 10 years 5 months (SD 5mo) at assessment 2, 10 years 11 months (SD 5mo) at assessment 3, 11 years 4 months (SD 4mo) at assessment 4, and 11 years 11 months (SD 4mo) at assessment 5.

Results: Children with pDCD reported less participation in organized and free-play activities than their typically developing peers, and these differences persisted over time. Among males, the gap in participation in free-play activities between those with DCD and typically developing children diminished substantially over time; among females, it increased slightly.

Interpretation: DCD is associated with a persistent activity deficit in children. Its effect on participation appears to be particularly serious among females but may diminish with time among males.

J Int Neuropsychol Soc. 2010 Jan;16:106-17.

Differential engagement of cognitive and affective neural systems in pediatric bipolar disorder and attention deficit hyperactivity disorder.

Passarotti AM, Sweeney JA, Pavuluri MN.

This fMRI study investigates the neural bases of cognitive control of emotion processing in pediatric bipolar disorder (PBD) and attention deficit hyperactivity disorder (ADHD). Seventeen un-medicated PBD patients, 15 un-medicated ADHD patients, and 14 healthy controls (HC) (mean age = 13.78 ± 2.47) performed an emotional valence Stroop Task, requiring them to match the color of an emotionally valenced word to the color of either of two adjacent circles. Both patient groups responded significantly slower than HC, but there were no group differences in accuracy. A voxel-wise analysis of variance on brain activation revealed a significant interaction of group by word valence [$F(2,41) = 4.44$; $p = .02$]. Similar group differences were found for negative and positive words. For negative versus neutral words, both patient groups exhibited greater activation in dorsolateral prefrontal cortex (DLPFC) and parietal cortex relative to HC. The PBD group exhibited greater activation in ventrolateral prefrontal cortex (VLPFC) and anterior cingulate cortex (ACC) relative to HC. The ADHD group exhibited decreased VLPFC activation relative to HC and the PBD group. During cognitive control of emotion processing, PBD patients deployed the VLPFC to a greater extent than HC. The ADHD patients showed decreased VLPFC engagement relative to both HC and PBD patients.

Psychiatry Res Neuroimaging. 2010;181:193-98.
Differential fractional anisotropy abnormalities in adolescents with ADHD or schizophrenia.
Davenport ND, Karatekin C, White T, et al.
Schizophrenia and Attention-Deficit/Hyperactivity Disorder (ADHD) are associated with similar deficits in working memory, attention, and inhibition. Both disorders also involve abnormalities of white matter integrity, possibly reflecting neural communication disruptions. There are likely some regional white matter abnormalities that underlie the common cognitive impairment, though also some regional abnormalities unique to each disorder. We used diffusion tensor imaging (DTI) to compare white matter integrity, as indicated by fractional anisotropy (FA), in adolescents with schizophrenia (n = 15) or ADHD (n = 14) and healthy controls (n = 26). Schizophrenia patients had uniquely low FA, relative to the other two groups, in bilateral cerebral peduncles, anterior and posterior corpus callosum, right anterior corona radiata, and right superior longitudinal fasciculus. ADHD patients had uniquely high FA in left inferior and right superior frontal regions. Both clinical groups had lower FA than controls in left posterior fornix. The two disorders generally demonstrated distinct patterns of abnormal connectivity suggesting that common cognitive and behavioral deficits derive from distinct sources, though the posterior fornix may be involved in both disorders. Schizophrenia was associated with abnormally low FA in widespread circuitry indicative of general connectivity disruptions, whereas ADHD was associated with abnormally high FA in frontal networks that may indicate impaired branching of fibers.

Dev Med Child Neurol. 2010;52:205-11.
Differentiating attention deficits in children with fetal alcohol spectrum disorder or attention-deficit-hyperactivity disorder.
Kooistra L, Crawford S, Gibbard B, et al.
Aim: The attention and inhibition problems found in children with attention-deficit-hyperactivity disorder (ADHD) are also common in children with fetal alcohol spectrum disorders (FASDs). Attempts to distinguish ADHD from FASDs in terms of these deficits are rare and were pursued in this study.
Method: A total of 116 children (47 with ADHD, 31 males, 16 females; 30 with FASDs, 17 males, 13 females; and 39 comparison children, 20 males, 19 females) participated. The mean age was 9 years 4 months (SD 1y 8mo) in the ADHD groups, 8 years 10 months (SD 1y 2mo) in the FASD group, and 9 years 1 month (SD 1y 1mo) in the comparison group. Sustained attention was tested with a slow event rate continuous performance task (CPT). Inhibitory control was tested with both a slow and fast event rate Go/No-Go task.
Results: On the CPT task, children with ADHD, combined type (ADHD-C), ADHD, primarily inattentive type (ADHD-PI), and FASDs showed greater declines in task performance as a function of time than comparison children, suggesting sustained attention problems in all clinical groups. Children's Go/No-Go performance was event-rate dependent, with the ADHD-C group being affected in the slow condition and the ADHD-PI and FASD groups having problems with the fast condition.
Interpretation: Children with ADHD-C are typically impaired in handling understimulation, while children with FASDs may have problems with overstimulation. The dissociation in responsivity to event rate between groups may have significant differential diagnostic value.

European Child & Adolescent Psychiatry. 2010 Feb;19:107-12.
Does ADHD moderate the manifestation of anxiety disorders in children?
Hammerness P, Geller D, Petty C, et al.
The main aim of this study was to examine the moderating effects of attention deficit hyperactivity disorder (ADHD) on anxiety disorders in children. Data were analyzed from a large referred sample of children with anxiety disorder without comorbid ADHD (anxiety disorder, N=253), anxiety disorder plus comorbid ADHD (anxiety disorder + ADHD, N=704), and ADHD without comorbid anxiety disorder (ADHD, N=511). Children were comprehensively assessed, including by structured diagnostic interview (K-SADS-E). Overall rates of individual anxiety disorders, as well as age of onset and severity of illness were not significantly different in the presence of comorbid ADHD. School functioning in children with anxiety disorders was negatively impacted by the presence of comorbid ADHD. Frequency of mental health treatment in children with anxiety disorders was significantly increased in the presence of comorbid ADHD. ADHD had a limited impact on the

manifestation of anxiety disorder in children suggesting that ADHD and anxiety disorders are independently expressed.

Neuroendocrinol Lett. 2009;30:604-09.

Dopamine beta hydroxylase (DBH) plasma activity in childhood mental disorders.

Paclt I, Koudelova J, Pacltova D, et al.

BACKGROUND: Developmental study of dopaminergic and noradrenergic systems in child psychiatric disorders are rare. DBH activity is one of noradrenergic biochemical marker that is correlate in psychiatry to clinical and genetic data.

OBJECTIVES: The main aim of the present study was to measure DBH activity at the onset of acute schizophrenia and depressive disorder in children and adolescents without pharmacological treatment and to compare these values with DBH activity in healthy controls. The authors also investigated untreated ADHD children.

METHODS: We examined 42 control healthy children, 15 children non-treated with acute schizophrenia, 15 non-treated children with acute depressive disorders and 30 non-treated ADHD children, all in age 7-14. Plasma DBH level was provided by Nagatsu (1972; 1974). Depressed children were reexamined after clinical remission.

RESULTS: DBH activity is statistically significantly decreased in non-treated depressive disorder and ADHD in children and adolescents. DBH activity is normalised during antidepressant therapy in child depression. Child schizophrenia patients present with normal DBH activity.

CONCLUSION: These results are similar to the results that have been observed in adult patients with schizophrenia and depression and in previous studies of DBH activity in children with ADHD. These results also indicate hypoactivity of the noradrenergic system in children with ADHD and depression.

Am J Med Genet Part B Neuropsychiatr Genet. 2010;153:365-75.

Effect of dopamine transporter gene (SLC6A3) variation on dorsal anterior cingulate function in attention-deficit/hyperactivity disorder.

Brown AB, Biederman J, Valera EM, et al.

Although attention-deficit/hyperactivity disorder (ADHD) is associated both with brain alterations in attention and executive function (EF) circuitry and with genetic variations within the dopamine system (including the dopamine transporter gene [SLC6A3]), few studies have directly investigated how genetic variations are linked to brain alterations. We sought to examine how a polymorphism in the 3' untranslated region (UTR) of SLC6A3, associated with ADHD in meta-analysis, might contribute to variation in dorsal anterior cingulate cortex (dACC) function in subjects with ADHD.We collected fMRI scans of 42 individuals withADHD, all of European descent and over the age of 17, while they performed the multi-source interference task (MSIT), a cognitive task shown to activatedACC. SLC6A3 3' UTR variable number tandem repeat (VNTR) polymorphisms were genotyped and brain activity was compared for groups based on allele status. ADHD individuals homozygous for the 10R allele showed significant hypoactivation in the left dACC compared to 9R-carriers. Exploratory analysis also showed trends toward hypoactivation in the 10R homozygotes in left cerebellar vermis and right lateral prefrontal cortex. Further breakdown of genotype groups showed similar activation in individuals heterozygous and homozygous for the 9R allele. Alterations in activation of attention and EF networks found previously to be involved in ADHD are likely influenced by SLC6A3 genotype. This genotype may contribute to heterogeneity of brain alterations found within ADHD samples. (copyright) 2009 Wiley-Liss, Inc

Epileptic Disord. 2009;11:301-08.

Effect of methylphenidate on the quality of life in children with epilepsy and attention deficit hyperactivity disorder: An open-label study using an osmotic-controlled release oral delivery system.

Yoo HK, Park S, Wang HR, et al.

This open study exploredwhether methylphenidate could be tolerated and effective in improving the quality of life (QOL) and attention deficit hyperactivity disorder (ADHD) symptoms of children with epilepsy and ADHD. Twenty-five subjects (aged 10.1 (plus or minus) 3.0 years) with ADHD and epilepsy were recruited at an

outpatient clinic in Seoul, Korea. We used the Quality of Life in Childhood Epilepsy Questionnaire (QOLCE), ADHD rating scale (ARS) and clinical global impression (CGI) in this study. Osmotic-controlled release oral delivery system (OROS) methylphenidate, 1.0 (plus or minus) 0.4 mg/kg/day, was administered for 55.2 (plus or minus) 7.5 days. The QOL subscales including physical restriction ($p = 0.005$), self-esteem ($p = 0.002$), memory ($p < 0.001$), language ($p = 0.005$), other cognition ($p < 0.001$), social interaction ($p = 0.002$), behaviour ($p < 0.001$), general health ($p = 0.002$) and QOL ($p < 0.001$) were significantly increased and the ARS ($p < 0.001$) and CGI-Severity of illness scores ($p < 0.001$) were significantly reduced after medication. Although 60% of subjects had experienced adverse effects, most were tolerable and only two subjects withdrew from the study owing to unbearable adverse effects (anorexia and insomnia). Two subjects had seizure attacks during the study period without having to discontinue the trial drug. Despite limitations related to the small sample size and the open design of the present pilot study, our results suggest that OROS methylphenidate may be well tolerated and effective in reducing ADHD symptoms and improving QOL in this patient population.

Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2010 Feb;38:173-84.

Evaluating the utility of sluggish cognitive tempo in discriminating among DSM-IV ADHD subtypes.

Harrington KM, Waldman ID.

The objective of the current study was to evaluate how the inclusion of 3 Sluggish Cognitive Tempo (SCT) symptoms in Attention-Deficit/Hyperactivity Disorder (ADHD) diagnostic criteria influences the external validity of the ADHD subtypes. The sample comprised 228 children (166 boys, 62 girls) ranging in age from 5–18 years who were referred to clinics for attentional, behavioral, and/or learning problems and diagnosed with DSM-IV ADHD (124 Combined type, 81 Inattentive type, 23 Hyperactive-Impulsive type). Parent ratings of ADHD symptoms were obtained using the Emory Combined Rating Scale (ECRS), which assesses symptoms of the common DSM-IV childhood psychiatric disorders. Regression analyses incorporating planned comparisons were conducted to examine how the inclusion of SCT symptoms affects differences among ADHD subtypes on several external validity indicators (i.e., gender, age-of-onset, and overlapping conditions). The regression analyses did not yield any significant differences in gender ratios, mean age-of-onset, or overlapping externalizing or internalizing problems when the ADHD Inattentive type was subdivided into high- versus low-SCT groups. In conclusion, the current results suggest that the inclusion of parent-reported SCT symptoms in the ADHD diagnostic criteria has limited utility for isolating diagnostically meaningful subgroups of the Inattentive type or for enhancing the external validity of the ADHD subtypes in clinic-referred samples.

Brain Cogn. 2010 Mar;72:228-37.

Evidence for specificity of ERP abnormalities during response inhibition in ADHD children: A comparison with reading disorder children without ADHD.

Liotti M, Pliszka SR, Higgins K, et al.

Executive function and working memory deficits are not only present in ADHD, but also in reading disorder (RD). Here, high-density ERPs were recorded during the Stop Signal Task in 53 children and adolescents: An ADHD-combined type group, a group with RD, and a healthy control group. The ADHD-C group displayed unique abnormalities of the frontal N200. Both healthy controls and RD groups showed a success-related right frontal N200 modulation, which was absent in the ADHD group. Second, for Success Inhibition trials, the ADHD-C had smaller right frontal N200 waves relative to healthy controls, while the RD group did not. In contrast, NoGo-P3 abnormalities were present both in the ADHD-C and RD groups. Impaired early response inhibition mechanisms, indexed by the frontal N200, appear to be limited to ADHD-C. In contrast, deficits in later cognitive control and error monitoring mechanisms, indexed by the NoGo-P3, appear to be present in both conditions.

Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2010 Feb;38:185-96.

Exploring the relationship between autistic-like traits and ADHD behaviors in early childhood: Findings from a community twin study of 2-year-olds.

Ronald A, Edelson LR, Asherson P, et al.

Behaviors characteristic of autism and ADHD emerge in early childhood, yet research investigating their comorbidity has focused on older children. This study aimed to explore the nature of the relationship between autistic-like traits and ADHD behaviors in a community sample of 2-year-olds. Twins from the Boston University Twin Project (N=312 pairs) were assessed by their parents on autistic-like traits and ADHD behaviors using the Childhood Behavior Checklist. Phenotypic analyses showed that after controlling for general cognitive ability and socioeconomic status, autistic-like traits (total scale as well as social and nonsocial subscales) correlated positively with ADHD behaviors (r=0.23–0.26). Structural equation model-fitting analyses revealed that there were modest shared genetic influences between ADHD- and autistic traits (genetic correlation=0.27) as well as some common environmental influences explaining their covariation. Implications for identifying shared biological pathways underlying autistic-like traits and ADHD behaviors are discussed.

Social Psychiatry and Psychiatric Epidemiology. 2010 Feb;45:233-44.

Family factors and children's disruptive behaviour: An investigation of links between demographic characteristics, negative life events and symptoms of ODD and ADHD.

Rydell AM.

Background: Oppositional defiant disorder behaviours (ODD) and attention deficit/hyperactivity disorder symptoms (ADHD) are common disruptive childhood problems and co-occur to a large extent. In this study, prime questions were the specificity of relations between demographic factors and negative life events, respectively, and ADHD and ODD symptoms, and the role of negative life events in the relations between demographic factors and ODD and ADHD symptoms.

Methods: Concurrent relations between maternal education, family structure, ethnicity/immigrant background and symptoms of ADHD and ODD were investigated in a Swedish population sample of 1,200 10-year-old children (52% boys). Parents completed questionnaires containing information about demographic characteristics and negative life events and rated the child's ADHD and ODD symptoms using DSM-IV criteria.

Results: Low maternal education, single/step-parenthood and non-European descent were associated with higher numbers of ODD and ADHD symptoms. Regression analyses identified ethnicity as specifically associated with ODD symptoms and single/step-parenthood as specific to ADHD symptoms, while there was no specificity with regard to negative life events. Experiences of multiple negative life events were more common in families in non-optimal circumstances. Negative life events had mainly additive effects on the level of ODD and ADHD symptoms above effects of the demographic stressors and especially conflicts between adults around the child were related to high symptom levels. The few gender effects pointed to boys as being more vulnerable than girls to non-optimal family factors expressed in relations to ODD and ADHD symptoms.

Conclusion: Even in an affluent and egalitarian society, children's life circumstances are related to their mental health. Further, there seems to be some specificity in the demographic risk factors associated with ODD and with ADHD symptoms, while negative life events act as general stressors.

J Autism Dev Disord. 2009 Dec;39:1694-705.

Fundamental movement skills in children diagnosed with autism spectrum disorders and attention deficit hyperactivity disorder.

Pan CY, Tsai CL, Chu CH.

The purpose of this study was to compare the movement skills of children with autism spectrum disorders (ASD), attention deficit hyperactivity disorder (ADHD), and those without disabilities. Ninety-one children (ASD, n=28; ADHD, n=29; control, n=34), ages 6–10 years, were of average IQ participated. After controlling for age, both ASD and ADHD groups scored significantly lower than controls (p's <.05) on overall gross motor development as well as locomotor and object control subtests, and the ASD group performed more

poorly than the ADHD group (p's <.01) on both subtests. Of the children with ASD and ADHD, only 16% had clinical levels of impairment. Potential underlying factors are discussed, with suggestions for future research.

Progress in Neuro-Psychopharmacology & Biological Psychiatry. 2010 Feb;34:76-80.
Ginkgo biloba for attention-deficit/hyperactivity disorder in children and adolescents: A double blind, randomized controlled trial.
Salehi B, Imani R, Mohammadi MR, et al.
Background: Although stimulants are highly effective in controlling the symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD), some children will not respond to, or are intolerant of stimulants. Thus, the desire for safe and effective nonstimulant medications has risen during the past several years. Ginkgo biloba has been suggested in the treatment of dementia and memory impairment. We hypothesized that G.biloba would be beneficial for treatment of ADHD, and this could be evaluated in a double blind, randomized, parallel group comparison of G.biloba (Ginko T.D.™ Tolidaru, Iran) and methylphenidate.
Methods: Fifty outpatients (39 boys and 11 girls) with a DSM-IV-TR diagnosis of ADHD were study population of this trial. Subjects were recruited from an outpatient child and adolescent clinic for a 6 week double blind, randomized clinical trial. All study subjects were randomly assigned to receive treatment using tablet of Ginko T.D.™ at a dose of 80–120 mg/day depending on weight (80 mg/day for <30 kg and 120 mg/day for >30 kg) (group 1) or methylphenidate at a dose of 20–30 mg/day depending on weight (20 mg/day for <30 kg and 30 mg/day for >30 kg (group 2) for a 6 week double blind, randomized clinical trial. The principal measure of outcome was the Teacher and Parent ADHD Rating Scale-IV. Patients were assessed at baseline and at 21 and 42 days after the medication started.
Results: Significant differences were observed between the two groups on the Parent and Teacher Rating Scale scores. The changes at the endpoint compared to baseline were: -6.52±11.43 (mean±S.D.) and -15.92±11.44 (mean ± S.D.) for Ginko T.D.™ and methyphenidate, respectively for Parent ADHD Rating Scale. The changes at the endpoint compared to baseline were: -0.84±6.79 (mean±S.D.) and -14.04±8.67 (mean±S.D.) for Ginko T.D.™ and methyphenidate, respectively for Teacher ADHD Rating Scale. The difference between the Ginko T.D.™ and methylphenidate groups in the frequency of side effects was not significant except for decreased appetite, headache and insomnia that were observed more frequently in the methylphenidate group.
Conclusion: The results of this study suggest that administration of G.biloba was less effective than methylphenidate in the treatment of ADHD.

ANAE Approche Neuropsychol Apprentiss Enfant. 2008;20:81-90.
Gross motor skill of children with attention deficit hyperactivity disorder (ADHD).
Gagne J, Chevalier N, Boucher JP, et al.
This article presents the motor skills and difficulties of children with attention deficit hyperactivity disorder (ADHD). More precisely, this paper refers to important research results in which the gross motor skills of ADHD boys (combined subtype) aged between 8 to 10 years old were investigated. The results show the necessity of motor evaluations in ADHD children that show a 50% prevalence of a developmental coordination disorder (DCD). The discussion suggests that these results can guide clinical applications.

Child Adolesc Psychiatry Ment Health. 2010;4.
How do ADHD children perceive their cognitive, affective, and behavioral aspects of anger expression in school setting?
Ghanizadeh A, Haghighi HB.
Background: Anger is an ignored research area in children and young adolescents with Attention deficit hyperactivity disorder (ADHD) in the school setting. This study compares school anger dimensions in children and young adolescents with ADHD and a control group.
Methods: The subjects were a clinical sample of 67 children and young adolescents with ADHD and their parents, with a sample of 91 children from the community of similar age and gender as control group. Anger was measured by the Farsi version of the Multidimensional School Anger Inventory (MSAI).

Results: The scores of the two components of "Hostile Outlook" and "Positive Coping" were different between the groups. The mean scores for the Anger components did not statistically differ between the children with ADHD and ODD and ADHD without ODD, boys and girls, or different types of ADHD.
Conclusion: Children with ADHD do not report higher rates of experience of anger and they do not apply destructive strategies more than the control group. However, children with ADHD appear to have a more hostile outlook toward school and their coping strategy is weaker than that of the control group.

Indian J Pediatr. 2009;76:1119-24.
Impact of attention-deficit/hyperactivity disorder on health-related quality-of-life of specific learning disability children.
Karande S, Bhosrekar K.
Objective: To evaluate the impact of co-occurring attention-deficit/ hyperactivity disorder (ADHD) on the health-related quality of life (HRQOL) of children with newly diagnosed specific learning disability (SpLD).
Methods: From September 2005 to March 2006, 150 parents (either mother or father) of children consecutively diagnosed as having SpLD were enrolled. The Child Health Questionnaire-Parent Form 50(registered trademark) (CHQ-PF50(registered trademark)) was used to measure parent-reported HRQOL. CHQ-PF50(registered trademark) mean domain and summary scores computed for "SpLD/ADHD" and "SpLD only" children groups were compared using Independent Samples t-test.
Results: HRQOL of "SpLD/ADHD" children was significantly poorer in four domains: emotional impact on parents (mean difference: -11.0; 95% CI: -18.75 - 3.25; P = 0.006), general behavior (-9.61; 95% CI: -15.44 - 3.78; P = 0.002), time impact on parents (-9.51; 95% CI: -18.42 - 0.60; P = 0.038), and, self esteem (-7.62; 95% CI: -13.98 - 1.26; P = 0.020); and in overall psychosocial functioning (-5.34; 95% CI: -8.49 - 2.19; P = 0.001).
Conclusion: Co-occurring ADHD adversely impacts the HRQOL of children with newly diagnosed SpLD especially in domains related to their psychosocial functioning. (copyright) 2009 Dr. K C Chaudhuri Foundation

Journal of Attention Disorders. 2010 Jan;13:358-68.
Impaired behavior regulation under conditions of concurrent variable schedules of reinforcement in children with ADHD.
Taylor D, Lincoln AJ, Foster SL.
Objective: To bridge theory of response inhibition and learning in children with ADHD.
Method: Thirty ADHD and 30 non-ADHD children (ages 9-12) were compared under concurrent variable interval (VI-15 sec., VI-30 sec. and VI- 45 sec.) reinforcement schedules that required the child to switch between the three schedules under conditions of experimentally controlled inhibition (change over delay [COD] vs. No COD). Classical matching law was used to evaluate children's success in maximizing reinforcement opportunities.
Results: Children with ADHD showed normal matching only when immediate reinforcement for responding was blocked by the presence of a 3-s COD. Without a COD, ADHD children failed to conform to the normal matching law. Non-ADHD children's behavior fit the matching law (i.e., rate of response was proportional to rate of reinforcement) whether a COD was present or absent.
Conclusions: Results supported other findings that response inhibition is a key mechanism in responses to reinforcement schedules by children with ADHD and that the absence of contingencies that inhibit impulsive responding might impair complex learning in which the child must choose between many different behavioral options, each with associated reinforcement schedules.

J Am Acad Child Adolesc Psychiatry. 2010;49:210-16.
Implications of Extending the ADHD Age-of-Onset Criterion to Age 12: Results from a Prospectively Studied Birth Cohort.
Polanczyk G, Caspi A, Houts R, et al.
Objective: To evaluate whether including children with onset of symptoms between ages 7 and 12 years in the ADHD diagnostic category would: (a) increase the prevalence of the disorder at age 12, and (b) change

the clinical and cognitive features, impairment profile, and risk factors for ADHD compared with findings in the literature based on the DSM-IV definition of the disorder.
Method: A birth cohort of 2,232 British children was prospectively evaluated at ages 7 and 12 years for ADHD using information from mothers and teachers. The prevalence of diagnosed ADHD at age 12 was evaluated with and without the inclusion of individuals who met DSM-IV age-of-onset criterion through mothers' or teachers' reports of symptoms at age 7. Children with onset of ADHD symptoms before versus after age 7 were compared on their clinical and cognitive features, impairment profile, and risk factors for ADHD.
Results: Extending the age-of-onset criterion to age 12 resulted in a negligible increase in ADHD prevalence by age 12 years of 0.1%. Children who first manifested ADHD symptoms between ages 7 and 12 did not present correlates or risk factors that were significantly different from children who manifested symptoms before age 7.
Conclusions: Results from this prospective birth cohort might suggest that adults who are able to report symptom onset by age 12 also had symptoms by age 7, even if they are not able to report them. The data suggest that the prevalence estimate, correlates and risk factors of ADHD will not be affected if the new diagnostic scheme extends the age-of-onset criterion to age 12.

Yonsei Med J. 2010;51:206-11.
Increased cortisol after stress is associated with variability in response time in ADHD children.
Lee SH, Shin DW, Stein MA.
Purpose: Children with attention-deficit/hyperactivity disorder (ADHD) often perform poorly during cognitive tests. We sought to evaluate cortisol as potential moderator of performance in mentally challenging tasks in children with ADHD.
Materials and Methods: Ninety clinic-referred children with ADHD were studied. Cortisol contents in saliva were measured before and after administration of a continuous performance test (CPT).
Results: Pre and post CPT cortisol levels were similar in 68 children. Children whose cortisol level increased after testing (n=22) displayed a significantly longer response time and increased response time variability scores as compared to children who did not display increase of cortisol after the CPT test. Even after controlling for the effects of response time and anxiety, the changes in cortisol levels were associated with effect on response time variability.
Conclusion: The patients who showed an increased cortisol level after stress displayed a higher variability in response time than the patients who showed no change or a decreased cortisol level. The result of the current study suggests that stressinduced high norepinephrine (NE) release may accompany poorer attention performance in patients with ADHD.

ANAE Approche Neuropsychol Apprentiss Enfant. 2008;20:23-26.
Interactions between motor disorders and attention deficiency disorders in dyslexic children. In favour of a more general approach to Specific Learning Disorders.
Chaix Y, Albaret JM .
Controversies exist about the influence of motor difficulties frequently encountered in developmental dyslexia. We have analysed motor and attention abilities of 58 children with phonological dyslexia. Motor impairment affecting co-ordination, balance and manual dexterity was found in 40% to 57% of the children (depending on the severity of motor difficulties) with a significant association between attention deficit and motor impairments. Conversely, the study was not in favour of an unequivocal causal link between reading disabilities and motor or attention disorders. In this context, new uniting approaches of developmental learning disorders could be particularly pertinent

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Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2010 Feb;38:163-71.

Interrelations between executive function and symptoms of hyperactivity/impulsivity and inattention in preschoolers: A two year longitudinal study.

Brocki KC, Eninger L, Thorell LB, et al.

The present study, including children at risk for developing Attention Deficit Hyperactivity Disorder (ADHD), examined the idea that complex executive functions (EFs) build upon more simple ones. This notion was applied in the study of longitudinal interrelations between core EF components—simple and complex inhibition, selective attention, and working memory (WM)—at age 5 and 6 as well as their predictive relations to ADHD symptoms at age 7. The results showed that simple inhibition and selective attention at age 5 independently predicted complex inhibition and WM at age 6. In addition, EFs primarily predicted symptoms of inattention rather than hyperactivity/impulsivity even at this young age. Finally, age 6 complex inhibition was shown to act as a mediator in the relations between simple inhibition and selective attention at age 5 and symptoms of inattention at age 7. These findings provide novel longitudinal support for the theory that fundamental EF components show a progression with age toward more complex executive control (see Garon et al. Psychological Bulletin 134(1):31–60 2008). Further, complex inhibition, implicating both inhibition and WM, seems to be a particularly strong correlate of ADHD symptoms in young children and should as such be the focus of future studies examining the relation between cognitive function and ADHD symptoms from a developmental perspective.

Prim Psychiatry. 2009;16:57-63.

Issues in the diagnosis and treatment of adult ADHD by primary care physicians.

Adler L, Shaw D, Sitt D, et al.

Introduction: The objective of this article is to compare primary care physicians' (PCPs') experiences with diagnosing and treating adult attention-deficit/hyperactivity disorder (ADHD) versus other mental health disorders.

Methods: Four hundred PCPs who have patients with ADHD, bipolar disorder, depression, generalized anxiety disorder (GAD), or obsessive-compulsive disorder completed a public release survey assessing their experiences and attitudes on diagnosing and treating these disorders.

Results: Forty-eight percent of PCPs felt uncomfortable diagnosing adult ADHD and 44% reported that there were no clear diagnostic criteria. Seventy-five percent rated the quality and accuracy of existing adult ADHD diagnostic tools as either poor or fair. Seventy-two percent reported that ADHD is easier to diagnose in children than adults. Sixty-five percent reported deferring to specialists to diagnose adult ADHD, compared to 2% for depression and 3% for GAD. Eighty-five percent reported that they would be more comfortable diagnosing and treating adult ADHD if thorough, straightforward screening tools were validated and if there were effective medications that were neither stimulants nor controlled substances.

Discussion: While this survey indicated that adult ADHD is generally accepted by PCPs, the results also indicate that PCPs are significantly less likely to diagnose and treat ADHD in adults without deferring to a specialist, when compared to GAD and depression. The recent development of new screening tools for adult ADHD as well as non-stimulant and novel stimulant medications may reduce PCPs' reliance on specialist referrals.

Conclusion: This study highlights a potential need for PCPs for increased education and training in adult ADHD. As the study was conducted 6 years ago, follow-up investigations into the current PCP awareness of adult ADHD are indicated.

ANAE Approche Neuropsychol Apprentiss Enfant. 2008;20:41-46.

Issues of orthophonie management in children with learning and attention disorders.

Thibault MP.

The therapy process of specific language impairments for children is recovering from a definite methodology. Initial measure is going to include the check-up, objective diagnosis and standard act and the qualitative analysis. Therapy will have to follow a rigour in its progress, fit regularly to progress of the patient and feeling of its circle. The stopping of this therapy will be made, ideally, in a consensual manner between all actors of this therapy. However, this step represented here can meet reefs at each of its phases.

Ann Pharmacother. 2010;44:185-91.
Melatonin treatment for insomnia in pediatric patients with attention-deficit/hyperactivity disorder.
Bendz LM, Scates AC.
OBJECTIVE: To evaluate the efficacy and safety of melatonin for the treatment of insomnia in pediatric patients with attention-deficit/hyperactivity disorder (ADHD).
DATA SOURCES: Literature was accessed through MEDLINE (1948-August 2009), EMBASE (1950-August 2009), and Scopus (1960-August 2009) using the terms melatonin, attention-deficit/hyperactivity disorder (ADHD), pediatric, insomnia, sleep disorder, and sleep. In addition, reference citations from publications identified were reviewed for relevant information.
STUDY SELECTION AND DATA EXTRACTION: All English-language articles and human studies were identified and evaluated. Results from all identified randomized trials (n=5), safety studies (n=1), long-term follow-up studies (n=1), post hoc retrospective analyses (n=1), meta-analyses (n = 2), review articles (n = 9), and letters (n=1) were summarized.
DATA SYNTHESIS: Pediatric insomnia is prevalent in children with ADHD and impacts academic performance, social functioning, overall health, and family life. First-line therapy includes ruling out differential diagnoses, optimizing ADHD stimulant treatment, and initiating good sleep hygiene and behavioral therapy. Adjuvant pharmacotherapy is then an option and melatonin is often prescribed. Melatonin regulates circadian rhythm sleep disorders such as sleep-onset insomnia (SOI) in children with ADHD. Four studies in children with ADHD and insomnia showed improvement in sleep onset and sleep latency. Studies included children 6-14 years old and melatonin doses ranged from 3 to 6 mg administered within a few hours of a scheduled bedtime. In all studies, adverse events were transient and mild. The available melatonin studies are limited by small size and short duration; variable SOI criteria, ADHD criteria, and treatment assessments; and lack of generalizability.
CONCLUSIONS: Available data suggest that melatonin is a well-tolerated and efficacious treatment option for pediatric patients with chronic SOI and ADHD. Regulated melatonin products and larger, well-designed trials to establish optimal dosing regimens and long-term safety are needed.

Neurosci Behav Physiol. 2010 Mar;40:295-303.
MRI morphometry of the cerebral ventricles in patients with attention deficit hyperactivity disorder.
Verkhlyutov VM, Gapienko GV, Ushakov VL, et al.
A total of 27 right-handed patients aged 7-30 years with diagnoses of attention deficit hyperactivity disorder were studied using standard MRI scans. Of these, 14 were aged below 13 years. The volumes of the lateral ventricles were measured using T1-weighted MRI images of sagittal sections of the brain to a precision of 3 mm3. External head sizes were also measured to allow ventricle volumes to be normalized. All patients underwent complex neuropsychological investigations. Memory was assessed, along with visual, auditory, tactile, and spatial recognition functions and the motor and speech spheres. Test data were assessed in terms of the severity of impairments associated with one brain structure or another on a tenpoint scale. Assessment points were summed for each hemisphere, for the "first area" (cortical structures), and all structures for statistical analysis. Neuropsychological testing revealed functional impairments predominantly of the frontal areas of the hemispheres, the hippocampus, and the reticular formation. Neuropsychological deficits were least linked with alterations in the postcentral and parietal areas of the cortex. Statistical analysis demonstrated a significant positive correlation between the normalized left lateral ventricle volume and the degree of neuropsychological impairments (r=0.5127 at p=0.0063) for the whole study group. The correlation was more marked on comparison of the normalized left ventricular volume and the severity of neuropsychological impairments related to the left hemisphere (r=0.6303 at p=0.0004). A relationship was seen between the volume of the intraventricular space and cortical functional impairments (r=0.5071 at p=0.0069) in patients less than 13 years old. A relationship between ventricular volume and linear head size was confirmed (r=0.5759 at p=0.0017), which was more marked in subjects less than 13 years old (r=0.6833 at p=0.01).

Clin Ther. 2010;32:252-64.

Pharmacokinetics of lisdexamfetamine dimesylate and its active metabolite, d-amphetamine, with increasing oral doses of lisdexamfetamine dimesylate in children with attention-deficit/hyperactivity disorder: A single-dose, randomized, open-label, crossover study.

Boellner SW, Stark JG, Krishnan S, et al.

Background: Lisdexamfetamine dimesylate (LDX) is a long-acting oral prodrug stimulant indicated for the treatment of attention-deficit/hyperactivity disorder (ADHD) in children 6 to 12 years old and in adults. Information on the pharmacokinetic profile of LDX in children with ADHD is lacking.

Objective: The aim of this study was to assess the pharmacokinetic properties of d-amphetamine delivery from LDX, and intact LDX with increasing doses of LDX administered in children with ADHD.

Methods: This single-dose, randomized, open-label, 3-period crossover study was conducted in children aged 6 to 12 years with ADHD symptoms that adversely affected school performance and required a medication switch. Eligible patients had prior stimulant experience, with good tolerability. Patients were administered a single oral dose of LDX 30, 50, or 70 mg in a randomized sequence. Each study period was separated by a 6-day washout. The pharmacokinetic properties of d-amphetamine and intact LDX were calculated over 48 hours. Adverse events (AEs) were assessed using physical examination, including vital sign measurements, and ECG.

Results: The study enrolled 18 children (mean [SD] age, 9.6 [1.9] years [range, 6-12 years]; 56% boys; weight, 36.0 [7.6] kg; 44% white, 44% black). Mean (%CV) Cmax values of d-amphetamine postdose were 53.2 (18.1), 93.3 (19.5), and 134.0 (19.4) ng/mL with LDX 30, 50, and 70 mg, respectively (Tmax, ~3.5 hours). These findings suggest that the overall AUC for d-amphetamine was dose proportional. The intact LDX AUC was 10% to 20% higher in girls than in boys, and for d-amphetamine was <10% higher. The most commonly reported AEs, of 17 total cases, with 30-, 50-, and 70-mg LDX were anorexia (4 [22%], 7 [41%], and 8 [47%], respectively), elevated blood pressure (2 [11%], 1 [6%], and 3 [18%]), and abdominal pain (2 [11%], 2 [12%], and 2 [12%]). All AEs were mild or moderate. No serious AEs were reported. One child was withdrawn from the analysis because of pharyngitis considered to be unrelated to LDX use.

Conclusion: The findings from this study in a small, select population of children with ADHD suggest that the concentrations of d-amphetamine, the active metabolite of LDX, after single-dose administration of LDX at increasing doses appeared to be dose proportional and had low interpatient variability.

Journal of Child Psychology and Psychiatry. 2010 Feb;51:116-33.

Practitioner review: Non-pharmacological treatments for ADHD: A lifespan approach.

Young S, Amarasinghe JM.

Background: Attention-deficit hyperactivity disorder (ADHD) is a chronic and pervasive developmental disorder that is not restricted to the childhood years.

Methods: This paper reviews non-pharmacological interventions that are available at present for preschoolers, school-age children, adolescents and adults.

Results: The most appropriate intervention for preschoolers is parent training. For school-age children with moderate impairments there is some evidence to suggest that group parent training programmes and classroom behavioural interventions may suffice as a first-line treatment. For school-age children with severe impairments, interventions are more appropriate when combined with stimulant medication (i.e., integrated treatment packages are likely to be more successful than standalone treatments). Multimodal interventions seem to be best suited for middle school adolescent children, which most likely reflects that these interventions usually integrate home and school treatment strategies and often include an element of social skills training. Stimulant medication is generally the first line of treatment for adults but CBT has also been found to be effective at addressing the complex needs of this population.

Conclusion: Current research has largely ignored that ADHD is a developmental disorder that spans the preschool to adult years. Most studies focus on young school-age children and outside of this age group there is a dearth of controlled trials that provide conclusive evidence. As children mature the mode and agent of intervention will shift to reflect the developmental needs and circumstances of the individual.

Journal of Attention Disorders. 2010 Jan;13:414-19.
Predicting response of ADHD symptoms to methylphenidate treatment based on comorbid anxiety.
Blouin B, Maddeaux C, Stanley Firestone J, et al.
Objective: In this small pilot study, the association of comorbid anxiety with the treatment of ADHD is studied.
Methods: Eighteen volunteers from a pediatric clinic are tested for ADHD and anxiety and assessed for behavioral and cognitive ADHD symptomology. Response to methylphenidate as treatment for ADHD symptoms is measured 2 to 3 weeks, and again 4 to 6 weeks following the diagnosis of ADHD.
Results: Methylphenidate proves effective for treating ADHD symptoms (both behavioral and cognitive). Participants are categorized into two groups, those with ADHD and comorbid anxiety and those with ADHD alone. Behaviorally, no statistically significant differences are seen in response between the two groups; however; cognitively, the non-anxious group improves significantly more than the anxious group.
Conclusion: Although anxiety may not affect behavioral response to stimulant medication in ADHD, it does appear to affect the medication response of more subtle symptoms of cognitive performance in ADHD patients.

Turk J Pediatr. 2009;51:478-84.
Pregnancy and delivery complications and treatment approach in attention deficit hyperactivity disorder.
Aktepe E, Ozkorumak E, Tanriover-Kandil S.
Pregnancy, delivery complications and treatment approach were evaluated in 153 cases diagnosed with attention deficit hyperactivity disorder in the State Hospital of Antalya in the Child and Adolescent Psychiatry Polyclinic. Most of the cases had been delivered vaginally (74.5%). The most frequent delivery complication was asphyxia/hypoxia (15.6%). The agent most frequently preferred in the treatment regimen was methylphenidate (82.4%), which is a psychostimulant. The other drugs used were risperidone (29.4%), selective serotonin reuptake inhibitors (16.4%) and imipramine (4.6%). The most frequent side effect resulting from methylphenidate use was a decrease in appetite (34.9%). Attention deficit hyperactivity disorder often presents with comorbid disorders; in these cases, nonstimulant agents had to be added to methylphenidate for better treatment outcomes. Use of selective serotonin reuptake inhibitors in combined treatment and in cases with comorbidities is in agreement with the literature. Further studies of combined treatment regimens in attention deficit hyperactivity disorder are needed.

Am J Epidemiol. 2010 Mar;171:593-601.
Prenatal organochlorine exposure and behaviors associated with attention deficit hyperactivity disorder in school-aged children.
Sagiv SK, Thurston SW, Bellinger DC, et al.
Organochlorines are environmentally persistent contaminants that readily cross the placenta, posing a potential risk to the developing fetus. Evidence for neurodevelopmental effects at low levels of these compounds is growing, though few studies have focused on behavioral outcomes. The authors investigated the association between prenatal polychlorinated biphenyl (PCB) and p,p'-dichlorodiphenyl dichloroethylene (p,p'-DDE) levels and behaviors associated with attention deficit hyperactivity disorder (ADHD), measured with the Conners' Rating Scale for Teachers (CRS-T), in a cohort of 607 children aged 7-11 years (median age, 8.2 years) born in 1993-1998 to mothers residing near a PCB-contaminated harbor in New Bedford, Massachusetts. The median umbilical cord serum level of the sum of 4 prevalent PCB congeners (118, 138, 153, and 180) was 0.19 ng/g serum (range, 0.01-4.41 ng/g serum). The authors found higher risk for ADHD-like behaviors assessed with the CRS-T at higher levels of PCBs and p,p'-DDE. For example, the authors found higher risk of atypical behavior on the Conners' ADHD Index for the highest quartile of the sum of 4 PCB congeners versus the lowest quartile (risk ratio = 1.76, 95% confidence interval: 1.06, 2.92) and a similar relation for p,p'-DDE. These results support an association between low-level prenatal organochlorine exposure and ADHD-like behaviors in childhood.

Environ Health Prev Med. 2009;14:150-54.
Prevalence of attention-deficit/hyperactivity disorder (ADHD) symptoms in preschool children: Discrepancy between parent and teacher evaluations.
Soma Y, Nakamura K, Oyama M, et al.
Objective Clarifying the characteristics of attention-deficit/ hyperactivity disorder (ADHD) symptoms in childhood is important for the prevention and management of this disorder. The purpose of this study was to determine the prevalence of ADHD symptoms in Japanese preschool children based on evaluations performed by parents or teachers.
Methods A questionnaire survey was performed to evaluate the estimated prevalence of ADHD symptoms in preschool children in Niigata City, Japan. The first survey, conducted in 2003, involved an evaluation of ADHD symptoms by their school teachers. The second survey, conducted in 2006, involved an evaluation of the symptoms by parents. The teacher survey included 9,956 children, and the parent survey included 7,566 children. Parents and teachers assessed ADHD symptoms in children using a 14-item questionnaire based on DSM-III-R. Children with a score of 8 or higher were classified as having ADHD symptoms.
Results The overall prevalence of ADHD symptoms was 2,349/7,566 (31.1%) in the parent survey and 431/9,956 (4.3%) in the teacher survey, with a prevalence ratio of 7.2 (95% CI: 6.5-7.9). Likelihood ratio test indicated that variables significantly associated with the presence of ADHD symptoms were gender, age, school type, interaction between gender and observer, and interaction between school type and observer (each with P\0.0001).
Conclusions The large difference between the estimated prevalence of ADHD symptoms in Japanese preschool children from teacher and parent surveys suggests that compared to teachers, parents consider their children's symptoms much more serious. Thus, parental evaluation of ADHD symptoms using DSM criteria may be inappropriate for ADHD screening.

Chin J Contemp Pediatr. 2010;12:123-27.
Prevalence of psychiatric disorders in primary and middle school students in Hunan Province.
Guan BQ, Luo XR, Deng YL, et al.
Objective: To investigate the prevalence of psychiatric disorders in a representative sample of primary and middle school students in Hunan Province.
Methods: A total of 9 495 children aged 5-17 years from Hunan urban and rural schools were enrolled by a cluster sampling and a two-phase design. The students' psychiatric status was assessed using the Investigation Screening Inventory for Child Mental Disorder and a semi-structured interview designed based on the DSM-IV criteria.
Results: The overall prevalence of psychiatric disorders was 16.22%. Attention-deficit and disruptive behavior disorders were the commonest in the diagnostic categories of psychiatric disorders (10.69%). Regarding specific disorders, the most prevalent was attention-deficit/ hyperactivity disorder (5.95%). Psychiatric disorders were more prevalent in boys than in girls (20.49% vs 11.16% P <0.01). The prevalence of attention-deficit and disruptive behavior disorders in boys was higher than in girls (14.76% vs 5.87%; P <0.01). The prevalence of psychiatric disorders in middle school students (12-17 years) was significantly higher than in primary students (5-11 years) (18.38% vs 14.64%; P <0.01). There were no significant differences in the prevalence of psychiatric disorders between urban and rural students.
Conclusions: Psychiatric disorders are common among primary and middle school students in Hunan Province. The prevalence of this disorder in boys is higher than in girls. The middle school students have higher prevalence than primary students.

Neurosci Behav Physiol. 2010 Mar;40:351-55.
Principles of medical care for children with attention deficit hyperactivity disorder.
Chutko LS, Yur'eva RG, Surushkina SY, et al.

Toxicol Lett. 2010 Mar;193:4-8.

Prospective follow-up studies found no chromosomal mutagenicity of methylphenidate therapy in ADHD affected children.

Walitza S, Kampf K, Oli RG, et al.

Five to ten percent of all children suffer from attention-deficit/hyperactivity disorder (ADHD), which is often treated with the central nervous stimulant methylphenidate (MPH). In 2005 controversy arose due to a report of enhanced cytogenetic effects in 12 children after 3 months of MPH treatment. Since then, several prospective studies have been performed and published, which are summarized here. A table comparing the micronucleus frequencies, a marker investigated in all of these studies, is presented. An induction of cytogenetic effects by MPH was only reported in one, the 2005 study by El-Zein et al., while all other studies, with now altogether 110 MPH-exposed individuals, showed no elevation. To address the question of long-term use of MPH, we published the data of 30 chronically treated children and also saw no difference compared to untreated children. Here, we report as new follow-up data that an additional 12 months time point in a small group of 12 children who had begun MPH therapy within our published study also did not reveal elevated cytogenetic damage. Furthermore, a previously unpublished analysis of urinary 8-oxo-7,8-dihydro-2'-deoxyguanosine (8-oxodG; a non-invasive biomarker for DNA-base oxidation and its repair) in 11 children before and after 3 months of MPH exposure yielded no significant difference. Since gene mutations may not necessarily manifest as chromosomal aberrations, micronuclei or SCEs, we discuss the available data from animal models, which also do not reveal a mutagenic potential of MPH. Although the only two available epidemiological studies do not report elevated risk for MPH exposure, the results are not conclusive yet, and further monitoring of exposed populations is suggested.

Aust New Zealand J Psychiatry. 2010;44:135-43.

Psychiatric comorbidity among children and adolescents with and without persistent attention-deficit hyperactivity disorder.

Gau SSF, Ni HC, Shang CY, et al.

Objectives: The aims of the present study were to examine the current psychiatric comorbidity among children and adolescents with and without persistent attention-deficit hyperactivity disorder (ADHD) as compared to school controls, and to determine the factors predicting psychiatric comorbidity.

Method: The sample included 296 patients (male, 85.5%), aged 1117, who were diagnosed with DSM-IV ADHD at the mean age of 6.7 (plus or minus) 2.7 years and 185 school controls. The ADHD and other psychiatric diagnoses were made based on clinical assessments and confirmed by psychiatric interviews. The ADHD group was categorized into 186 patients (62.8%) with persistent ADHD and 110 (37.2%) without persistent ADHD.

Results: Compared to the controls, the two ADHD groups were more likely to have oppositional defiant disorder (ODD), conduct disorder (CD), tics, mood disorders, past and regular use of substances, substance use disorders and sleep disorders (odds ratios (ORs) 1.825.3). Patients with persistent ADHD had higher risks for anxiety disorders, particularly specific phobia than the controls. Moreover, patients with persistent ADHD were more likely to have ODD than their partially remitted counterparts. Advanced analyses indicated that more severe baseline ADHD symptoms predicted ODD/CD at adolescence; longer methylphenidate treatment duration was associated with an increased risk for tics and ODD/CD at adolescence; and older age predicted higher risks for mood disorders and substance use disorders.

Conclusion: Reduced ADHD symptoms at adolescence may not lead to decreased risks for psychiatric comorbidity, and identification of severe ADHD symptoms at childhood and age-specific comorbid patterns throughout the developmental stage is important to offset the long-term adverse psychiatric outcomes of ADHD.

Am J Psychiatry. 2010 Mar;167:321-30.

Psychiatric disorders in preschool offspring of parents with bipolar disorder: the Pittsburgh Bipolar Offspring Study (BIOS).

Birmaher B, Axelson D, Goldstein B, et al.

OBJECTIVE: The authors evaluated lifetime prevalence and specificity of DSM-IV psychiatric disorders and severity of depressive and manic symptoms at intake in preschool offspring of parents with bipolar I and II disorders.

METHOD: A total of 121 offspring ages 2-5 years from 83 parents with bipolar disorder and 102 offspring of 65 demographically matched comparison parents (29 with non-bipolar psychiatric disorders and 36 without any lifetime psychopathology) were recruited for the study. Parents with bipolar disorder were recruited through advertisements and adult outpatient clinics, and comparison parents were ascertained at random from the community. Participants were evaluated with standardized instruments. All staff were blind to parental diagnoses.
RESULTS: After adjustment for within-family correlations and both biological parents' non-bipolar psychopathology, offspring of parents with bipolar disorder, particularly those older than age 4, showed an eightfold greater lifetime prevalence of attention deficit hyperactivity disorder (ADHD) and significantly higher rates of having two or more psychiatric disorders compared to the offspring of the comparison parents. While only three offspring of parents with bipolar disorder had mood disorders, offspring of parents with bipolar disorder, especially those with ADHD and oppositional defiant disorder, had significantly more severe current manic and depressive symptoms than comparison offspring.
CONCLUSIONS: Preschool offspring of parents with bipolar disorder have an elevated risk for ADHD and have greater levels of subthreshold manic and depressive symptoms than children of comparison parents. Longitudinal follow-up is warranted to evaluate whether these children are at high risk for developing mood and other psychiatric disorders.

Postgrad Med. 2010;122:184-91.
Review of medication adherence in children and adults with ADHD.
Adler LD, Nierenberg AA.
Objective: To review the literature on the prevalence, potential causes, and consequences of medication nonadherence in adult attention-deficit/ hyperactivity disorder (ADHD).
Background: Attention-deficit/hyperactivity disorder is a common, chronic, and impairing neuropsychiatric disorder, affecting 4.4% of the US adult population. Medications alleviate many aspects of the disorder, but associated difficulties with disorganization and planning can lead patients to have poor adherence and subsequent treatment failure. This review will examine the scope and consequences of medication nonadherence in children and adults with ADHD.
Methods: Comprehensive literature reviews via PubMed searches were conducted for continuity of medication and medication adherence (and related terms) in ADHD (and ADD). The studies were reviewed and classified regarding prevalence, measure of adherence or continuity, etiology, and consequences of medication nonadherence in childhood/adolescent and adult ADHD.
Results: Studies of pharmacy claims databases and treatment studies have shown that the prevalence of medication discontinuation or nonadherence is between 13.2% to 64%. More studies have focused on medication adherence in children/adolescents than in adult ADHD. Medication nonadherence is more prevalent in immediate-release versus extended-release psychostirnulants in childhood/adolescent ADHD, but differences in the formulations have not been studied extensively in adults. Current studies have almost exclusively relied on patient reports. Possible etiologies of medication nonadherence have not been examined with formal rating instruments in adult ADHD. The long-terni consequences of medication nonadherence, in terms of impairments, have not been examined.
Conclusions: Studies have documented that medication nonadherence is common in childhood/adolescent ADHD. Further prospective studies are necessary to document the scope of the problem in adult ADHD and to examine the potential benefits of utilizing extended-release medications in adult ADHD. Studies correlating the impact of medication nonadherence on symptoms and impairments in adult ADHD are needed. Future studies should consider utilizing technology to document medication nonadherence, such as MEMS caps.

Acta Paediatrica. 2010 Jan;99:112-20.
Routine developmental screening at 5.5 and 7 years of age is not an efficient predictor of attention-deficit/hyperactivity disorder at age 10.
Holmberg K, Sundelin C, Hjern A.
Aim: The aim of this study was to assess the efficiency of developmental screening for deficits in attention, motor control and perception or attention-deficit/hyperactivity disorder (DAMP/ADHD) at 5.5 and 7 years of age for diagnosing ADHD in grade 4.

Method: The study population consisted of 442 children from a cohort study of ADHD in 10- year olds in one municipality in Stockholm County. Sensitivity, specificity and positive predictive value of a developmental screening at 5.5 and at 7 years of age for being diagnosed with ADHD at 10 years of age was calculated.
Results: The sensitivity was 44%, the specificity 85% and the positive predictive value for having a diagnosis of pervasive ADHD in 4th grade was 15%, when at least two deviations in nine items was used as the cut-off point in 5.5-year screening at Child Health Centres (CHCs). With a cut-off score of at least two deviations in four items rated by parents or and teachers in 1st grade, these estimates were 58%, 81% and 15% respectively.
Conclusion: This study demonstrates that developmental screening for DAMP/ADHD at 5.5 and 7 years of age does not identify children who are diagnosed with ADHD in grade 4 with a high degree of selectivity.

J Am Acad Child Adolesc Psychiatry. 2010;49:217-28.
Sex and Age Differences in Attention-Deficit/Hyperactivity Disorder Symptoms and Diagnoses: Implications for DSM-V and ICD-11.
Ramtekkar UP, Reiersen AM, Todorov AA, et al.
Objective: To examine gender and age differences in attention-deficit/hyperactivity disorder (ADHD) symptom endorsement in a large community-based sample.
Method: Families with four or more full siblings ascertained from Missouri birth records completed telephone interviews regarding lifetime DSM-IV ADHD symptoms and the Strengths and Weaknesses of ADHD-Symptoms and Normal-behavior (SWAN) questionnaire for current ADHD symptoms. Complete data were available for 9,380 subjects aged 7 through 29 years. Lifetime and current DSM-IV-like ADHD diagnoses were assigned by the DSM-IV symptom criteria. Linear regression was used to examine sex and age effects on SWAN ADHD symptom scores. Logistic regression was used to examine sex and age effects on specific ADHD diagnoses. Fractional polynomial graphs were used to examine ADHD symptom count variations across age.
Results: Overall prevalence of current DSM-IV-like ADHD was 9.2% with a male:female ratio of 2.28:1. The prevalence of DSM-IV-like ADHD was highest in children. Gender differences in DSM-IV-like ADHD subtype prevalences were highest in adolescents. On average, individuals with lifetime DSM-IV-like ADHD diagnoses had elevated current ADHD symptoms even as adolescents or adults.
Conclusions: Lower male:female ratios than reported in some clinic-based studies suggest that females are underdiagnosed in the community. Although they may no longer meet the full symptom criteria, young adults with a history of lifetime DSM-IV-like ADHD maintain higher levels of ADHD symptoms compared with the general population. The use of age-specific diagnostic criteria should be considered for DSM-V and ICD-11.

Psychiatry Res Neuroimaging. 2010;181:199-203.
Short-TE proton magnetic resonance spectroscopy investigation in adolescents with attention-deficit hyperactivity disorder.
Yang P, Wu MT, Dung SS, et al.
In this study, short echo time 1H-magnetic resonance spectroscopy (MRS) was applied for quantification of neurometabolites using the LC Model algorithm in Taiwanese adolescents with attention-deficit hyperactivity disorder (ADHD). Proton magnetic resonance spectra were acquired bilaterally on the prefrontal area (part of the anterior cingulate gyrus and part of the medial frontal gyrus) in 15 adolescents with ADHD (average age of 13.88 years) and 22 controls (average age of 14.85 years). Absolute metabolite levels and ratios relative to creatine plus phosphocreatine (Cr + PCr) were obtained to be compared between groups. Results showed that adolescents with ADHD had significantly lower mean right prefrontal levels of Cr + PCr as compared with the controls. No significant differences between groups were noted in the remainder of the prefrontal metabolites. As for the group comparison of relative ratios, the N-acetylaspartate/Cr + PCr ratio was significantly higher in the right prefrontal regions of ADHD adolescents. This finding provides evidence of a right prefrontal neurochemical alteration in ADHD adolescents, which is consistent with current ADHD theory of prefrontal neuropathology with developmental mechanism. In addition, it highlights the importance of the method in interpretation of MRS findings in the context of ADHD.

Brain & Development. 2010 Feb;32:115-22.
Short-term effect of American summer treatment program for Japanese children with attention deficit hyperactivity disorder.
Yamashita Y, Mukasa A, Honda Y, et al.
We reported the results of the 3-week summer treatment program (STP) for children with attention deficit hyperactivity disorder (ADHD) in 2006. The STP was based on methods established by Professor Pelham in Buffalo, NY and has been used in a number of studies and at a number of sites in the U.S. This is the first STP outside North America. Thirty-six children age 6–12 years with ADHD participated. The collection of evidence-based behavioral modification techniques that comprises the STP's behavioral program (e.g., point system, daily report card, positive reinforcement, time out) was used. Most children showed positive behavioral changes in multiple domains of functioning, demonstrated by significant improvement in points earned daily, which reflect behavior frequencies. Only one child with ADHD co-morbid with pervasive developmental disorder required an individualized program for excessive time outs. The ADHD rating scale, symptoms of oppositional defiant disorder, and hyperactivity/inattention in Strength and Difficulties Questionnaires evaluated by parents significantly improved after STP. Although the 3-week STP was much shorter than most STPs run in the U.S., the program is more intensive than typical outpatient treatment, providing 105 h of intervenion in 3 weeks. The short-term effect of the STP was demonstrated for Japanese children with ADHD.

Prim Psychiatry. 2009;16:32-37.
Sleep in adults with ADHD and the effects of stimulants.
Roth T, Zinsenheim J.
Attention-deficit/hyperactivity disorder (ADHD), a common disorder of childhood, is frequently associated with sleep disorders in children. Symptoms of ADHD often persist into adulthood, and a growing recognition of the high prevalence of ADHD in adults has spurred research on sleep disorders in this patient population. The authors conducted a literature review to examine what is known about sleep disturbances in adults with ADHD, both in untreated patients and patients treated with stimulants. Seven relevant studies were identified-two describing sleep in unmedicated adults with ADHD and five describing the effects of stimulant medications on sleep in adults with ADHD. Basal sleep studies indicated that unmedicated adults with ADHD exhibited sleep disturbances, including reduced sleep quality. Results from the five studies of stimulant-medicated adults with ADHD suggest that, depending on the sleep parameters assessed, certain sleep parameters were improved or at least not worsened by treatment with stimulants. Because sleep symptoms are present in adults with ADHD, and sleep disturbances are often comorbid with ADHD in adults, psychiatrists should be vigilant for sleep disturbances and primary sleep disorders (eg, restless leg syndrome and sleep apnea) in their adult patients with ADHD and should monitor sleep after the initiation of therapy.

Journal of Attention Disorders. 2010 Jan;13:374-85.
Speed of language comprehension is impaired in ADHD.
Wassenberg R, Hendriksen JGM, Hurks PPM, et al.
Objective: Children with ADHD have an increased risk of poor academic performance. It is important to identify cognitive processes that may be related to this academic failure. In Western schooling systems, especially language processing skills may be of relevance. The present study, therefore, compares the ability to comprehend complex sentences of individuals with and without ADHD.
Method: Fifteen children (aged 8-11) and 15 adolescents (aged 12-16) with ADHD combined subtype are matched for age, gender, and parental level of education to 30 control subjects. Language comprehension is measured using the neuropsychological procedure proposed by Luria and an adapted version of the Token Test.
Results: Compared with the control group, children and adolescents with ADHD perform significantly slower on language comprehension tasks. Differences in accuracy are limited. No interaction between age and ADHD is found.
Conclusions: Children and adolescents with ADHD are slower and less efficient than matched control subjects with regard to complex sentence comprehension.

Nat Prod Res. 2010;24:203-05.
St. John's wort may improve some symptoms of attention-deficit hyperactivity disorder.
Niederhofer H.
There is evidence for the efficacy of noradrenaline and serotonin reuptake inhibitors treating attention-deficit hyperactivity disorder (ADHD). In this open trial, we checked St. John's wort, a serotonin and noradrealine reuptake inhibitor, and actually used as an antidepressant, for this indication. Three 14-16-year-old male psychiatric outpatients, diagnosed with ADHD have been rated at baseline and while taking St. John's wort or a placebo, respectively, by the Conner Scale and by the Continuous Performance Test, to determine its efficacy as a treatment option for ADHD. Patients' mean scores improved for Conners' hyperactivity, inattention and immaturity factors. Although the sample size is very small and therefore generalisation is very difficult, this observation indicates that St. John's wort might be a slightly effective treatment for ADHD also.

J Commun Disord. 2010;43:77-91.
The contribution of processing impairments to SLI: Insights from attention-deficit/hyperactivity disorder.
Oram Cardy JE, Tannock R, Johnson AM, et al.
Slowed speed of processing and impaired rapid temporal processing (RTP) have been proposed to underlie specific language impairment (SLI), but it is not clear that these dysfunctions are unique to SLI. We considered the contribution of attention-deficit/hyperactivity disorder (ADHD), which frequently co-occurs with language impairments, to performances on processing tasks. School-aged children who had SLI without concurrent ADHD (n=14), ADHD without concurrent SLI (n=14), and typical development (TD, n=28) performed two nonverbal speeded tasks and one auditory RTP task. RTP impairments were found in many children with SLI and ADHD, and some children with TD. Children with ADHD demonstrated slower processing speed than children with SLI or TD. Overall, findings questioned the uniqueness of these processing dysfunctions to language impairments and the validity of the behavioural paradigms traditionally used to estimate processing dysfunctions. Accounts of SLI should be further scrutinized by considering the influence of other disorders. Learning outcomes: Readers will (1) become familiar with areas of overlap between SLI and ADHD, (2) understand some of the confounds associated with behavioural measures of processing speed in children, and (3) recognize the value in testing models of language disorders by including participants with other types of disorders.

Pediatrics. 2010 Mar;125:e489-e498.
The course of inattention and hyperactivity/impulsivity symptoms after foster placement.
Linares LO, Li M, Shrout PE, et al.
BACKGROUND: It is largely unknown whether symptoms of inattention and hyperactivity/impulsivity of foster children decline over time after placement and what the role of the quality and stability of the foster placement is on the course of attention-deficit hyperactivity disorder (ADHD) symptom trajectories. Longitudinal studies of normative trajectories of symptom types in nonreferred children may assist in appropriately diagnosing ADHD and designing the clinical treatment for foster children.
OBJECTIVE: We described average level and slope of inattention and hyperactivity/impulsivity symptoms over time and examined parental (biological and foster) warmth and hostility and placement stability (number of foster-home moves and discharge from care) as reported by 3 informants (biological parent, foster parent, and classroom teacher) after considering maltreatment risks (child age, gender, sibling ADHD, and comorbidity) and use of ADHD medication.
METHODS: We studied 252 maltreated children in 95 families during 4 yearly waves, beginning shortly after placement; children were assessed whether they remained in or were discharged from foster care.
RESULTS: Average level of inattention declined according to the biological parent, whereas hyperactivity/impulsivity symptoms declined according to both biological and foster parents. Higher inattention was associated with lower parental warmth (foster parent), higher parental hostility (biological, foster, and teacher), and discharge from care (biological parent). Higher hyperactivity was also associated with lower parental warmth (foster parent) and higher parental hostility (biological and foster parent), higher (average) number of foster-home moves, and discharge from care (biological report). Higher teacher-derived hyperactivity symptoms were associated with a history of child abuse (versus neglect); however, abused children showed a steeper decline of hyperactivity over time than those with neglect histories. Unexpected

interactions were found for the impact over time of parental (foster) warmth and number of foster-home moves.
CONCLUSION: Findings point to the clinical usefulness of attending to the parenting quality and placement stability as malleable factors affecting symptom reduction subsequent to placement.

Int Clin Psychopharmacol. 2010;25:107-15.
The effect of OROS methylphenidate on the sleep of children with attention-deficit/hyperactivity disorder.
Kim HW, Yoon IY, Cho SC, et al.
We evaluated the effect of OROS methylphenidate (MPH) on sleep quality and architecture in children with attention-deficit/hyperactivity disorder (ADHD) using both a parental sleep questionnaire and polysomnography. Twenty-four ADHD children who had no comorbid psychiatric or sleep disorders except for oppositional defiant disorder completed the 6-week, prospective, open-label, flexible-dose trial with OROS MPH (Concerta) monotherapy. After OROS MPH administration, the polysomnography data indicated that the percentage of stage 2 sleep was increased (P=0.024) and the Number of Awakenings was decreased (P=0.047). Relative to baseline, Parasomnias of the Children's Sleep Habits Questionnaire were decreased (P=0.033). Sleep Onset Latency was not changed during the treatment in general, but was increased in six children with subjective sleep difficulties (F1=5.832, P=0.025, (eta)p=0.226). Bedtime Resistance and Sleep Onset Delay in Children's Sleep Habits Questionnaire were also increased during the treatment with OROS MPH only in individuals with sleep complaints (F1=5.001, P=0.036, (eta)p=0.185; F1=7.237, P=0.013, (eta)p=0.248). These results suggest that OROS MPH in open-label treatment does not seem to impair sleep and may even improve some aspects of sleep.

J Child Neurol. 2010;25:171-81.
The presence of attention-deficit hyperactivity disorder (ADHD) and obsessive-compulsive disorder worsen psychosocial and educational problems in tourette syndrome.
Debes N, Hjalgrim H, Skov L.
We assessed the psychosocial and educational consequences of Tourette syndrome using a structured interview and child behavior checklist in 314 children with Tourette syndrome and 81 healthy controls. Of the children with Tourette syndrome, 59.0% needed some kind of educational support, 44.7% had been teased, and 61.8% withheld themselves from taking part in social activities because of Tourette syndrome-related problems. There were significantly more psychosocial and educational problems in children with Tourette syndrome compared with healthy controls. A higher rate of these problems was also seen if the comorbidities attention-deficit hyperactivity disorder (ADHD) and/or obsessive compulsive disorder were present. It is very important for the physicians, teachers, and other professionals to be aware of the high prevalence of these social and educational problems to be able to deal with them and to teach the families to cope with them.

Brain. 2010;133:599-610.
The psychophysics of visual motion and global form processing in autism.
Koldewyn K, Whitney D, Rivera SM.
Several groups have recently reported that people with autism may suffer from a deficit in visual motion processing and proposed that these deficits may be related to a general dorsal stream dysfunction. In order to test the dorsal stream deficit hypothesis, we investigated coherent and biological motion perception as well as coherent form perception in a group of adolescents with autism and a group of age-matched typically developing controls. If the dorsal stream hypothesis were true, we would expect to document deficits in both coherent and biological motion processing in this group but find no deficit in coherent form perception. Using the method of constant stimuli and standard psychophysical analysis techniques, we measured thresholds for coherent motion, biological motion and coherent form. We found that adolescents with autism showed reduced sensitivity to both coherent and biological motion but performed as well as age-matched controls

during coherent form perception. Correlations between intelligence quotient and task performance, however, appear to drive much of the group difference in coherent motion perception. Differences between groups on coherent motion perception did not remain significant when intelligence quotient was controlled for, but group differences in biological motion perception were more robust, remaining significant even when intelligence quotient differences were accounted for. Additionally, aspects of task performance on the biological motion perception task were related to autism symptomatology. These results do not support a general dorsal stream dysfunction in adolescents with autism but provide evidence of a more complex impairment in higher-level dynamic attentional processes.

European Child & Adolescent Psychiatry. 2010 Feb;19:83-105.
The quality of life of children with attention deficit/hyperactivity disorder: A systematic review.
Danckaerts M, Sonuga-Barke EJS, Banaschewski T, et al.
Quality of life (QoL) describes an individual's subjective perception of their position in life as evidenced by their physical, psychological, and social functioning. QoL has become an increasingly important measure of outcome in child mental health clinical work and research. Here we provide a systematic review of QoL studies in children and young people with attention deficit hyperactivity disorder (ADHD) and address three main questions. (1) What is the impact of ADHD on QoL? (2) What are the relationships between ADHD symptoms, functional impairment and the mediators and moderators of QoL in ADHD? (3) Does the treatment of ADHD impact on QoL? Databases were systematically searched to identify research studies describing QoL in ADHD. Thirty six relevant articles were identified. Robust negative effects on QoL are reported by the parents of children with ADHD across a broad range of psycho-social, achievement and self evaluation domains. Children with ADHD rate their own QoL less negatively than their parents and do not always seeing themselves as functioning less well than healthy controls. ADHD has a comparable overall impact on QoL compared to other mental health conditions and severe physical disorders. Increased symptom level and impairment predicts poorer QoL. The presence of comorbid conditions or psychosocial stressors helps explain these effects. There is emerging evidence that QoL improves with effective treatment. In conclusion, ADHD seriously compromises QoL especially when seen from a parents' perspective. QoL outcomes should be included as a matter of course in future treatment studies.

J Child Neurol. 2010;25:157-64.
The reliability and validity of the aggregate neurobehavioral student health and educational review parentgs questionnaire (ANSER-PQ).
Or D, Cohen A, Tirosh E.
The internal reliability and validity of the Aggregate Neurobehavioral Student Health and Educational Review parentgs questionnaire (ANSER-PQ) were evaluated. Three diagnostic groups participated: (1) attention-deficit hyperactivity disorder (ADHD; N=100), (2) learning disability (N=80), and (3) a combined group (N-100). The Connersg parent and teacher rating scales were completed. Seven clusters were derived as follows: conduct, anxiety, social, attention and activity, strengths, obsessiveg(euro)"compulsive, and distress and disruption. Internal reliability was found above 0.7 for 6 of the clusters. Concurrent validity was found highly significant for the clusters of conduct and attention and activity. Discriminant validity of these clusters was found acceptable for the attention and learning disability groups. The clusters of conduct, attention and activity, and distress and disruption were found to significantly correlate with the Connersg teacher scale. The ANSER-PQ may be employed for the assessment of children with attention or learning disabilities.

Fam Med Prim Care Rev. 2008;10:98-102.
The specifics care of hospitalized children with co-existing attention deficit hyperactivity disorder (ADHD).
Wilczek-Ruzyczka E, Cepuch G.
ADHD - Attention Deficit Hyperactivity Disorder - is one of the most frequent developmental disorders in children. ADHD prevalence for general population is between 1 and 20% and it depends on diagnostic criterion used for the estimation. Therefore there is a significant probability that children with diagnosed

ADHD would be among children hospitalized because of different problems. It seems that describing problems of those children and specifics of nursing care of that group of patients becomes fundamental.

Postgrad Med. 2009;121:158-65.

Treatment of aggressive ADHD in children and adolescents: Conceptualization and treatment of comorbid behavior disorders.

McBurnett K, Pfiffner LJ.

Primary care physicians who treat attention-deficit/hyperactivity disorder (ADHD) may expect to encounter oppositional defiant disorder (ODD) in about half of patients with ADHD. Up to 20% of patients with ADHD may meet criteria for conduct disorder (CD), and a higher percentage will exhibit aggressiveness or other symptoms of CD without meeting full diagnostic criteria. Primary care physicians self-report more competence in managing ADHD alone than when it is accompanied by comorbid ODD or CD, even though the diagnostic and treatment considerations are similar. The empirical literature on normal and antisocial behavioral development provides insight into understanding how patients with comorbid disruptive behavior may differ from those with uncomplicated ADHD. Primary care physicians who are competent to diagnosis and treat ADHD may develop similar competence in managing patients with ADHD plus oppositional and/ or aggressive behavior and, if allied with colleagues who provide specialized psychosocial treatment, may fill an important role in the overall management of complex cases.

Dev Med Child Neurol. 2010;52:e10-e15.

Visuospatial attention disturbance in Duchenne muscular dystrophy.

De Moura MCDS, Valle LERD, Resende MBD, et al.

Aim: The cognitive deficits present in the Duchenne muscular dystrophy (DMD) are not yet well characterized. Attention, considered to be the brain mechanism responsible for the selection of sensory stimuli, could be disturbed in DMD, contributing, at least partially, to the observed global cognitive deficit. The aim of this study was to investigate attentional function in individuals with DMD.

Method: Twenty-five males (mean age 12y; SD 2y 2mo) with DMD and 25 healthy males (mean age 12y; SD 2y) were tested in a visuospatial task (Posner computerized test). They were instructed to respond as quickly as possible to a lateralized visual target stimulus with the ipsilateral hand. Their attention was automatically orientated by a peripheral prime stimulus or, alternatively, voluntarily orientated by a central spatially informative cue.

Results: The main result obtained was that the attentional effect (sum of the benefit and the cost of attention) did not differ between the two groups in the case of automatic attention ($p=0.846$) but was much larger for individuals with DMD than for comparison individuals in the case of voluntary attention ($p<0.001$).

Interpretation: The large voluntary attentional effect exhibited by the participants with DMD seems similar to that of younger children, suggesting that the disease is associated with delayed maturation of voluntary attention mechanisms.

Cognition. 2010;115:93-103.

What does distractibility in ADHD reveal about mechanisms for top-down attentional control?

Friedman-Hill SR, Wagman MR, Gex SE, et al.

In this study, we attempted to clarify whether distractibility in ADHD might arise from increased sensory-driven interference or from inefficient top-down control. We employed an attentional filtering paradigm in which discrimination difficulty and distractor salience (amount of image "graying") were parametrically manipulated. Increased discrimination difficulty should add to the load of top-down processes, whereas increased distractor salience should produce stronger sensory interference. We found an unexpected interaction of discrimination difficulty and distractor salience. For difficult discriminations, ADHD children filtered distractors as efficiently as healthy children and adults; as expected, all three groups were slower to respond with high vs. low salience distractors. In contrast, for easy discriminations, robust between-group differences emerged: ADHD children were much slower and made more errors than either healthy children or adults. For easy discriminations, healthy children and adults filtered out high salience distractors as easily as low salience distractors, but ADHD children were slower to respond on trials with low salience distractors

than they did on trials with high salience distractors. These initial results from a small sample of ADHD children have implications for models of attentional control, and ways in which it can malfunction. The fact that ADHD children exhibited efficient attentional filtering when task demands were high, but showed deficient and atypical distractor filtering under low task demands suggests that attention deficits in ADHD may stem from a failure to efficiently engage top-down control rather than an inability to implement filtering in sensory processing regions.

J Abnorm Psychol. 2010;119:174-85.

Working Memory Demands Impair Skill Acquisition in Children With ADHD.

Huang-Pollock CL, Karalunas SL.

This study examined the process of cognitive skill acquisition under differential working memory (WM) load conditions in children with the primarily inattentive (n=21) and the combined (n=32) subtypes of childhood attention-deficit/hyperactivity disorder (ADHD) and compared the results with those of non-ADHD controls (n=48). Children completed 2 tasks of cognitive skill acquisition: alphabet arithmetic and finger math. The tasks differed in the amount of WM required for execution (alphabet arithmetic required more) but were otherwise matched with respect to logical structure, design, and discriminatory power. As would be predicted if the WM of the to-be-learned task affected the ability of children with ADHD to develop automaticity for a complex cognitive skill, ADHD-related impairments in the development of automaticity were seen for alphabet arithmetic but not for finger math. Results not only are relevant to ongoing debate regarding the presence of effortful versus automatic cognitive deficits in ADHD but also have implications for the development of new psychoeducational interventions for children with ADHD.

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