



# ADHD

ATTENTION DEFICIT HYPERACTIVITY DISORDER

  
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NEWSLETTER

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Journal of Attention Disorders. 2010 Mar;13:454-63.

**Accuracy of the DSM-oriented attention problem scale of the child behavior checklist in diagnosing attention-deficit hyperactivity disorder.**

**Aebi M, Metzke CW, Steinhausen HC.**

**Objective:** The present study aimed at testing the Child Behavior Checklist (CBCL) including an adapted five-item DSM-Oriented Attention Problem Scale for predicting attention deficit hyperactivity disorders (ADHD).

**Methods:** CBCL ratings were made both in a community sample (N = 390) and an outpatient child psychiatric sample (N = 392). Four different prediction models were analyzed in a community subsample (n = 195) and an outpatient subsample (n = 196) and cross-validated in two further subsamples of the same size.

**Results:** The adapted DSM-Oriented Attention Problem Scale was superior to the original Attention Problem Scale in the identification of ADHD participants. A raw score of 5 to 6 on the reduced DSM-Oriented Attention Problem Scale was the best discriminator between cases and noncases.

**Conclusions:** The adapted DSM-Oriented Attention Problem Scale of the CBCL is a useful screening instrument for ADHD with adequate diagnostic accuracy in community and outpatient samples.

Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2010 May;38:497-507.

**Competing core processes in attention-deficit/hyperactivity disorder (ADHD): Do working memory deficiencies underlie behavioral inhibition deficits?**

**Alderson RM, Rapport MD, Hudec KL, et al.**

The current study examined competing predictions of the working memory and behavioral inhibition models of ADHD. Behavioral inhibition was measured using a conventional stop-signal task, and central executive, phonological, and visuospatial working memory components (Baddeley 2007) were assessed in 14 children with ADHD and 13 typically developing (TD) children. Bootstrapped mediation analyses revealed that the visuospatial working memory system and central executive both mediated the relationship between group membership (ADHD, TD) and stop-signal task performance. Conversely, stop-signal task performance mediated the relationship between group membership and central executive processes, but was unable to account for the phonological and visuospatial storage/rehearsal deficits consistently found in children with ADHD. Comparison of effect size estimates for both models suggested that working memory deficits may underlie impaired stop-signal task performance in children with ADHD. The current findings therefore challenge existing models of ADHD that describe behavioral inhibition as a core deficit of the disorder.

Journal of the American Academy of Child & Adolescent Psychiatry. 2010 Mar;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

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.

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 through 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.

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Journal of Clinical Child and Adolescent Psychology. 2010 May;39:362-72.

**ADHD across cultures: Is there evidence for a bidimensional organization of symptoms?**

**Bauermeister JJ, Canino G, Polanczyk G, et al.**

We examined the phenotypic expression of attention-deficit/hyperactivity disorder (ADHD) across cultures by assessing the factor/latent class structure of its core symptoms. We conducted a systematic review of the literature published from January 1987 to November 2008 using Medline and PsycINFO. We systematically reviewed 2,511 article abstracts, and 48 of these abstracts were included in this review. Research with school-age children from 15 countries including different samples, informants, and rating instruments supported a two-factor ADHD model consisting of inattention and combined hyperactivity and impulsivity. This model was not supported for preschool children. Cross-cultural equivalence for the two-factor model was suggested in some studies. Latent class analyses using parental data and more recent approaches like factor mixture modeling are generally consistent with factor analyses. These findings argue in favor of a cross-cultural validity of the syndrome. The implications of these findings for further research and classificatory systems in mental health like the Diagnostic and Statistical Manual of Mental Disorders (5th ed.) are discussed.

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Acta Paediatr Int J Paediatr. 2010;99:925-28.

**Intrauterine exposure to caffeine and inattention/overactivity in children.**

**Bekhus M, Skjothaug T, Nordhagen R, et al.**

**Aim:** To determine the association between intrauterine exposure to timing and sources of caffeine and inattention/overactivity, suggesting ADHD in the child.

**Method:** This study used prospectively collected data from the large population-based study, The Norwegian Mother and Child Cohort Study (MoBa). Participants were 25 343 mothers and their 18-month-old children. Mothers reported on consumption of a number of caffeine sources at the 17th week and 30th week of gestation, as well as child inattention/overactivity at 18 months. Data were analysed using univariate analyses of covariance (ancova).

**Results:** Once we controlled for confounders, there was a small effect of caffeine intake at 17th week of gestation on inattention/overactivity combined, and both 17th and 30th week of gestation on overactivity, when investigated separately from inattention. Surprisingly, the caffeine effect was only found for soft drinks, not tea or coffee.

**Conclusion:** Intrauterine exposure to soft drinks rather than coffee, the traditional focus, is associated with maternal reports of overactive behaviour in children aged 18 months.

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Can J Psychiatry. 2010;55:211-21.

**Psychometric properties of a pictorial instrument for assessing psychopathology in youth aged 12 to 15 years: The dominic interactive for adolescents.**

**Bergeron L, Smolla N, Valla JP, et al.**

**Objectives:** Over the last 15 years, adequate psychometric properties of the different versions of the Dominic led to the development of the Dominic Interactive for Adolescents (DIA). The DIA is a Diagnostic and Statistical Manual of Mental Disorders (DSM), Fourth Edition, Text Revision - based self-administered computerized pictorial instrument for assessing the most frequent mental disorders in adolescents aged 12 to 15 years. Our study aims to verify the internal consistency, the test - retest estimate of reliability, and the criterion-related validity of this instrument.

**Method:** The total sample included 607 adolescents living in the Montreal urban area recruited from the community (465 French-speaking) and the clinical population (142 French-speaking). Internal consistency was evaluated by Cronbach's alpha coefficients and test - retest estimate of reliability by the kappas and intraclass correlation coefficients (ICCs). Two criteria are indicative of criterion-related validity of the DIA: clinical judgment on the presence or absence of symptoms (scored independently by 3 judges) and the adolescents' referrals to outpatient psychiatric clinics.

**Results:** For most symptom scales of the DIA, Cronbach's alpha coefficients varied from 0.69 to 0.89, test-retest kappas were 0.50 or greater, and ICCs ranged from 0.78 to 0.87. The criterion-related validity was demonstrated for symptoms, symptom scales, and the categories based on the symptom scale cut-off points.

**Conclusion:** As no informant can be considered the criterion standard of psychopathology, the interview with adolescents regarding their own symptoms is necessary. Findings from our study reasonably support adequate psychometric properties of the DIA in adolescents aged 12 to 15 years.

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Behavior Modification. 2010 Mar;34:79-93.

**Endurance of multiplication fact fluency for students with attention deficit hyperactivity disorder.**

**Brady KK, Kubina RM, Jr.**

This study examines the relationship between a critical learning outcome of behavioral fluency and endurance, by comparing the effects of two practice procedures on multiplication facts two through nine. The first procedure, called whole time practice trial, consisted of an uninterrupted 1 minute practice time. The second procedure, endurance building practice trials, had three 20 second practice trials. A total of 3 students with attention deficit hyperactivity disorder participated. Results indicated that multiplication facts with the endurance building practice trials produced more efficient learning when compared to the whole time practice trial procedure for all 3 participants. Additionally, results show that even with the amount of practice time being equal, 1 minute in both conditions, on average participants practiced 30% more problems with the endurance building practice trials procedure than they did with the whole time practice trial procedure.

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Tijdschr Psychiatr. 2010;52:255-57.

**Follow-up of the MTA-study in children with ADHD: What do the data tell us, and what not?**

**Buitelaar JK.**

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Acta Anaesthesiol Taiwan. 2009;47:208-11.

**General anesthesia in a juvenile with attention-deficit hyperactivity disorder accompanied by long-term use of methylphenidate (Concerta(registered trademark)).**

**Chang CH, Yang CF, Huang YC, et al.**

Methylphenidate, a central stimulant, is used in the treatment of individuals who have attention-deficit hyperactivity disorder (ADHD). ADHD is a notorious worldwide disorder with a prevalence rate of 8-12% in schoolchildren, which is characterized by hyperactivity, impulsivity, and inattention. Currently, there have been few reports in the anesthetic literature examining ADHD patients who have had long-term use of methylphenidate, especially the extended-release formulation. Here, we report a case of a 14-year-old boy with ADHD treated chronically with the long-acting form of methylphenidate (Concerta(registered trademark)), and who was scheduled to receive orthopedic surgery under general anesthesia. No significant

problems or fluctuations in hemodynamics were encountered during anesthesia induction, maintenance, and emergence. The patient made an uncomplicated recovery and was discharged 3 days later without incident.

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Journal of Attention Disorders. 2010 Mar;13:497-504.

**Negative priming within a Stroop task in children and adolescents with attention-deficit hyperactivity disorder, their siblings, and independent controls.**

**Christiansen H, Oades RD.**

**Objective:** Negative priming (NP) is the slowed response to a stimulus that was previously ignored. Response times in NP task conditions were compared with the interference provided by congruent/incongruent stimuli in a Stroop condition in the same task in children diagnosed with attention-deficit hyperactivity disorder (ADHD), their unaffected siblings, and independent controls.

**Method:** Speed, accuracy, and variability of responses were compared using a computerized NP Stroop test for 35 children with ADHD, 24 siblings without diagnosis, and 37 independent healthy controls aged 6 to 17 years.

**Results:** NP was evident at test onset for congruent trials in children without a diagnosis and was reduced initially in those with ADHD occurring in the absence of a significant Stroop interference effect and independently of age or symptom severity. Incongruency masked NP effects. Cases showed more intraindividual response-time variability.

**Conclusions:** Both NP in normal children and its reduction in ADHD cases attenuated across trials reflecting the increased facilitation from previous stimulation.

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J Child Adolesc Psychopharmacol. 2010;20:119-26.

**Impulsive aggression in attention-deficit/hyperactivity disorder: Symptom severity, co-morbidity, and attention-deficit/hyperactivity disorder subtype.**

**Connor DF, Chartier KG, Preen EC, et al.**

**Objective:** The aim of this study was to characterize aggression and its relationship to psychiatric co-morbidity, attention-deficit/hyperactivity disorder (ADHD) subtype, and ADHD symptom severity in clinically referred ADHD youngsters. We also wanted to ascertain whether reactive and impulsive aggression is more prevalent than proactive aggression in an ADHD sample.

**Method:** Consecutively referred ADHD children and adolescents (n=268) and community controls (n=100) were assessed systematically regarding demographics, psychiatric diagnosis, overt aggression severity, proactive and reactive aggression severity, and ADHD symptom severity using correlational analysis and analysis of covariance (ANCOVA).

**Results:** Across all aggression measures, ADHD children were more aggressive than community controls. ADHD children with nonanxiety co-morbid disorders were more aggressive than ADHD children without such co-morbidity. The number of co-morbid psychiatric diagnoses and ADHD symptom severity were significantly associated with aggression. ADHD youngsters demonstrated significantly more reactive than proactive forms of aggression across all co-morbid diagnoses.

**Conclusions:** Aggression is common in clinically referred ADHD youngsters and should be identified as a legitimate target for psychopharmacological treatment in children and adolescents with moderate to severe ADHD and nonanxiety co-morbid diagnostic disorders.

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Psychiatr Genet. 2010;20:20-24.

**Variation in the catechol-O-methyltransferase Val158Met polymorphism associated with conduct disorder and ADHD symptoms, among adolescent male delinquents.**

**DeYoung CG, Getchell M, Kopolov RA, et al.**

**Objective:** Variation in the catechol-O-methyltransferase gene (COMT) has been associated with antisocial behavior in populations with attention deficit/hyperactivity disorder (ADHD). This study examined whether COMT would predict antisocial behavior in a sample with high levels of behavior problems, not necessarily ADHD. In addition, because previous research suggests that COMT may be associated with ADHD in males, association between COMT and ADHD symptoms was examined.

**Method:** This study tested whether variation in three polymorphisms of the COMT gene was predictive of symptoms of conduct disorder and ADHD, in a sample of 174 incarcerated Russian adolescent male delinquents.

**Results:** The Val allele of the ValMet polymorphism was significantly associated with conduct disorder diagnosis and symptoms, whereas the Met allele was associated with ADHD symptoms.

**Conclusion:** The ValMet polymorphism of the COMT gene shows a complex relation to behavior problems, influencing conduct disorder and ADHD symptoms in opposite directions in a high-risk population.

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Biol Psychiatry. 2010;67:608-16.

### **Mapping Attention-Deficit/Hyperactivity Disorder from Childhood to Adolescence-No Neurophysiologic Evidence for a Developmental Lag of Attention but Some for Inhibition.**

**Doehnert M, Brandeis D, Imhof K, et al.**

**Background:** The role of a developmental lag for deficits of higher brain functions in attention-deficit/hyperactivity disorder (ADHD) has not yet been tested in longitudinal studies. We examined the development of neurophysiological markers of attention (Cue P300; contingent negative variation [CNV]) and inhibition (NoGo P300) in ADHD and control groups from childhood to adolescence for support of the developmental lag hypothesis of ADHD.

**Methods:** ADHD (n = 28/3 girls) and control (n = 22/5 girls) subjects were assessed at baseline (Time 1; ADHD age 10.8 (plus or minus) 1.8 years, controls 10.4 (plus or minus) 1.1 years) and at two follow-up examinations (Time 2 after 1.2 years, Time 3 after 2.5 years). Event-related potential maps were recorded during a cued Continuous Performance Test (CPT) at all assessments and analyzed using scalp and source (sLORETA) measures.

**Results:** CPT performance showed common effects of ADHD and younger age, consistent with (but not specific to) developmental lag. The NoGo P300 developed earlier and became stronger in control subjects than in the ADHD group, again consistent with an initial developmental lag. In contrast, the attenuation of the Cue P300 and the CNV with ADHD at all assessments was opposite to the enhancement with younger age and thus inconsistent with developmental lag. The sLORETA source localization also differed between ADHD and developmental effects.

**Conclusions:** These results provide strong evidence for multiple and persistent neural processing deficits in ADHD. They do not support the developmental lag hypothesis for attentional dysfunction in ADHD despite partial evidence that developmental lag contributes to inhibitory brain dysfunction during early adolescence.

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J Clin Psychopharmacol. 2010 Apr;30:145-51.

### **Quality of life and attention-deficit/hyperactivity disorder core symptoms: A pooled analysis of 5 non-US atomoxetine clinical trials.**

**Escobar R, Schacht A, Wehmeier PM, et al.**

The objective of this pooled analysis was to correlate parameters related to quality of life with attention-deficit/hyperactivity disorder (ADHD) core symptoms analyzing data of 5 atomoxetine clinical trials in children and adolescents with ADHD. Data from 5 clinical trials (4 from Europe and 1 from Canada) with similar inclusion/exclusion criteria and similar duration (8-12 weeks' follow-up) were included. All studies used the Child Health and Illness Profile, Child Edition (CHIP-CE), parent rating form at baseline and end point. Correlation coefficients and effect sizes to ADHD-Rating Scale (ADHD-RS) scores were calculated. A total of 794 patients aged 6 to 15 years (mean, 9.7 years), with mean (SD) baseline Clinical Global Impression of Severity of 4.8 (0.89) and ADHD-RS of 41.8 (8.04), were included. Baseline total CHIP-CE mean t score (standard, 50 [10]) was 28.9 (11.76), and the strongest impairments were seen in risk avoidance (30.2 [14.62]) and achievement (30.5 [10.4]) domains. At baseline, CHIP-CE versus ADHD-RS correlation was low (total, -0.345) except for the risk avoidance domain (total, -0.517). For changes from baseline to end point, a low correlation between the scales was found (total, -0.364; placebo-controlled studies only, n = 372). Quality of life impairment in ADHD was found in CHIP-CE total score and several domains. Correlations between CHIP-CE and ADHD-RS at baseline, end point, and for change from baseline to end point were low to moderate. These findings suggest that measuring quality of life adds clinically relevant insight beyond core symptom evaluation in children and adolescents with ADHD.

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Eur Child Adolesc Psychiatry. 2010;19:159-66.

**Co-morbidity and patterns of care in stimulant-treated children with ADHD in the Netherlands.**

**Faber A, Kalverdijk LJ, De Jong-Van Den Berg, 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 Cogn Neurosci. 2010 May;22:1011-25.

**Multisensory spatial attention deficits are predictive of phonological decoding skills in developmental dyslexia.**

**Facoetti A, Trussardi AN, Ruffino M, et al.**

Although the dominant approach posits that developmental dyslexia arises from deficits in systems that are exclusively linguistic in nature (i.e., phonological deficit theory), dyslexics show a variety of lower level deficits in sensory and attentional processing. Although their link to the reading disorder remains contentious, recent empirical and computational studies suggest that spatial attention plays an important role in phonological decoding. The present behavioral study investigated exogenous spatial attention in dyslexic children and matched controls by measuring RTs to visual and auditory stimuli in cued-detection tasks. Dyslexics with poor nonword decoding accuracy showed a slower time course of visual and auditory (multisensory) spatial attention compared with both chronological age and reading level controls as well as compared with dyslexics with slow but accurate nonword decoding. Individual differences in the time course of multisensory spatial attention accounted for 31% of unique variance in the nonword reading performance of the entire dyslexic sample after controlling for age, IQ, and phonological skills. The present study suggests that multisensory "sluggish attention shifting"-related to a temporoparietal dysfunction-selectively impairs the sublexical mechanisms that are critical for reading development. These findings may offer a new approach for early identification and remediation of developmental dyslexia.

Journal of Attention Disorders. 2010 Mar;13:532-38.

**Effects of extended-release guanfacine on ADHD symptoms and sedation-related adverse events in children with ADHD.**

**Faraone SV, Glatt SJ.**

**Objective:** Guanfacine extended release (GXR) is a selective  $\alpha_2A$ -adrenoceptor agonist that is shown to be an effective nonstimulant treatment for the symptoms of attention-deficit/hyperactivity disorder. This report documents the time course and predictors of symptom efficacy and sedation-related adverse events (AEs) that emerge during GXR treatment throughout 3 randomized, placebo-controlled, double-blind trials of the drug.

**Method:** Analysis of data from 3 GXR clinical trials.

**Results:** Few variables related to the study participants or their treatment regimen affects the emergence or magnitude of sedation-related AEs. The best predictor of sedation is treatment duration, with the likelihood of sedation-related AEs decreasing with increasing time on medication. Sedation-related AEs are not predicted by the actual dose a participant receives, the magnitude of any dose changes, or the relationship between dose received and the magnitude of dose changes. Rates of discontinuation because of sedation-related

side effects average 6.3% for GXR-treated participants and 0.5% for placebo-treated participants across the three trials.

**Conclusion:** These results suggest that acclimation to GXR may minimize the risk for, and magnitude of, sedation-related AEs.

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J Child Adolesc Psychopharmacol. 2010;20:113-18.

**Manganese in children with attention-deficit/hyperactivity disorder: Relationship with methylphenidate exposure.**

*Farias AC, Cunha A, Benko CR, et al.*

Attention-deficit/hyperactivity disorder (ADHD) is a common neurobehavioral disorder that affects children worldwide. The etiology of ADHD is complex and not fully understood. Earlier studies associated elevated levels of manganese (Mn) with learning problems, attention deficits, and ADHD. Furthermore, it has also been shown that the dopamine (DA) system, the primary site of action of pharmacological ADHD treatments, is influenced by high levels of Mn. Recent studies have suggested that Mn accumulates in dopaminergic neurons via the presynaptic dopamine transporter (DAT). A role for altered functioning of the dopaminergic system in the etiology of ADHD has been well established through neurochemical, neurophysiological, imaging, and genetics studies. Methylphenidate (MPH) is a psychostimulant commonly used to manage ADHD symptoms. The pharmacotherapeutic effect of MPH occurs primarily through its action of inhibiting DAT, and thus increasing dopamine, as well as other catecholamines, at the synapse. We assessed a group of children with ADHD and matched control children without psychopathology attending public schools in a southern Brazilian city and reported elevated serum concentrations of Mn in treatment-naive children with ADHD compared to normal controls. Interestingly, children with ADHD receiving concurrent MPH showed no difference in Mn serum levels versus controls. We then prospectively assessed the impact of naturalistic treatment with MPH and determined that Mn concentrations were significantly reduced from baseline values following MPH exposure.

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Rev Neurol. 2010;50:573-74.

**Cardiovascular side effects secondary to treatment with methylphenidate.**

*Fernandez-Fernandez MA, Rufo-Campos M, Mateos-Checa R, et al.*

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Child Adolesc Ment Health. 2010 May;15:85-90.

**Undertreatment of motor problems in children with ADHD.**

*Fliers EA, Franke B, Lambregts-Rommelse NNJ, et al.*

**Correction Notice:** An erratum for this article was reported in Vol 15(2) of Child and Adolescent Mental Health (see record 2010-06698-019). In the original article, an error was made in the second line of the Key Practitioner message on page 1.

**The message should read as follows:** Only half of children with ADHD and motor problems receive physiotherapy treatment]

**Background:** Motor problems occur in 30% to 50% of children with ADHD, and have a severe impact on daily life. In clinical practice there seems to be little attention for this comorbidity with the possible consequence that these motor problems go undertreated.

**Method:** Clinical interview and questionnaire survey of treatment by physiotherapy and factors predicting treatment of motor problems in 235 children with ADHD and 108 controls.

**Results:** Half of motor-affected children had received physiotherapy. Treated children had more severe motor problems, and less frequently presented with comorbid anxiety and conduct disorder. Treated and untreated children were similar in age, and rated similarly on ADHD inattentive and hyperactive/impulsive scales and parental socio-economic status.

**Conclusion:** Currently, undertreatment of motor problems in ADHD occurs. Behavioural factors play a role in referral and intervention.

**Key Practitioner Message:** 1. ADHD and motor problems are frequently co-occurring 2. Only half of

children with ADHD receive physiotherapy treatment 3. Health workers should be aware of the impact of motor problems on the daily life of children with ADHD.

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European Child & Adolescent Psychiatry. 2010 Mar;19:311-23.

**Phenotypic and measurement influences on heritability estimates in childhood ADHD.**

**Freitag CM, Rohde LA, Lempp T, et al.**

Twin studies described a strongly heritable component of attention-deficit/hyperactivity disorder (ADHD) in children and adolescents. However, findings varied considerably between studies. In addition, ADHD presents with a high rate of comorbid disorders and associated psychopathology. Therefore, this literature review reports findings from population-based twin studies regarding the influence of subtypes, assessment instruments, rater effects, sex differences, and comorbidity rates on ADHD heritability estimates. In addition, genetic effects on the persistence of ADHD are discussed. By reviewing relevant factors influencing heritability estimates more homogeneous subtypes relevant for molecular genetic studies can be elicited. A systematic search of population-based twin studies in ADHD was performed, using the databases PubMed and PsycInfo. Results of family studies were added in case insufficient or contradictory findings were obtained in twin studies. Heritability estimates were strongly influenced by rater effects and assessment instruments. Inattentive and hyperactive-impulsive symptoms were likely influenced by common as well as specific genetic risk factors. Besides persistent ADHD, ADHD accompanied by symptoms of conduct or antisocial personality disorder might be another strongly genetically determined subtype, however, family environmental risk factors have also been established for this pattern of comorbidity.

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Journal of Attention Disorders. 2010 Mar;13:464-67.

**Comorbidity of enuresis in children with attention-deficit/hyperactivity disorder.**

**Ghanizadeh A.**

**Objective:** To compare parental psychopathology and psychiatric disorders in ADHD children with and those without enuresis.

**Method:** The participants of the clinical sample interviewed according to DSM-IV diagnostic criteria were 35 children with ADHD and enuresis, 153 ADHD children without enuresis, 115 fathers, and 172 mothers.

**Results:** Only ODD comorbidity was the predictor of enuresis. Conduct disorder, tic disorder, major depressive disorder, separation anxiety disorder, bruxism, generalized anxiety disorder, obsessive compulsive disorder, and nail biting were not statistically more frequent in ADHD children with enuresis than in the ADHD children without enuresis. The only parental psychiatric disorder that was related to the groups was father's major depressive disorder.

**Conclusion:** Enuresis in ADHD has a relationship with ODD. Physicians who treat patients with ADHD and enuresis should routinely inquire about the presence of major depression in the fathers.

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Journal of Attention Disorders. 2010 Mar;13:479-88.

**Usefulness of a clinician rating scale in identifying preschool children with ADHD.**

**Gopin C, Healey D, Castelli K, et al.**

**Objective:** To ascertain the psychometric properties and clinical utility of the Behavioral Rating Inventory for Children (BRIC), a novel clinician inventory for preschoolers.

**Method:** Completion of the BRIC for 214 preschoolers follows 2 evaluation sessions, generally separated by less than 2 weeks. Items are submitted to a Principal Components Analysis (PCA) with Varimax rotation. Test-retest reliability and validity relative to other measures are assessed.

**Results:** PCA yields a 2-factor solution representing a "Symptom Triad" and a "Mood/Sociability Factor." Test-retest reliability of the triad and factor are .78 ( $p < .001$ ) and .55 ( $p < .001$ ), respectively. Correlations between parent and teacher ratings of ADHD-related behaviors and the Symptom Triad range from .39-.47 (all  $p < .001$ ); similar correlations are found with laboratory measures of activity level ( $r = .35-.49$ , all  $p < .001$ ).



**Conclusion:** The Symptom Triad of the BRIC appears to be a reliable and valid tool that may assist researchers and clinicians in studying and diagnosing ADHD in preschoolers, particularly in cases where teacher ratings are unavailable.

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Education & Treatment of Children. 2010 May;33:205-21.

**Increasing on-task behaviors of high school students with attention deficit hyperactivity disorder: Is it enough?**

**Graham-Day KJ, Gardner R, III, Hsin YW.**

This study used audiotaped chimes and a student checklist to improve the on-task behavior of three 10th-grade students with ADHD. The study took place in a high school study hall specifically for students with disabilities. The observers used a 10-second whole interval recording system to record on-task/ off-task behavior within an alternating treatment experimental design. The conditions included: Baseline, Self-monitoring, and Self-monitoring with Reinforcement. Results indicate that all three participants improved their on-task behavior. Self-monitoring alone was effective in increasing the on-task behavior of two participants. Self-monitoring with reinforcement was needed to increase the on-task behavior of the third student.

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Biol Psychiatry. 2010;67:624-31.

**Effects of Motivation and Medication on Electrophysiological Markers of Response Inhibition in Children with Attention-Deficit/Hyperactivity Disorder.**

**Groom MJ, Scerif G, Liddle PF, et al.**

**Background:** Theories of attention-deficit/hyperactivity disorder (ADHD) posit either executive deficits and/or alterations in motivational style and reward processing as core to the disorder. Effects of motivational incentives on electrophysiological correlates of inhibitory control and relationships between motivation and stimulant medication have not been explicitly tested.

**Methods:** Children (9-15 years) with combined-type ADHD (n = 28) and matched typically developing children (CTRL) (n = 28) performed a go/no-go task. Electroencephalogram data were recorded. Amplitude of two event-related potentials, the N2 and P3 (markers of response conflict and attention), were measured. The ADHD children were all stimulant responders tested on and off their usual dose of methylphenidate; CTRLs were never medicated. All children performed the task under three motivational conditions: reward; response cost; and baseline, in which points awarded/deducted for inhibitory performance varied.

**Results:** There were effects of diagnosis (CTRL > ADHD unmedicated), medication (on > off), and motivation (reward and/or response cost > baseline) on N2 and P3 amplitude, although the N2 diagnosis effect did not reach statistical significance (p = .1). Interactions between motivation and diagnosis/medication were nonsignificant (p > .1).

**Conclusions:** Motivational incentives increased amplitudes of electrophysiological correlates of response conflict and attention in children with ADHD, towards the baseline (low motivation) amplitudes of control subjects. These results suggest that, on these measures, motivational incentives have similar effects in children with ADHD as typically developing CTRLs and have additive effects with stimulant medication, enhancing stimulus salience and allocation of attentional resources during response inhibition.

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Dev Med Child Neurol. 2010;52:364-70.

**Reliability and validity of the assessment of neurological soft-signs in children with and without attention-deficit-hyperactivity disorder.**

**Gustafsson P, Svedin CG, Ericsson I, et al.**

**Aim:** To study the value and reliability of an examination of neurological soft-signs, often used in Sweden, in the assessment of children with attention-deficit-hyperactivity disorder (ADHD), by examining children with and without ADHD, as diagnosed by an experienced clinician using the DSM-III-R.

**Method:** We have examined interrater reliability (26 males, nine females; age range 5y 6mo-11y), internal consistency (94 males, 43 females; age range 5y 6mo-11y), test-retest reliability (12 males, eight females; age range 6-9y), and validity (79 males, 33 females; age range 5y 6mo-9y).

**Results:** The sum of the scores for the items on the examination had good interrater reliability (intraclass correlation [ICC] 0.95) and acceptable internal consistency (Cronbach's alpha 0.76). The test-retest study

also showed good reliability (ICC 0.91). There were modest associations between the examination and the assessment of motor function made by the physical education teacher (ICC 0.37) as well as from the parents' description (ICC 0.39). The examination of neurological soft-signs had a sensitivity of 0.80 and a specificity of 0.76 in predicting motor problems as evaluated by the physical education teacher.

**Interpretation:** The reliability and validity of this examination seem to be good and can be recommended for clinical practice and research.

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Nord J Psychiatry. 2010;64:218-24.

**The autism-Tics, AD/HD and other comorbidities (A-TAC) telephone interview: Convergence with the child behavior checklist (CBCL).**

**Hallerod SLH, Larson T, Stahlberg O, et al.**

**Objective:** To compare telephone interview screening for child psychiatric/neuropsychiatric disorders using the inventory of AutismTics, Attention deficit/hyperactivity disorder (AD/HD) and other Comorbidities (A-TAC) with results from the Child Behavior Checklist (CBCL).

**Background:** The A-TAC is a parent telephone interview focusing on autism spectrum disorders (ASDs) and co-existing problems, developed for lay interviewers.

**Subjects and methods:** A-TAC telephone interviews and CBCL questionnaires were obtained from parents of 106 Swedish twin pairs aged 9 and 12 years.

**Results:** Correlations between A-TAC modules and CBCL scales aimed at measuring similar concepts were generally significant albeit modest, with correlation coefficients ranging from 0.30 through 0.55.

**Conclusion:** The A-TAC has convergent validity with the CBCL in several problem areas, but the A-TAC also provides more detailed and specific assessments of ASD symptoms and related neuropsychiatric problems.

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Encephale. 2010;36:172-79.

**Psychocognitive and psychiatric disorders associated with developmental dyslexia: A clinical and scientific issue.**

**Huc-Chabrolle M, Barthez MA, Tripi G, et al.**

**Introduction:** Dyslexia is a complex neurodevelopmental disorder that affects 5 to 10% of school-age children. This condition consists in a specific learning disability with a neurological origin. These learning difficulties are unexpected in relation to other cognitive abilities and the provision of efficient classroom instruction. A range of neurobiological investigations suggests that disruption of the parieto-temporo-occipital systems underlies a failure of skilled reading to develop. The observation that dyslexia is both a familial and heritable problem was made early on and was confirmed by twin studies. They also suggested that both genetic and environmental factors are involved. Several loci have been implicated in dyslexia, notably on chromosomes 2, 3, 6, 15 and 18 and some candidate genes have been proposed, but no functional mutation has yet been identified.

**Literature review:** Dyslexia seldom appears isolated and dyslexic people are very likely to present other kinds of learning disabilities or psychiatric disorders. Specific language impairment, often with a mild outcome, is the most frequently associated with dyslexia. Indeed, late language development is often reported by dyslexic patients and also occurs more frequently among their siblings. Genetic linkage studies suggest some common genetic factor underlying this comorbidity. Dyscalculia is associated with dyslexia in 25% of cases, but most people with dyscalculia do not have any sign of dyslexia. The question of whether dyscalculia associated with dyslexia and dyscalculia itself rely on the same cognitive impairment is still controversial. Impaired motor development is also a common feature that affects nearly 50% of dyslexics and dyslexia is frequent among dyspraxic patients. This association raises the discussion on the role of motor impairment in dyslexia's physiopathology and the cerebellar theory of dyslexia. Beyond its link with other learning disorders, the study of dyslexia's comorbidity highlights psychopathological issues. ADHD is the most frequent psychiatric disorder associated with dyslexia. Underpinnings of this link between the two disorders seem to rely on common cognitive and genetic factors. Some authors have proposed a candidate gene ADRA2A to determine the condition including ADHD and dyslexia. In addition, dyslexics are exposed to a higher risk of anxiodepressive and behavioural disorders. Dyslexic children experience three times more behavioural disorders and one third of children with behavioural problems turn out to be affected by dyslexia. The literature study reveals inconsistent findings about depressed mood among dyslexics, but evidence of a

persistent increase in the rate of anxiety disorders. The authors put forward the impact of environmental factors to explain these psychiatric comorbidities.

**Conclusion:** This review emphasizes dyslexia's comorbidities because they represent an important issue, both from a scientific and clinical point of view. Indeed, for clinicians, children showing multiple learning disabilities have specific reeducation and educational needs and dyslexics have a higher risk of emotional and behavioural disorders. On the other hand, dyslexia's comorbidity study provides a powerful method for researchers to investigate the still unknown physiopathology of dyslexia.

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Journal of Child Psychology and Psychiatry. 2010 Mar;51:223-32.

**Deficits in interval timing measured by the dual-task paradigm among children and adolescents with attention-deficit hyperactivity disorder.**

*Hwang SL, Gau SS-F, Hsu WY, et al.*

**Background:** The underlying mechanism of time perception deficit in long time intervals in attention-deficit/hyperactivity disorder (ADHD) is still unclear. This study used the time reproduction dual task to explore the role of the attentional resource in time perception deficits among children and adolescents with ADHD.

**Methods:** Participants included 168 children and adolescents with DSM-IV ADHD and 90 control children and adolescents without ADHD, aged 10 to 17 years, in Taipei. The DSM-IV diagnoses of ADHD and other psychiatric comorbid conditions were made by clinical assessments and confirmed by the psychiatric interviews of both parents and participants using the Chinese Kiddie Epidemiologic version of the Schedule for Affective Disorders and Schizophrenia. The participants were also assessed by using the Wechsler Intelligence Scale for Children-3<sup>rd</sup> edition (WISC-III), and time reproduction tasks (the single task and the simple and difficult versions of the dual tasks) at 5-second, 12-second, and 17-second intervals. The linear mixed model was used for data analysis.

**Results:** Children and adolescents with ADHD had less precise time reproduction than the controls in all three tasks except the 5-second interval of the single task. There were significant interactions between group and interval (12-second vs. 5-second,  $p = .030$ ; 17-second vs. 5-second,  $p < .001$ ), and between group and task (simple dual task vs. single task,  $p = .016$ ; difficult dual task vs. single task,  $p < .001$ ) after controlling for FSIQ, comorbidity, sex, age, use of methylphenidate, and the performance of the non-temporal tasks in dual tasks, if relevant.

**Conclusions:** Significantly increased estimation errors in ADHD with increased task difficulties suggest that impaired timing processing in children and adolescents with ADHD during long time intervals may be accounted for by the limited attentional capacity rather than a primary problem in timing per se. This finding does not apply to rapid time intervals, in which cerebellar circuitry is important.

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Biol Psychiatry. 2010;67:11S.

**Morphological abnormalities of the basal ganglia and the thalamus in ADHD.**

*Ivanov I.*

**Background:** Neuroimaging studies in humans have identified morphological and functional abnormalities in components of the cortico-striatal-thalamic networks such as the frontal and temporal cortices as well as the basal ganglia in individuals with ADHD; however, inconsistencies in the existing reports and lack of data on particular structures such as the thalamus have hampered advancement in the understanding of the role of the cortico-striatal-thalamic networks in the pathogenesis of ADHD.

**Methods:** Two groups of individuals with ADHD (N=47) and healthy controls (N=59) ages 8-18 underwent a structural MRI scan on 1.5-T scanner. Within the ADHD group 31 patients were receiving stimulant treatment at the time of the scan. A mixed analytic model with repeated measures was performed with SAS software to compare conventional volumes between groups; surface analyses p-values (threshold  $< 0.001$ ) were color-coded at each voxel and displayed across the surface of the reference structures.

**Results:** No between groups differences were detected in the conventional volumes of the basal ganglia and the thalamus. Regional volumes of the caudate, putamen, globus pallidus and the pulvinar were significantly larger in treated youth with ADHD compared to untreated counterparts. These areas closely overlapped with regions that exhibited significantly smaller local volumes in the ADHD vs. the control group.

**Conclusions:** This preliminary evidence demonstrates that i) youth with ADHD exhibit significantly smaller

regional volumes than controls in the basal ganglia and the thalamus and that ii) stimulant treatment may help to attenuate these morphological differences in treated patients with ADHD.

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The American Journal of Psychiatry. 2010 Apr;167:397-408.

**Morphological abnormalities of the thalamus in youths with attention deficit hyperactivity disorder.**

*Ivanov I, Bansal R, Hao X, et al.*

**Objective:** The role of the thalamus in the genesis of attention deficit hyperactivity disorder (ADHD) remains poorly understood. The authors used anatomical MRI to examine the morphology of the thalamus in youths with ADHD and healthy comparison youths.

**Method:** The authors examined 46 youths with ADHD and 59 comparison youths 8–18 years of age in a cross-sectional case-control study. Conventional volumes and measures of surface morphology of the thalamus served as the main outcome measures.

**Results:** A mixed-effects model comparing whole thalamic volumes revealed no significant differences between groups. Maps of the thalamic surface revealed significantly smaller regional volumes bilaterally in the pulvinar in youths with ADHD relative to comparison subjects. Post hoc analyses showed that ADHD patients who received stimulants (N=31) had larger conventional thalamic volumes than untreated youths with ADHD, and maps of the thalamic surface showed enlargement over the pulvinar in those receiving stimulants. Smaller regional volumes in the right lateral and left posterior thalamic surfaces were associated with more severe hyperactivity symptoms, whereas larger regional volumes in the right medial thalamic surfaces were associated with more severe symptoms of inattention.

**Conclusion:** These findings demonstrate reduced pulvinar volumes in youths with ADHD and indicate that this same area is relatively enlarged in patients treated with stimulants compared to those untreated. Associations of hyperactivity scores with smaller regional volumes on the lateral thalamic surface and inattention scores with larger regional volumes on the medial thalamic surface suggest the differential involvement of thalamic subcircuits in the pathogenesis of differing ADHD symptoms.

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J Orthomol Med. 2010;25:39-42.

**Urine pyrroles and other orthomolecular tests in patients with ADD/ADHD.**

*Jackson JA, Braud M, Neathery S.*

Attention Deficit Disorder (ADD), Attention Deficit Hyperactivity Disorder (ADHD) and autism are usually diagnosed by a series of symptoms while in orthomolecular medicine, they are classified by a series of laboratory tests of the blood, hair and urine. The tests are classified as histapenia (low blood histamine), histadelia (high blood histamine), pyrroluria (high urine pyrroles), cerebral allergies (blood test) and/or hypoglycemia. Out of 2,200 patients recently seen at The Center, 14% were classified as psychiatric. Sixty five patients had urine pyrroles performed with positive rate of 51%. Plasma and urine vitamin C were performed on 24 patients. Eight patients had low plasma vitamin C and 15 had zero urine vitamin C. The tests mentioned in this article are almost unknown to traditional medical doctors. At The Center these tests have proven their value many times over and do have a place in treating patients, especially children diagnosed with mental dysperceptions.

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Dev Med Child Neurol. 2010;52:371-78.

**Predictive validity of attentional functions in differentiating children with and without ADHD: A componential analysis.**

*Kaufmann L, Zieren N, Zotter S, et al.*

**Aim:** The objective of this study was to investigate which attentional components are of predictive utility in differentiating children with attention-deficit-hyperactivity disorder, combined type (ADHD-C) from their peers without ADHD.

**Methods:** Thirty-four children participated in the study: 17 males with ADHD-C (mean age 10y 4mo, SD 1y 9mo) and 17 comparison children (12 males, 5 females; mean age 10y 8mo, SD 1.7y). Attentional functions were assessed using a computer-administered, child-friendly test series in German (i.e. Testbatterie zur Aufmerksamkeitsprüfung für Kinder; KITAP). The KITAP measures several attentional components, including alertness and executive attention (inhibition, divided attention, flexibility).

**Results:** The variable best able to discriminate between children with and without ADHD-C was found to be response time variability in a go/no go task, followed by, in order, number of errors in a divided attention task and response time variability in an alertness task. However, group discrimination was not facilitated by differences in either response latency or accuracy of response in visuospatial attention and attentional flexibility tasks.

**Interpretation:** The assessment of attentional functions proved to be a powerful instrument for discriminating between children with and without ADHD-C. Notably, the discriminative power of executive attention was found to be task dependent and dependent on processing demands.

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Journal of Clinical Child and Adolescent Psychology. 2010 Mar;39:220-33.

**Parent-reported homework problems in the MTA study: Evidence for sustained improvement with behavioral treatment.**

*Langberg JM, Arnold LE, Flowers AM, et al.*

Parent-report of child homework problems was examined as a treatment outcome variable in the MTA-Multimodal Treatment Study of Children with Attention-Deficit/Hyperactivity Disorder (ADHD). Five hundred seventy-nine children ages 7.0 to 9.9 were randomly assigned to either medication management, behavioral treatment, combination treatment, or routine community care. Results showed that only participants who received behavioral treatment (behavioral and combined treatment) demonstrated sustained improvements in homework problems in comparison to routine community care. The magnitude of the sustained effect at the 10-month follow-up assessment was small to moderate for combined and behavioral treatment over routine community care ( $d = .37, .40$ , respectively). Parent ratings of initial ADHD symptom severity was the only variable found to moderate these effects.

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Psychiatr Invest. 2010;7:49-54.

**The effects of methylphenidate on neural substrates associated with interference suppression in children with ADHD: A preliminary study using event related fMRI.**

*Lee YS, Han DH, Lee JH, et al.*

**Objective:** The core deficit of attention deficit hyperactivity disorder (ADHD) is associated with frontal cortex and related circuitry. Children with ADHD and a medication history have shown atypical brain activation in prefrontal and striatal brain regions during cognitive challenge. We investigated two cognitive control operations such as interference suppression (IS) and response inhibition (RI) in children with ADHD. We also assessed the brain functions affected by the methylphenidate (MPH) effect by comparing the blood-oxygen level dependent (BOLD) signals in ADHD children on and off medication.

**Methods:** Eight children (9-11 years of age) with combined-type ADHD underwent rapid event-related functional magnetic resonance imaging (fMRI) during performance of a modified flanker task. Two fMRI (3.0 T) scans were conducted with a one week interval-one with MPH treatment and the other without. Functional maps were generated through group averaging and performance-based correlational analyses.

**Results:** Performances of the two cognitive control operations did not differ significantly between on-MPH and off-MPH status other than the reaction time to incongruent stimuli in ADHD children. In those affected by MPH treatment, an increased activation in the right prefrontal cortex during incongruent task was observed relative to a neutral trial in children with ADHD.

**Conclusion:** On the treatment of MPH, the ADHD children exhibited increased activation of the right frontal cortex during interference suppression. This finding suggested that MPH affected the right frontal cortex in ADHD compensating for a reduced level of interference suppression. Future studies will be required to ascertain the MPH effect of cognitive brain regions among large number of children with ADHD.

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Rev Neurol. 2010;50:333-40.

**Usefulness of the Stroop test in attention deficit hyperactivity disorder.**

*Lopez-Villalobos JA, Serrano-Pintado I, Andres-De Llano JM, et al.*

**Aims.** The aim of this study is to analyse the differences in the Stroop effect between cases with attention deficit hyperactivity disorder (ADHD) and controls. It also seeks to find the best model based on the third task

of the colours and words test (Stroop-CW) for predicting ADHD and to analyse the validity of the Stroop-CW test for diagnosing the disorder.

**Subjects and methods.** The sample studied consisted of 100 cases of ADHD -according to Diagnostic and statistical manual of mental disorders (DSM-IV) criteria- and 100 controls, between 7 and 11 years of age, who were evaluated using the Stroop test. The controls were recruited at random and paired by age, sex and sociodemographic area with the cases.

**Results.** The cases present a mean cognitive style that is significantly less flexible ( $d = -1.06$ ) and they also display a lower capacity to inhibit or control automatic responses than the controls at all ages (7 years:  $d = 1.67$ ; 8 years:  $d = 1.02$ ; 9 years:  $d = 1.32$ ; 10 years:  $d = 2.04$ ; 11 years:  $d = 0.89$ ). The model of logistic regression analysis that best predicts ADHD is made up of age and Stroop-CW. The formulation derived from the model offers a sensitivity of 81% and a specificity of 72%, taking the criteria of the DSM-IV for ADHD as the reference test.

**Conclusions.** The Stroop-CW test presents usefulness and complementary criteria validity for the diagnosis of ADHD.

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World J Biol Psychiatry. 2009;10:488-94.

**Co-morbidity of bipolar disorder in children and adolescents with attention deficit/hyperactivity disorder (ADHD) in an outpatient Turkish sample.**

**Lus G, Mukaddes NM.**

This study aimed to assess the prevalence of bipolar disorder (BPD) in children and adolescents with attention deficit hyperactivity disorder (ADHD), and to compare the clinical characteristics of a group with ADHD with a group with co-morbidity of ADHD and BPD. The study includes 121 individuals, aged 6-16 years, with a diagnosis of ADHD. Co-morbidity of BPD was evaluated using the Schedule for Affective Disorders and Schizophrenia for School-age Children-Present and Lifetime version (K-SADS-PL) and the Parent-Young Mania Rating Scale (P-YMRS). The Child Behavior Checklist (CBCL) was used to assess psychopathology in two groups. Ten children (8.3%) in the ADHD sample received the additional diagnosis of BPD. The ADHD + BPD group had significantly higher scores than the ADHD group on withdrawn, anxiety/depression, social problems, thought problems, attention problems, aggression, externalization, total score items of CBCL, and on the P-YMRS. It could be concluded that BPD is not a rare co-morbid condition in children with diagnosis of ADHD and subjects with this co-morbidity show more severe psychopathology than subjects with pure ADHD. Differential diagnosis of BPD disorder in subjects with ADHD seems crucial in establishing an effective treatment program, and therefore improving mental health outcomes.

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J Neural Transm. 2010 Mar;117:403-19.

**Cross-sectional evaluation of cognitive functioning in children, adolescents and young adults with ADHD.**

**Marx I, Hübner T, Herpertz SC, et al.**

Attention-deficit/hyperactivity disorder (ADHD) often persists into adulthood, albeit with changes in clinical symptoms throughout the life span. Although effect sizes of neuropsychological deficits in ADHD are well established, developmental approaches have rarely been explored and little is yet known about age-dependent changes in cognitive dysfunction from childhood to adulthood. In this cross-sectional study, 20 male children (8–12 years), 20 adolescents (13–16 years), and 20 adults (18–40 years) with ADHD and a matched control group were investigated using six experimental paradigms tapping into different domains of cognitive dysfunction. Subjects with ADHD were more delay-averse and showed deficits in time discrimination and time reproduction, but they were not impaired in working memory, interference control or time production. Independent of age, the most robust group differences were observed with respect to delay aversion and time reproduction, pointing to persistent dysfunction in the mesolimbic reward circuitry and in the frontal-striatal-cerebellar timing system in subjects with ADHD. Across all tasks, effect sizes were lowest for adolescents with ADHD compared to age-matched controls. Developmental dissociations were found only for simple stimuli comparison, which was particularly impaired in ADHD children. Thus, in line with current multiple-pathway approaches to ADHD, our data suggest that deficits in different cognitive domains are persistent across the lifespan, albeit less pronounced in adolescents with ADHD.

Biol Psychiatry. 2010;67:617-23.

**Functional Disconnection of Frontal Cortex and Visual Cortex in Attention-Deficit/Hyperactivity Disorder.**

**Mazaheri A, Coffey-Corina S, Mangun GR, et al.**

**Background:** Current pathophysiologic models of attention-deficit/hyperactivity disorder (ADHD) suggest that impaired functional connectivity within brain attention networks may contribute to the disorder. In this electroencephalographic (EEG) study, we analyzed cross-frequency amplitude correlations to investigate differences in cue-induced functional connectivity in typically developing children and children with ADHD.

**Methods:** Electroencephalographic activity was recorded in 25 children aged 8 to 12 years (14 with ADHD) while they performed a cross-modal attention task in which cues signaled the most likely (.75 probability) modality of an upcoming target. The power spectra of the EEG in the theta (3-5 Hz) and alpha (8-12 Hz) bands were calculated for the 1-sec interval after the cue and before the target while subjects prepared to discriminate the expected target.

**Results:** Both groups showed behavioral benefits of the predictive attentional cues, being faster and more accurate for validly cued targets (e.g., visual target preceded by a cue predicting a visual target) than to invalidly cued targets (e.g., visual target preceded by a cue predicting an auditory target); in addition, independent of cue-target validity, typical children were faster to respond overall. In the typically developing children, the alpha activity was differentially modulated by the two cues and anticorrelated with midfrontal theta activity; these EEG correlates of attentional control were not observed in the children with ADHD.

**Conclusions:** Our findings provide neurophysiological evidence for a specific deficit in top-down attentional control in children with ADHD that is manifested as a functional disconnection between frontal and occipital cortex.

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J Child Neurol. 2010;25:453-62.

**Corpus callosum segment circumference is associated with response control in children with attention-deficit hyperactivity disorder (ADHD).**

**McNally MA, Crocetti D, Mahone EM, et al.**

Response control is impaired in attention-deficit hyperactivity disorder (ADHD). Given the corpus callosums role in response control, we compared callosal morphology in 64 children with ADHD and 64 typically developing children, aged 7 to 13 years, and investigated the relationships between callosal morphology and response control. Area and circumference of 5 callosal segments (genu, rostral body, midbody, isthmus, and splenium) were normalized for cerebral volume and examined for correlation with mean reaction time, intrasubject variability, and/or commission error rate from a go/no-go task. There were no between-group differences in segment areas or circumferences. Reaction time correlated with midbody circumference for boys with ADHD and isthmus circumference for girls with ADHD. For the entire cohort, rostral body circumference correlated with intrasubject variability. Impaired response control in ADHD is associated with anomalies in frontal interhemispheric connections. Future studies examining callosal shape will illuminate the anatomic basis of correlations between callosal segment circumference and response control.

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World J Biol Psychiatry. 2009;10:671-72.

**Worsening of bruxism with atomoxetine: A case report.**

**Mendhekar D, Lohia D.**

Atomoxetine is the only FDA-approved non-stimulant to treat ADHD. We report a case of Atomoxetine-related exacerbation of nocturnal bruxism in a 12-yr old boy with ADHD, subsiding on discontinuing the drug, but re-worsening with re-trial, finally subsiding upon adding Buspirone. This is the first report of its kind showing such an association, not included in any pre-or post-marketing data. Clinical implications and possible mechanisms are discussed.

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Journal of Clinical Child and Adolescent Psychology. 2010 May;39:373-85.

**Positive illusory bias and response to behavioral treatment among children with attention-deficit/hyperactivity disorder.**

**Mikami AY, Calhoun CD, Abikoff HB.**

The current study investigates the accuracy of self-perceptions of competence among 43 children with attention-deficit/hyperactivity disorder (ages 6.9-11.9; 37 boys) attending an 8-week empirically supported behavioral summer treatment program. Having inflated self-perceptions about one's competence at the beginning of the summer predicted poorer response to the intervention administered in the program as assessed by changes in observed conduct problems, peer-nominated social preference, and friendship. However, inflated self-perceptions at the start of the summer predicted reductions in self-reported depressive symptoms during the treatment period. Despite participating in an intensive intervention, there was high stability of children's biased self-perceptions regarding their performance.

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Journal of Child Psychology and Psychiatry. 2010 Mar;51:233-41.

**The influence of sex on the course and psychiatric correlates of ADHD from childhood to adolescence: A longitudinal study.**

**Monuteaux MC, Mick E, Faraone SV, et al.**

**Background:** Little is known about the influence of sex on the course of attention-deficit/hyperactivity disorder (ADHD) and its comorbid psychiatric conditions. The purpose of this study was to examine the effect of sex on the course and psychiatric correlates of ADHD from childhood into adolescence.

**Methods:** Two identically designed, longitudinal, case-control family studies of male and female probands with and without ADHD and their siblings were combined. All subjects were blindly assessed with structured diagnostic interviews. Among subjects with a lifetime history of ADHD (n = 471, mean age 11.5 ± 4.3 years at baseline), we used linear growth curve models to estimate the effect of time on the change in ADHD symptoms, and whether this effect differed by sex. We also examined the effect of sex on the association between ADHD and the longitudinal progression of comorbid psychopathology using structural equation models.

**Results:** We found no evidence that sex moderated the effect of age on ADHD symptoms; in both genders, age exhibited a similar effect on the decline of ADHD symptoms. However, the female sample demonstrated greater stability in comorbid psychopathology from childhood into adolescence. Furthermore, we found that the stability of comorbid psychopathology in females remained significant after accounting for the correlation between adolescent psychopathology and adolescent ADHD. In males, childhood and adolescent comorbid psychopathology were no longer correlated when adolescent ADHD was taken into account.

**Conclusions:** Our findings indicate that while the course of ADHD across childhood and adolescence did not differ between males and females, patterns of psychiatric comorbidity were conditional on sex. Future studies should explicitly test how sex modifies the associations between ADHD and risk factors and ADHD and associated functional outcomes.

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Tijdschr Psychiatr. 2010;52:245-54.

**Does ADHD medication stop working after 2-3 years? On the surprising, but littleknown follow-up of the MTA study.**

**Nieweg EH.**

The large Multimodal Treatment Study of Children with ADHD (MTA) has become widely known especially because in the treatment phase intensive medication management appeared to be superior (on some outcome-measures) to other treatment modalities. The second follow-up, 22 months after the end of the treatment phase, shows several surprising and controversial results. For example, the advantage of having partaken in the intensive medication algorithm has disappeared and continued stimulant treatment is a marker not of beneficial outcome, but of deterioration (higher symptom scores). The balance of advantages and disadvantages of long-term stimulant treatment appears to be considerably less favourable than previously thought. A reconsideration of several widely held views on stimulant treatment would seem in order. However, in The Netherlands the results of the second follow-up do not seem to draw the amount of attention and publicity the previous findings did. A possible reason for this is that they contradict prevailing ideas on ADHD. The goal of this article is to draw attention to the most important findings and clinical



implications of the second follow-up. At the same time the article illustrates the extent to which the dissemination of scientific knowledge is a social process.

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Journal of the American Academy of Child & Adolescent Psychiatry. 2010 Mar;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.

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Compr Psychiatry. 2010;51:286-92.

**Temperament and character dimensions associated with clinical characteristics and treatment outcome in attention-deficit/hyperactivity disorder boys.**

**Purper-Ouakil D, Cortese S, Wohl M, et al.**

**Background:** Although differential patterns of temperament and character have been documented in subjects with attention-deficit/hyperactivity disorder (ADHD), few studies have investigated relations between these dimensions, clinical features of ADHD, and treatment outcome.

**Methods:** Ninety-five boys with ADHD and 87 controls participated in the study; 88.5% of the referred patients were reassessed after optimal titration of methylphenidate treatment.

**Results:** Compared with controls, boys with ADHD showed a temperament profile of high novelty seeking, low reward dependence, and persistence, as well as low scores on both self-determination and cooperativeness character dimensions. No significant differences were found between subjects with ADHD and controls in harm avoidance. Temperament and character traits were related to specific symptom domains and comorbidity but did not predict global severity of ADHD. Persistent and immature children with ADHD were more likely to experience short-term remission.

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Behav Genet. 2010 May;40:357-65.

**Gene-gene interaction between COMT and MAOA potentially predicts the intelligence of attention-deficit hyperactivity disorder boys in China.**

**Qian QJ, Yang L, Wang YF, et al.**

The catechol-O-methyltransferase (COMT) gene contains a functional polymorphism (Val158Met) affecting the activity of the enzyme, and the monoamine oxidase A (MAOA) gene contains a VNTR polymorphism (MAOA-uVNTR) that affects the transcription of the gene. COMT and MAOA each contribute to the enzymatic degradation of dopamine and noradrenaline. Prefrontal cortical (PFC) function, which plays an important role in individual cognitive abilities, including intelligence, is modulated by dopamine. Since our previous association studies between attention deficit hyperactivity disorder (ADHD) and these two functional

polymorphisms consistently showed the low activity alleles were preferentially transmitted to inattentive ADHD boys, the goal of the present study was to test the hypothesis that the interaction between COMT Val158Met and MAOA-uVNTR may affect the intelligence in a clinical sample of Chinese male ADHD subjects ( $n = 264$ ). We found that the COMT  $\times$  MAOA interaction significantly predicted full scale (FSIQ) and performance (PIQ) IQ scores ( $P = 0.039, 0.011$ ); the MAOA-uVNTR significantly predicted FSIQ, PIQ and verbal IQ (VIQ) ( $P = 0.009, 0.019, 0.038$ ); COMT Val158Met independently had no effect on any of the IQ scores. Only the COMT  $\times$  MAOA interaction for PIQ remained significant after a Bonferroni correction. Among all combined genotypes, the valval-3R genotype predicted higher intelligence, (average  $106.7 \pm 1.6$ , 95% C.I. 103.7–109.8 for FSIQ), and the valval-4R predicted lower intelligence (average  $98.0 \pm 2.3$ , 95% C.I. 93.5–102.6 for FSIQ). These results suggest that there is an inverted U-shaped relationship between intelligence and dopaminergic activity in our sample. Our finding that gene–gene interaction between COMT and MAOA predicts the intelligence of ADHD boys in China is intriguing but requires replication in other samples.

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Journal of Attention Disorders. 2010 Mar;13:505-15.

**Memory for object locations in boys with and without ADHD.**

**Reck SG, Hund AM, Landau S.**

**Objective:** To determine whether 7- to 12-year-old boys with ADHD, relative to non-ADHD age-mates, exhibit greater difficulty learning and remembering object locations. The second purpose was to examine the functional utility of mnemonic strategies, specifically speech-to-self, used by boys with and without ADHD.

**Method:** Boys with and without ADHD were videotaped while completing a well-established, laboratory-based object location learning and memory task.

**Results:** Boys with ADHD evinced a deficit while learning the location of objects and employed less sophisticated forms of private speech during the memory task.

**Conclusion:** These findings reveal details about the utility of private speech during spatial working memory performance and further a theoretical understanding of ADHD.

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Accident Analysis and Prevention. 2010 May;42:842-51.

**The impact of distractions on young adult drivers with attention deficit hyperactivity disorder (ADHD).**

**Reimer B, Mehler B, D'Ambrosio LA, et al.**

Young adults with attention deficit hyperactivity disorder (ADHD) are at higher risk for being involved in automobile crashes. Although driving simulators have been used to identify and understand underlying behaviors, prior research has focused largely on single-task, non-distracted driving. However, in-vehicle infotainment and communications systems often vie for a driver's attention, potentially increasing the risk of collision. This paper explores the impact of secondary tasks on individuals with and without ADHD, a medical condition known to affect the regulation of attention. Data are drawn from a validated driving simulation representing periods before, during, and after participation in a secondary cognitive task. A hands-free phone task was employed in a high stimulus, urban setting and a working memory task during low stimulus, highway driving. Drivers with ADHD had more difficulty on the telephone task, yet did not show an increased decrement in driving performance greater than control participants. In contrast, participants with ADHD showed a larger decline in driving performance than controls during a secondary task in a low demand setting. The results suggest that the interaction of the nature of the driving context and the secondary task has a significant influence on how drivers with ADHD allocate attention and, in-turn, on the relative impact on driving performance. Drivers with ADHD appear particularly susceptible to distraction during periods of low stimulus driving.

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Journal of Attention Disorders. 2010 Mar;13:468-78.

**The moderating role of sensory overresponsivity in HPA activity: A pilot study with children diagnosed with ADHD.**

**Reynolds S, Lane SJ, Gennings C.**

**Objective:** To determine if sensory overresponsivity (SOR) is a moderating condition impacting the activity of the Hypothalamic Pituitary Adrenal (HPA) Axis in children with ADHD.

**Method:** Participants were children with (n = 24) and without ADHD (n = 24). Children in the ADHD group were divided into SOR (ADHDs) and non-SOR (ADHDt) groups using the Sensory Over-Responsivity Inventory. All children participated in the Sensory Challenge Protocol. Salivary cortisol was used as a measure of HPA activity. Two prechallenge and seven post challenge samples of saliva were taken. Cortisol patterns between groups were examined using a mixed-effects ANOVA.

**Results:** There was a borderline significant difference found between the ADHDt and ADHDs group ( $p = .056$ ) and a significant difference between ADHDt and the typical group ( $p = .014$ ).

**Conclusion:** Preliminary results support the premise that SOR may be a moderating variable used to create subgroups in diagnostic populations such as ADHD.

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Arch Pediatr Adolesc Med. 2010;164:462-69.

**Impact of early school-based screening and intervention programs for ADHD on children's outcomes and access to services: Follow-up of a school-based trial at age 10 years.**

**Sayal K, Owen V, White K, et al.**

**Objectives:** To investigate the impact of early school-based screening and educational interventions on longerterm outcomes for children at risk for attention-deficit/ hyperactivity disorder (ADHD) and the predictive utility of teacher ratings.

**Design:** A population-based 5-year follow-up of a randomized, school-based intervention.

**Setting:** Schools in England.

**Participants:** Children between 4 and 5 years of age with high teacher-rated hyperactivity/inattention scores. Follow-up data were collected on 487 children in 308 schools.

**Interventions:** Following screening, using a 2 x 2 factorial design, schools randomly received an educational intervention (books about ADHD for teachers), the names of children with high hyperactivity/inattention scores between ages 4 and 5 years (identification), both educational intervention and identification, or no intervention.

**Outcome Measures:** Parent-rated hyperactivity/ inattention, impairment in classroom learning, and access to specialist health services for mental health or behavioral problems.

**Results:** None of the interventions were associated with improved outcomes. However, children receiving the identification-only intervention were twice as likely as children in the no-intervention group to have high hyperactivity/inattention scores at follow-up (adjusted odds ratio, 2.11; 95% confidence interval, 1.12-4.00). Regardless of intervention, high baseline hyperactivity/ inattention scores were associated with high hyperactivity/ inattention and specialist health service use at follow-up.

**Conclusions:** We did not find evidence of long-term, generalizable benefits following a school-based universal screening program for ADHD. There may be adverse effects associated with labeling children at a young age.

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Biol Psychiatry. 2010;67:641-48.

**Temporal Reward Discounting in Attention-Deficit/Hyperactivity Disorder: The Contribution of Symptom Domains, Reward Magnitude, and Session Length.**

**Scheres A, Tontsch C, Thoeny AL, et al.**

**Background:** Theoretical models have hypothesized that one core problem in attention-deficit/hyperactivity disorder (ADHD) is abnormal reward processing. Temporal reward discounting (decreases in subjective reward value due to prereward delay) is of interest because of its relation with a key symptom of ADHD-impulsivity. This study investigated 1) whether steep temporal reward discounting (TD) is associated with ADHD-combined type (ADHD-C)/symptoms of hyperactivity-impulsivity specifically; 2) the role of reward magnitude in TD in ADHD-C/participants with symptoms of hyperactivity-impulsivity; and 3) whether steep TD in ADHD-C/participants with symptoms of hyperactivity-impulsivity is affected by session length.

**Methods:** Three TD tasks were administered to children and adolescents (aged 6-17) with ADHD-C (n = 25), ADHD-inattentive type (ADHD-I; n = 20), and matched typically developing participants (n = 37). Reward magnitude and session length were varied.

**Results:** Steep TD was observed in participants with ADHD-C but not in those with ADHD-I, independent of reward magnitude and session length. Dimensional analyses revealed that steep TD was associated with hyperactivity-impulsivity (transcending the arbitrary cutoff for ADHD subtypes), especially when reward magnitude at the trial level was small.

**Conclusions:** These findings suggest that steep TD in ADHD is best thought of as a correlate of the symptom dimension of hyperactivity/impulsivity. Additionally, steep TD in ADHD is the result of a trade-off between delay and reward magnitude, with all factors contributing to choice preferences. These findings may help refine the delay aversion theory of ADHD, and provide evidence for the notion that unique reward processing is one mechanism associated with symptoms of hyperactivity-impulsivity.

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Internist Prax. 2010;50:321-22.

**Are there relations between AD[H]D [Attention Deficit [Hyperactivity] Disorder] and exceptional talent?**

**Schlamp D.**

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Der Nervenarzt. 2010 Mar;81:289-300.

**Gesundheitsökonomie der aufmerksamkeitsdefizit-/hyperaktivitätsstörung in Deutschland: Teil 1: Versorgungsepidemiologie und krankheitskosten.**

**Schlender M, Trott G-E, Schwarz O.**

In the German region of Nordbaden, 5% of children (aged 7–12 years) and 1.3% of adolescents (aged 13–19 years) were diagnosed with attention deficit hyperactivity disorder (ADHD) in 2003. About two thirds of these patients were not seen by a physician specialized in psychiatry. Now the National Association of Statutory Health Insurance Physicians in Germany (Kassenaerztliche Bundesvereinigung, KBV) has developed a proposal for the integrated provision of care for these patients, combining a guidelines-oriented multidisciplinary approach with a system of quality assurance. Against this background, currently available ADHD-related data are presented, covering epidemiology, comorbidity and differential diagnosis, health care utilization, and cost of illness. According to administrative data analyses from Nordbaden, direct medical costs for patients with ADHD, from the perspective of statutory health insurance (SHI), exceed those of matched controls by a factor of >2.5. On this basis, ADHD-related expenditures of the German SHI may be estimated at around EUR 260 million in 2003, and almost certainly will have continued to grow further since. In addition to this, a diagnosis of ADHD is associated with substantial indirect cost. Although the literature on the burden of ADHD is incomplete, it seems plausible that the cost of illness might be comparable to that reported for alcohol and addiction disorders. Thus we anticipate an increasing relevance of formal health economic evaluations of health care programs offered to patients with ADHD.

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Clin Pediatr. 2010;49:150-57.

**Information needs of parents of children with attention-deficit/ hyperactivity disorder.**

**Sciberras E, Iyer S, Efron D, et al.**

**Objective.** To determine the information needs of parents of children with attention-deficit/hyperactivity disorder (ADHD).

**Method.** A cross-sectional survey of parents recruited from pediatric hospital clinics, support groups, and newspaper advertisements in Victoria, Australia, was undertaken. Parents completed a questionnaire covering information sources accessed, the quality of this information, the information content they considered important and their preferred information modes.

**Results.** Survey data were collected from 99 parents. Parents most frequently accessed information from pediatricians (89%), books (78%), general practitioners (65%), and schools (61%). Pediatricians were rated highest as a useful, trusted, easy-to-understand, and up-to-date information source. Parents placed most importance on causes and symptoms at the time of diagnosis. Parents preferred to receive verbal information from a professional (69%).

**Conclusion.** Information provision for parents of children with ADHD is a continuous process. Although they access a range of sources and modes, parents prefer verbal information delivery.

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Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2010 May;38:509-19.

**Direct and indirect measures of social perception, behavior, and emotional functioning in children with Asperger's disorder, nonverbal learning disability, or ADHD.**

**Semrud-Clikeman M, Walkowiak J, Wilkinson A, et al.**

Understanding social interactions is crucial for development of social competence. The present study was one of the first to utilize direct and indirect measures of social perception to explore possible differences among children with nonverbal learning disability (NLD), Asperger's Syndrome (AS), Attention Deficit Hyperactivity Disorder-Combined (ADHD-C), Attention Deficit Hyperactivity Disorder-Predominately Inattentive (ADHD-PI), and controls (N = 342). Multiple informants provided ratings of the child's behavioral and social functioning. Results indicated that the NLD and AS groups experienced the most difficulty understanding emotional and nonverbal cues on the direct measure. In addition, children with AS or NLD showed significant signs of sadness and social withdrawal compared to the other groups. Attentional skills, while related to social perception, did not predict social perception difficulties to the same degree as number of AS symptoms.

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Rehabilitation Psychology. 2010 May;55:188-93.

**Inspection time and attention-deficit/hyperactivity disorder symptoms in children with cerebral palsy.**

**Shank LK, Kaufman J, Leffard S, et al.**

**Objective:** To examine between-groups differences in the associations between aspects of processing speed assessed with an inspection time task and attention-deficit/hyperactivity disorder (ADHD) symptoms.

**Research Design:** Two groups comprising 34 children with cerebral palsy (CP) and 70 nonaffected peers (control), ages 8–16 years, participated in a prospective correlational study. Measures included a visual inspection time task and the Conners' Parent Rating Scale—Revised: Long Version.

**Results:** Children with CP exhibited significantly slower processing speed and more symptoms of inattention and hyperactivity than controls. Significant associations between inspection time and ADHD symptoms were found only in the control group.

**Conclusions:** Findings have implications for clinical assessment and understanding of attentional risks associated with CP.

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J Abnorm Psychol. 2010 May;119:376-88.

**The etiology of associations between negative emotionality and childhood externalizing disorders.**

**Singh AL, Waldman ID.**

Despite consistent documentation of associations between childhood negative emotionality and externalizing psychopathology, few genetically informative studies have investigated the etiology of that association. The goal of the current study was to delineate the etiology of the covariation of negative emotionality and childhood externalizing problems (e.g., oppositional defiant disorder, conduct disorder, inattention, and hyperactivity/impulsivity). Twin families were recruited from Georgia state birth records and completed parental report questionnaires of negative emotionality and common Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; American Psychiatric Association, 2000) child psychiatric disorders. Results suggest both genetic and environmental influences underlying negative emotionality and each externalizing symptom dimension, with additional evidence for sibling competition/rater contrast effects for inattention and hyperactivity/impulsivity. Bivariate model-fitting analyses indicated that a portion of the additive (43%–75%) and nonadditive (26%–100%) genetic influences underlying each symptom dimension was accounted for by the genetic influences underlying negative emotionality. Finally, an independent pathways model examining the etiology of the association between negative emotionality and the

externalizing dimensions indicated that a substantial portion of the additive genetic, nonadditive genetic, and nonshared environmental influences underlying externalizing behavior is shared with negative emotionality.

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Journal of Child and Family Studies. 2010 Apr;19:157-66.

**Mindfulness training for parents and their children with ADHD increases the children's compliance.**

**Singh NN, Singh AN, Lancioni GE, et al.**

Children with ADHD are often non-compliant with parental instructions. Various methods have been used to reduce problem behaviors in these children, with medication and manipulation of behavioral contingencies being the most prevalent. An objection often raised by parents is that these management strategies require them to impose external control on the children which not only results in the children not learning self-control strategies, but also does not enhance positive interactions between them and their parents. Studies have shown that providing mindfulness training to parents, without a focus on reducing problem behaviors, can enhance positive interactions with their children and increase their satisfaction with parenting. We were interested to see what effects giving mindfulness training to two mothers, and subsequently to their children, would have on compliance by the children. Using a multiple baseline across mothers and children design, we found that giving a mother mindfulness training enhanced compliance by her child. When the children were subsequently given similar training, compliance increased even more markedly, and was maintained during follow-up. The mothers reported associated increases in satisfaction with the interactions with their children and happiness with parenting. We suspect that the mindfulness training produces personal transformations, both in parents and children, rather than teaching strategies for changing behavior.

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Wiad Psychiatr. 2009;12:114-22.

**Association study of selected candidate genes polymorphisms in ADHD.**

**Slopien A, Dmierzak-Weglarz M, Rybakowski F, et al.**

Attention-deficit/hyperactivity disorder (ADHD) is a common psychiatric disorder among children and adolescents with high heritability. Although a genetic contribution to higher risk of ADHD is evident, predisposing genetic determinants remain largely unknown despite extensive research.

**Aim:** The aim of the study was the assessment of genotypes and alleles of DRD2, DRD3, DRD4, DAT, COMT and BDNF polymorphisms in patients with ADHD.

**Subjects:** We studied 205 patients aged 7-17 years old diagnosed with ADHD according to ICD 10 and DSM IV criteria. Control group consisted of 155 healthy subjects aged 7-17 years. The parents and patients gave written informed consent to this study. The study was approved by Ethical Committee.

**Methods:** The 9 SNPs in genes were analyzed by iPLEX Gold method using Sequenom system. The DRD4 gene polymorphism rs1800955 was analyzed by PCR-RFLP method. The DAT gene VNTR polymorphism was analyzed by PCR-VNTR method.

**Results:** We obtained statistically significant differences in the frequency of allele G of DRD2 gene (SNP rs1800497) ( $p < 0,05$ ) between ADHD and healthy controls. We observed GG (Val/Val) genotype of BDNF gene statistically more frequent in the subgroup with inattentive type than in the subgroup with hyperactive/impulsive type of ADHD.

**Conclusion:** The results of the present study suggest that SNP rs1800497 in DRD2 gene may be related to the pathogenesis of ADHD. However, this effect seems to be weak and the polymorphism of BDNF gene may modify clinical symptoms of ADHD.

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Child Health Care. 2010;39:59-72.

**Adding insult to injury: Bullying experiences of youth with attention deficit hyperactivity disorder.**

**Taylor LA, Saylor C, Twyman K, et al.**

This study tested the hypothesis that self-reported bullying and peer victimization in pediatric populations ( $n = 238$ ) diagnosed with attention deficit hyperactivity disorder (ADHD) would exceed that of peers with no diagnosis. Higher rates of victimization were reported by the youth with ADHD, but bullying rates were comparable for youth with ADHD and peers. Results suggest that students diagnosed with ADHD are at significantly higher risk for peer victimization, and its psychological impact on youth with ADHD who

experience bullying as victims, perpetrators, or both are more likely to show psychosocial problems above and beyond their attention and social competence difficulties.

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Med Clin North Am. 2010 May;94:615-32.

**Attention-deficit/hyperactivity disorder and sleep disorders in children.**

**Tsai MH, Huang YS.**

Attention-deficit/hyperactivity disorder (ADHD) is a neurocognitive and behavior abnormality commonly seen in childhood and adolescence. Symptoms and consequences of ADHD and sleep problems frequently overlap, and their relationship is complex and bidirectional. To avoid inappropriate diagnosis and inadequate management, mental health professionals should assess sleep problems and disorders in children, adolescents, and adults with ADHD-related symptoms and in those with a diagnosis of ADHD. Screening for other psychiatric comorbidities and the side effects of medications, such as psychostimulants, is necessary when considering sleep complaints, because both have adverse effects on sleep.

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J Pediatr Psychol. 2010 Apr;35:317-29.

**Behavioral parent training as an adjunct to routine care in children with attention-deficit/hyperactivity disorder: Moderators of treatment response.**

**van den Hoofdakker BJ, Nauta MH, van der Veen-Mulders L, et al.**

**Objective** To investigate predictors and moderators of outcome of behavioral parent training (BPT) as adjunct to ongoing routine clinical care (RCC), versus RCC alone.

**Methods** We randomly assigned 94 referred children (4–12 years) with attention-deficit/hyperactivity disorder (ADHD) to BPT plus RCC or RCC alone. Outcome was based on parent-reported behavioral problems and ADHD symptoms. Predictor/moderator variables included children's IQ, age, and comorbidity profile, and maternal ADHD, depression, and parenting self-efficacy.

**Results** Superior BPT treatment effects on behavioral problems and ADHD symptoms were present in children with no or single-type comorbidity—anxiety/depression or oppositional defiant disorder (ODD)/conduct disorder (CD)—and when mothers had high parenting self-efficacy, but absent in children with broad comorbidity (anxiety/depression and ODD/CD) and when mothers had low parenting self-efficacy. In older children ADHD symptoms tended to decrease more through BPT than in younger children.

**Conclusions** Adjunctive BPT is most useful when mothers have high parenting self-efficacy and in children with no or single-type comorbidity.

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Child Health Care. 2010;39:73-90.

**Adolescent caffeine use, ADHD, and cigarette smoking.**

**Walker LR, Abraham AA, Tercyak KP.**

The purpose of this study was to describe the prevalence of adolescent caffeine use and its association with attention deficit hyperactivity disorder (ADHD) and cigarette smoking. A total of 448 adolescents between the ages of 13 and 21 years consecutively presenting for routine, well-child care were studied. Twenty-four percent had a pre-existing diagnosis of ADHD, and 47% reported a positive lifetime history of cigarette smoking. Eighty-five percent of participants reportedly consumed a caffeinated beverage within the past 30 days; 38% had consumed 1+ cups of caffeinated coffee, and 78% had consumed 1+ glasses of another caffeinated beverage other than coffee (e.g., tea or soft drinks). After controlling for sociodemographic and other potential confounding factors, an ADHD diagnosis and a positive lifetime smoking history were significantly associated with caffeine use: Adolescents with ADHD were nearly twice as likely to use more caffeine than were adolescents without ADHD (odds ratio [OR] = 2.08; 95% confidence interval [CI] = 1.23, 3.50,  $p = .006$ ); lifetime smokers were 80% more likely to use more caffeine than were adolescents who had never smoked (OR = 1.80; 95% CI = 1.16, 2.79,  $p = .009$ ). Caffeine use is elevated among adolescents diagnosed with ADHD and those who have ever tried cigarette smoking. Although caffeine is a non-illicit psychostimulant, these findings add to the emerging data on substance use behaviors among adolescents

with ADHD. Health care professionals who work with adolescents with ADHD should regularly screen for both cigarette and caffeine use among their patients.

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Curr Crug Ther. 2010;5:139-50.

**Reasons for physicians' choice of medication in medication-naive patients with ADHD: Baseline data from the COMPLY observational study.**

**Wehmeier PM, Schacht A, Dittmann RW, et al.**

**Background:** The various patient-, parent-, and physician-related factors that influence the choice of a particular medication for attention-deficit/hyperactivity disorder (ADHD) have been insufficiently investigated. The physician-reported reason for choice of medication was one factor assessed in this observational study on compliance with ADHD medication.

**Methods:** This is a baseline data analysis of a multicenter, prospective, 12-month observational study in children and adolescents with ADHD. Among other factors, the physician's reason for choice of medication was captured at baseline. The two largest medication groups (non-stimulants vs. stimulants) were compared in terms of reasons for choice of medication. Correlations were explored by Pearson's correlation coefficient, Cohen's Kappa, and cluster analyses.

**Results:** 504 patients with a mean age 9.6 years were included. Non-stimulant medication was prescribed in 50.0% and stimulant medication in 49.0% of patients (1% received both). There were no significant group differences in baseline ADHD symptom scores. Reasons for choosing non-stimulants over stimulants included: "duration of action" (73.4%/28.7%), "beneficial for compliance" (60.3%/40.1%), and "patient/parent decision" (33.7%/26.3%). Reasons for choosing stimulants over non-stimulants included: "good efficacy" (93.1%/73.0%), "good tolerability" (66.4%/44.1%), and "well-priced" (38.1%/2.8%).

**Conclusion:** The reasons for choice of medication reported by physicians differed significantly between the two medication groups. Trial Registration Number: ClinicalTrials.gov Identifier: NCT00540826.

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J Abnorm Psychol. 2010 May;119:366-75.

**Child effects on communication between parents of youth with and without attention-deficit/hyperactivity disorder.**

**Wymbs BT, Pelham WE Jr.**

Numerous studies indicate interparental conflict causes child externalizing behavior. However, far less is known about the inverse relationship. Exploring this gap in the literature has clear implications for parents of children with externalizing disorders (e.g., attention-deficit/hyperactivity disorder [ADHD]). Adapting an experimental child behavior manipulation paradigm (Lang, Pelham, Atkeson, & Murphy, 1999; Pelham et al., 1997, 1998), parent couples of 9- to 12-year-old boys and girls with ADHD (n = 51) and without ADHD (n = 39) were randomly assigned to interact with a "disruptive" or "typical" confederate child. According to parent and observer ratings, parents interacting with disruptive confederates communicated less positively and more negatively with each other during and after the interactions than did parents who interacted with typical confederates. Observational coding also indicated that child effects on negative interparental communication were more noticeable among parents of youth with ADHD, particularly those with comorbid oppositional defiant disorder or conduct disorder, compared with parents of youth without ADHD. These findings extend results of prospective studies highlighting child effects on marital quality.

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J Forensic Psychiatry Psychol. 2010;21:238-46.

**Prevalence of ADHD symptoms among youth in a secure facility: The consistency and accuracy of self- and informant-report ratings.**

**Young S, Gudjonsson G, Misch P, et al.**

The current study aimed to determine the most reliable source of information about attention deficit hyperactivity disorder (ADHD) symptoms. This was a between-groups cohort study in order to compare the accuracy of three informant groups (self-, teacher-, and keyworker-report ratings) in identifying symptoms of ADHD. The estimate of ADHD prevalence was obtained by comparing the Conners' rating scales administered to 54, 14-year-old antisocial persons detained in a high-risk care home with a psychiatric assessment conducted on every third child. Overall, teachers were the most valid source and their ratings



estimated that 43% of antisocial adolescents might have ADHD with sensitivity and specificity rates of 67% and 75%, respectively. In conclusion, rating scales may assist services in targeting their resources for those with most clinical need in this population, but these should not replace comprehensive assessment procedures.

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J Trop Pediatr. 2010;56:97-102.

**Attention deficit hyperactivity and oppositional defiance disorder in HIV-infected South African children.**

**Zeegers I, Rabie H, Swanevelder S, et al.**

**Objective:** To determine the prevalence of attention deficit-hyperactivity disorder (ADHD) and oppositional defiance disorder (ODD) in HIV-infected South African children.

**Methods:** Swanson, Nolan and Pelham (SNAP-IV) questionnaires were used to determine ADHD and ODD severity and a draw-a-person (DAP) test was used to screen for developmental disorders. Associations between behavioural subtypes, psychological functioning, demographic and health variables were investigated.

**Results:** The SNAP-IV caregiver questionnaires showed a 26% prevalence of ADHD inattentive type; 38% hyperactive type and 24% combined type. The prevalence of ODD was 12% on parent questionnaires and 9.5% on teacher's questionnaires.

**Conclusions:** Parents/caregiver-only SNAP-IV questionnaires indicate a high prevalence of significant ADHD (all subtypes) and ODD in HIV-infected children. No significant differences were found between the severity of HIV disease and the presence of a behavioural disorder. The SNAP IV questionnaires and DAP test may prove valuable screening tools in HIV children with behavioural problems.

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