



# ADHD

ATTENTION DEFICIT HYPERACTIVITY DISORDER

  
Laboratorio per la Salute  
Materno Infantile

  
MARIO NEGRI  
ISTITUTO DI RICERCHE  
FARMACOLOGICHE

NEWSLETTER

N. 18 - anno II - Giugno 2009

Child Neuropsychol. 2009 Mar;15:120-35.

### **Distractibility in attention/deficit/hyperactivity disorder (ADHD): The virtual reality classroom.**

**Adams R, Finn P, Moes E, et al.**

Nineteen boys aged 8 to 14 with a diagnosis of ADHD and 16 age-matched controls were compared in a virtual reality (VR) classroom version of a continuous performance task (CPT), with a second standard CPT presentation using the same projection display dome system. The Virtual Classroom included simulated auditory and visual distracters. Parent ratings of attention, hyperactivity, internalizing problems, and adaptive skills on the Behavior Assessment System for Children (BASC) Monitor for ADHD confirmed that the ADHD children had more problems in these areas than controls. The difference between the ADHD group (who performed worse) and the control group approached significance ( $p=.05$ ; adjusted  $p=.02$ ) in the Virtual Classroom presentation, and the classification rate of the Virtual Classroom was better than when the standard CPT was used (87.5% versus 68.8%). Children with ADHD were more affected by distractions in the VR classroom than those without ADHD. Results are discussed in relation to distractibility in ADHD.

(PsycINFO Database Record (c) 2009 APA, all rights reserved)

latreia. 2008;21:375-85.

### **Clinical, neuropsychological and sociodemographic characteristics of male children with attention deficit/hyperactivity disorder, with predominance of inattention, in Medellin, Colombia, 2004-2005.**

**Arango LZ, Mejia MU, Silgado JCC, et al.**

Attention-deficit hyperactivity disorder (ADHD) with predominance of inattention is one of the most common neurobehavioral disorders during childhood, and a frequent reason for consultation. It is characterized by basic alterations in the executive functions and by behavioral inhibition. Objective: to describe the neuropsychological and sociodemographic characteristics of a group of predominantly-inattentive boys with ADHD, in Medellin, Colombia. Patients and methods: 16 boys, aged 7 to 11, were selected on the basis of the DSM IV checklist for the inattentive type of ADHD. The following variables were taken into account: age, socioeconomic stratum, reason for consultation, schooling, personal and familial background, development, family typology, and soft neurological signs. The neuropsychological characteristics were evaluated with a battery of psychometric tests that included: the Wechslers Intelligence Scale for children (WISC-R) with measurements to determine the Estimated Intellectual Coefficient (IC). The Attention test of the Luria-DNA battery in order to evaluate attention and mental control. The Wisconsin Card Sorting Test (WCST) to measure the executive function. The Stroop test for behavioral inhibition. The Woodcock Munoz (WM) cognitive hability battery subtests Visual Matching, and Cross out, to evaluate the speed of processing and selective focalization; also the Analysis-Synthesis and Concept formation that evaluate the executive function. Two subtests of KABC test were also included, namely: Hand movements to evaluate sequential processing, and Word order to measure interference control. Results: in the Visual matching subtest of the WM battery, we found that 6 out of the 16 boys (37.5%) were at risk and that 3 (18.8%) were clinically significative. In the dimension Learn to learn of the WCST, 6 boys (37.5%) were at risk and clinically significative. Conclusion: in general, according to the results obtained in the WISC-R, Woodcock-Munoz, Wisconsin and K-ABC, most of our patients were in the average and favorable categories. The tests that identified more at risk and clinically significant situations were those of Woodcock-Munoz and Wisconsin, that evaluate the speed of processing, selective focalization and executive function.

Per la ricerca degli articoli pubblicati nella letteratura scientifica nel mese in esame sono state consultate le banche dati Medline, Embase e PsycINFO 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.

Paediatr Child Health (CAN). 2009;14:89-98.

**Omega-3 fatty acid treatment of children with attention-deficit hyperactivity disorder: A randomized, double-blind, placebo-controlled study.**

**Belanger SA, Vanasse M, Spahis S, et al.**

**Background:** Although several clinical trials have evaluated the impact of n-3 polyunsaturated fatty acid (PUFA) on patients with attention-deficit hyperactivity disorder (ADHD), changes in plasma PUFA composition were not always assessed following n-3 supplementation. Furthermore, no reports are available on the efficacy of n-3 PUFA in Canadian youth with ADHD.

**Objectives:** To determine fatty acid (FA) composition, and the efficacy and safety of n-3 PUFA supplementation on ADHD clinical symptoms in French Canadian primary school children. Patients and methods: The Strengths and Weaknesses in ADHD and Normal Behaviors (SWAN) and Conners' questionnaires were used to assess changes in ADHD symptoms in 37 children (only 26 children completed the study from zero to 16 weeks). They were divided into two groups (A and B), and participated in a 16-week, double-blind, one-way, crossover randomized study. In the first phase, group A received the n-3 PUFA supplement and group B received n-6 PUFA (sunflower oil) as a placebo. During the second phase, group B received the active n-3 PUFA supplement that was continued in group A. FA composition and lipid profile were assessed during the phases of the study.

**Results:** FA differences between groups were observed in the 26 patients. Supplementation with n-3 PUFA resulted in significant increases in eicosapentaenoic and docosahexaenoic acids in group A, while group B was enriched with alpha-linolenic, gamma-linolenic and homo-gamma-linolenic acids. The n-3 PUFA supplement was tolerated without any adverse effects. A statistically significant improvement in symptoms was noted based on the parent version of the Conners' questionnaire from baseline to the end of phase 1, and this amelioration continued from phases 1 to 2, although the latter changes from phases 1 and 2 were not statistically significant in any of the subscales except for the subscale measuring inattention in group B. The improvement was greater in patients from group A in phase 1 and in patients from group B in phase 2. A subgroup of eight patients (four in each group) displayed a statistically significant clinical improvement following the administration of the n-3 PUFA supplement, particularly for the inattention and global Diagnostic and Statistical Manual of Mental Disorders, Fourth edition, total Conners' subscales.

**Conclusions:** A subgroup of children with ADHD who used n-3 PUFA supplements achieved and maintained symptom control. The data of the present study also supported n-3 PUFA safety and tolerability, but limited changes were noted in the FA profile in French Canadians with ADHD.

(copyright)2009 Pulsus Group Inc. All rights reserved

---

Clin Neurophysiol. 2009;120:30-40.

**Arousal-state modulation in children with AD/HD.**

**Benikos N, Johnstone SJ.**

**Objective:** To investigate the effect of arousal-state modulation, via manipulation of stimulus event-rate, on response inhibition in children with Attention-Deficit/Hyperactivity disorder (AD/HD) using behavioural and ERP measures.

**Methods:** Eighteen children with AD/HD, aged 7-14 years, and 18 age- and sex-matched controls performed a cued visual Go/Nogo task (70% Go) with stimuli presented at fast, medium and slow event-rates. Task performance and ERPs to Warning, Go and Nogo stimuli, as well as preparation between the S1-S2 interval, were examined for group differences.

**Results:** AD/HD subjects displayed poorer response inhibition during the fast condition, accompanied by a reduced Nogo P3. Group differences during the fast rate extended to Warning cues, with the AD/HD group showing ERP evidence of atypical orienting/preparation, as indexed by the early and late CNV, and early sensory/attentive processing prior to S2.

**Conclusions:** Although deficient response inhibition has been proposed as the core deficit in AD/HD, the results of the present study highlight the key role of energetic factors. Furthermore, group differences found to cues suggest that this effect extends to the processing of task-irrelevant stimuli. Significance: This was the first ERP Go/Nogo task investigation using three event-rates, and the results support the theory that state factors may contribute to response inhibition deficits in AD/HD.

(copyright) 2008 International Federation of Clinical Neurophysiology

---

J Child Neurol. 2009;24:692-96.

**Attention-deficit hyperactivity disorder (ADHD) and birth order.**

**Berger I, Felsenthal-Berger N.**

Birth order is considered one of the most influential environmental factors in child development, affecting cognitive abilities and behavioral traits. This study investigates the effect of birth order in relation to attention-

deficit hyperactivity disorder (ADHD), the most common neuro-behavioral disorder of childhood. The study describes birth order of 598 children aged 6 to 18 years diagnosed due to attention-deficit hyperactivity disorder. The cohort contains relatively large size families because 47.1% of the participants were born in families of more than 4 children. The results show no statistically significant differences in birth order of children among all families. We conclude that the chances of first, middle, or later born children, as well as single children, to suffer from attention-deficit hyperactivity disorder are almost equal. This study provides evidence that birth order has no effect in relation to attention-deficit hyperactivity disorder.

(copyright) 2009 Sage Publications

---

Pediatrics. 2009 Jun;123:1472-76.

**The impact of early behavior disturbances on academic achievement in high school.**

*Breslau J, Miller E, Breslau N, et al.*

**BACKGROUND:** Previous research has indicated that childhood behavioral disturbances predict lower scores on academic tests and curtail educational attainment. It is unknown which types of childhood behavioral problems are most likely to predict these outcomes.

**METHODS:** An ethnically diverse cohort was assessed at 6 years of age for behavioral problems and IQ and at 17 years of age for academic achievement in math and reading. Of the original cohort of 823 children, 693 (84%) had complete data. Multiple regressions were used to estimate associations of attention and internalizing and externalizing problems at age 6 and with math and reading achievement at age 17, adjusting for IQ and indicators of family socioeconomic status.

**RESULTS:** Adjusting for IQ, inner-city community, and maternal education and marital status, teacher ratings of attention, internalizing behavior, and externalizing problems at age 6 significantly predict math and reading achievement at age 17. When types of problems are examined simultaneously, attention problems predict math and reading achievement with little attenuation, whereas the influence of externalizing and internalizing problems is materially reduced and not significant.

**CONCLUSIONS:** Interventions that target attention problems at school entry should be tested as a potential avenue for improving educational achievement.

---

Int Clin Psychopharmacol. 2008;23:291-98.

**Association of the catechol-O-methyltransferase polymorphism with methylphenidate response in a classroom setting in children with attention-deficit hyperactivity disorder.**

*Cheon KA, Jun JY, Cho DY.*

It has been postulated that the prefrontal cortex plays a key role in attention-deficit hyperactivity disorder (ADHD). The catechol-O- methyltransferase (COMT) enzyme degrades synaptic catecholamines and plays a specific role in the catabolism of prefrontal cortex dopamine. We investigated the association between the COMT valine (Val) 108/158 methionine (Met) polymorphism and the response to treatment with methylphenidate (MPH) in children with ADHD. This study included 124 children with ADHD in South Korea. Those patients who had an improvement after 8 weeks of treatment greater than or equal to 50% compared with the baseline ADHD rating scale scores before treatment were considered to be the 'good response' group. After performing genotyping for COMT, we examined the correlation of the COMT polymorphism with response to treatment with MPH using the (chi) test. We found that whereas 62.5% of the patients showing a good response to MPH treatment had the Val/Val genotype, 41.7 and 11.7% of the patients showing a poor response to MPH treatment as assessed by their teachers had the Val/Met and Met/Met genotypes ((chi)=6.58, d.f.=2, P=0.035). Our findings provide evidence of an association between the COMT genotype and MPH response as assessed by the teachers of children with ADHD.

(copyright) 2008 Wolters Kluwer Health | Lippincott Williams & Wilkins

---

J Clin Psychopharmacol. 2008;28:723-25.

**Tactile and visual hallucinations in a child with methylphenidate and fluoxetine combination.**

*Coskun M, Zoroglu S.*

---

Psychiatr Genet. 2009 Jun;19:134-41.

**Candidate gene analysis in an on-going genome-wide association study of attention-deficit hyperactivity disorder: suggestive association signals in ADRA1A.**

*Elia J, Capasso M, Zaheer Z, et al.*

**OBJECTIVES:** Attention-deficit hyperactivity disorder (ADHD) is a highly heritable, common developmental disorder. Although a few confirmed associations have emerged from candidate gene studies, these have

shown the same limitations that have become evident in the study of other complex diseases, often with inconsistent and nonreplicated results across different studies.

**METHODS:** In this report, 27 ADHD candidate genes were explored in greater depth using high-density tag single nucleotide polymorphism (SNP) genotyping. Association with 557 SNPs was tested using the transmission disequilibrium test in 270 nuclear pedigrees selected from an ongoing ADHD genetic study that includes all disease subtypes.

**RESULTS:** SNPs in seven genes including SLC1A3, SLC6A3, HTR4, ADRA1A, HTR2A, SNAP25, and COMT showed a nominal level of association with ADHD (P values <0.05), but none remained significant after a stringent correction for the total number of tests performed.

**CONCLUSION:** The strongest signal emerged from SNPs in the promoter region (rs3808585) and in an intron (rs17426222, rs4732682, rs573514) of ADRA1A, all located within the same haplotype block. Some of the SNPs in HTR2A and COMT have already been reported by others, whereas other SNPs will need confirmation in independent samples.

---

Eur Child Adolesc Psychiatry. 2008;17:106-15.

**Psychometric properties of two ADHD questionnaires: Comparing the conners' scale and the FBB-HKS in the general population of german children and adolescents - Results of the BELLA study.**

**Erhart M, Dopfner M, Ravens-Sieberer U.**

**Background and objective:** To examine and compare the psychometric properties of two short screening instruments for children and adolescents suffering from attention deficit-/ hyperactivity disorder (ADHD). The Conners' Hyperactivity Index consists of ten items that assess symptoms of hyperactivity through self-report and parents' proxy. The German ADHD Rating scale (FBB-HKS/ADHS) consists of 20 items that assess the severity and perceived burden of inattention, hyperactivity, and impulsiveness as defined by the ICD-10 and DSM-IV.

**Methods:** Within the BELLA module of the German Health Interview and Examination Survey for Children and Adolescents (KiGGS), the parents of 2,863 children and adolescents rated the Conners' Hyperactivity Index and the FBB-HKS.

**Results:** The internal consistency of item responses was assessed via Cronbach's (alpha) and showed that both instrument scores were able to obtain a reliable measurement. The factorial validity of the FBB-HKS measurement model as well as the unidimensionality of the Conners' scale was tested by means of exploratory and confirmatory factor analysis (EFA and CFA), indicating satisfactory goodness of fit for the FBB-HKS (RMSEA = 0.06) and some deviation from the unidimensionality assumption of the Conners' scale. Stability of results across age could be confirmed with few exceptions. Mean scores differences were found between both sexes, age groups, and different socioeconomic status groups (Winkler-Index) with males, younger respondents, and children with low socioeconomic status displaying more ADHD-related behaviour. Correlation coefficients between the two instruments' scores and other scales assessing emotional and behavioural problems hinted at convergent validity.

**Conclusion:** Both instruments' scores showed reliability as well as factorial and convergent / discriminant validity. The pros and cons of the two instruments as well as for which purpose and under which circumstances one of the measures can be favoured must be considered prior to applying such a measure.

(copyright) 2008 Steinkopff Verlag

---

Brain Res. 2009;1273:114-28.

**A lack of default network suppression is linked to increased distractibility in ADHD.**

**Fassbender C, Zhang H, Buzy WM, et al.**

Heightened distractibility in participants with ADHD as indexed by increased reaction time (RT) variability has been hypothesized to be due to a failure to sufficiently suppress activation in the default attention network during cognitively demanding situations. The present study utilized fMRI to examine the relationship between intra-individual variability (IIV) in task RT and suppression of BOLD response in regions of the default network, using a working memory paradigm and two levels of control tasks. IIV was calculated separately for thirteen healthy control and twelve children with ADHD, Combined Type. Children with ADHD displayed significantly more RT variability than controls. Neural measures showed that although both groups displayed a pattern of increasing deactivation of the medial prefrontal cortex (PFC) with increasing task difficulty, the ADHD group was significantly less deactive than controls. Correlations between IIV and brain activation suggested that greater variability was associated with a failure to deactivate ventromedial PFC with increasing task difficulty. T-tests on brain activation between participants with ADHD with low versus high IIV implicated a similar region so that high variability was associated with greater activity in this region. These data provide support for the theory that increased distractibility in at least some participants with ADHD may



be due to an inability to sufficiently suppress activity in the default attention network in response to increasing task difficulty.

(copyright) 2009 Elsevier B.V. All rights reserved

---

Psychoneuroendocrinology. 2009;34:1019-28.

**Cortisol awakening response in healthy children and children with ADHD: Impact of comorbid disorders and psychosocial risk factors.**

**Freitag CM, Hanig S, Palmason H, et al.**

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common child psychiatric disorders. Previous studies have reported a blunted cortisol response to challenging situations and a decreased cortisol awakening response (CAR) in children with ADHD. As ADHD often is comorbid with oppositional defiant disorder (ODD), conduct disorder (CD), or anxiety disorder (AnxD), and changes in hypothalamic-pituitary-adrenal (HPA) axis activity have also been reported for these disorders, the present study aimed to compare the CAR in children with ADHD with and without comorbid disorders. Data on the CAR were obtained in 128 children with ADHD (aged 6-13 years) and in 96 control children (aged 6-12 years). Children with ADHD + ODD showed an attenuated CAR (area under the curve, AUC) compared to children with ADHD without ODD/CD and control children. Findings point towards either disinhibition or pervasive underarousal in children with ADHD + ODD, and seem to be specific for children with ADHD + ODD, as the attenuated CAR-AUC was not observed in children with ADHD without comorbid disorders or children with ADHD + CD or ADHD + AnxD. In addition, current adverse parenting conditions, family conflicts, and acute life events were associated with mean increase in CAR, emphasizing the role of psychosocial risk factors in mediating HPA axis activity in children with ADHD.

(copyright) 2009 Elsevier Ltd. All rights reserved

---

J Neural Transm. 2009;116:631-36.

**Response to methylphenidate in children and adolescents with ADHD: Does comorbid anxiety disorders matters?**

**Garcia SP, Guimaraes J, Zampieri JF, et al.**

There are controversial evidence in the literature on the role of comorbid anxiety disorders (ANX) in the improvement of attention-deficit/hyperactivity disorder (ADHD) symptoms with methylphenidate (MPH) treatment. Our main objective was to assess differences in the response to MPH treatment in children and adolescents with ADHD with and without comorbid ANX. We extensively evaluated response to MPH in a naturalistic study of 280 children and adolescent with ADHD according to DSM-IV criteria. Psychiatric diagnoses (ADHD, ANX, and other comorbidities) were assessed by semi-structured interviews (K-SADS-E). Response to MPH was assessed by means of total score in the Swanson, Nolan, and Pelham Scale-version IV (SNAP-IV) after 1 month of treatment. There was no significant between-group difference in the response to treatment with MPH after 1 month either when SNAP-IV scores were assessed dimensionally or categorically (moderate response) ( $P > 0.05$ ). Our findings suggest that comorbid ANX do not interfere in the response to MPH on core ADHD symptoms.

(copyright) 2009 Springer-Verlag

---

Sleep. 2009;32:671-79.

**Sleep problems and disorders among adolescents with persistent and subthreshold attention-deficit/hyperactivity disorders.**

**Gau SSF, Chiang HL.**

**Study Objectives:** To investigate the sleep schedules, problems, and disorders among adolescents with persistent attention-deficit/hyperactivity disorder (ADHD) and those with partially remitted ADHD symptoms.

**Design:** A case-control study.

**Setting:** National Taiwan University and schools in Taipei  
**Patients or Participants:** The sample included 281 adolescents (male, 85.4%; 145 with persistent ADHD, 136 with subthreshold ADHD), aged 11 to 17, who were diagnosed with ADHD, according to DSM-IV criteria, at the mean age of 6.7 years ( $SD = 3.0$ ) and 185 unaffected control subjects.  
**Interventions:** N/A.  
**Measurements and Results:** We conducted psychiatric interviews of participants and their mothers using the Chinese Kiddie-Schedule for Affective Disorders and Schizophrenia-Epidemiology version for making the diagnoses of ADHD, other psychiatric disorders, and sleep problems or disorders. We also collected the medication treatment data and parent and teacher reports of ADHD-related symptoms. Our results showed that adolescents with a childhood diagnosis of ADHD according to DSM-IV criteria, regardless of persistent ADHD, were more likely to have current and lifetime sleep problems and sleep disorders according to DSM-IV (insomnia, sleep terrors, nightmares, bruxism, and snoring). The presence of at least 1 psychiatric comorbid condition increased the risks for

insom- insomnia and nightmares. The use of methylphenidate was not associated with further increased risk of sleep problems, except bruxism.

**Conclusions:** Our findings support a relationship between ADHD and sleep problems, which can be partially explained by the psychiatric comorbidities, but did not support a disturbed sleep schedule. Our study suggests that mental health professionals should screen for sleep problems and psychiatric comorbidities among adolescents with a childhood diagnosis of ADHD regardless of the severity of current ADHD symptoms.

---

Clin Case Stud. 2009;8:174-92.

**Evidence-Based ADHD Treatment with a Spanish-Speaking Latino Family.**

**Gerdes AC, Schneider BW.**

Though data support effective treatments for attention-deficit hyperactivity disorder (ADHD), little research examining these interventions with ethnic minority families exists. Thus, the current case study focuses on a Spanish-speaking, Latino family assessed and treated in a university-based ADHD clinic implementing evidence-based treatment. In addition to discussing the course of treatment, this case study highlights some of the challenges faced when treating ethnic minority families and identifies several lines of research needed to fully explore ethnicity and treatment outcomes in child psychotherapy.

---

J Clin Psychopharmacol. 2008;28:725-26.

**Insomnia, night terror, and depression related to clonidine in attention-deficit/hyperactivity disorder.**

**Ghanizadeh A.**

---

J Child Neurol. 2009;24:679-84.

**Psychiatric comorbidity differences in clinic-referred children and adolescents with ADHD according to the subtypes and gender.**

**Ghanizadeh A.**

There are controversial or even opposite findings about gender and prevalence of comorbid psychiatric disorders among different subtypes of attention-deficit hyperactivity disorder (ADHD). The participants were children with attention-deficit hyperactivity disorder. Gender, subtype of attention-deficit hyperactivity disorder, and the interaction effects were evaluated by logistic regression. Of the 171 children, 73 (42.7%) were of the combined subtype, 45 (26.3%) inattentive, and 52 (31.0%) were hyperactive/impulsive. The prevalence of attention-deficit hyperactivity disorder subtypes was not different between genders. There was no significant difference of gender by subtype interaction effects on the children's age. This study does not provide evidence supporting attention-deficit hyperactivity disorder subtypes as distinct clinical entities in terms of comorbidity. Association of attention-deficit hyperactivity disorder subtypes and psychiatric disorders in Iran is somehow different from that in some studies conducted in the Western culture. It is more similar to that of other Asian countries.

(copyright) 2009 Sage Publications

---

Psychosomatics. 2009;50:178.

**Attention-deficit hyperactivity disorder, methylphenidate, and primary encopresis.**

**Golubchik P, Weizman A.**

---

Int Clin Psychopharmacol. 2008;23:228-31.

**Methylphenidate in the treatment of female adolescents with cooccurrence of attention deficit/hyperactivity disorder and borderline personality disorder: A preliminary open-label trial.**

**Golubchik P, Sever J, Zalsman G, et al.**

Recent studies reported symptomatic overlap between attention deficit/hyperactivity disorder (ADHD) and borderline personality disorder (BPD). Methylphenidate (MPH) is the most efficient treatment for ADHD. We assessed the efficacy and tolerability of MPH treatment in adolescent females who met the Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV criteria for both disorders. Fourteen BPD/ADHD female adolescents aged 14-19 years were treated with MPH for 12 weeks, targeting ADHD, BPD symptoms, and aggressive behavior, as rated by ADHD-rating scale (ADHD-RS) and Clinical Global Impression-Severity (CGI-S) scale for BPD and aggressive behavior severity. A significant improvement was detected in both ADHD and BPD severity (baseline vs. end point, ADHD-RS: 33.1(plus or minus)4.8 vs. 17.6(plus or minus)5.2,  $P < 0.001$ ; BPD CGI-S: 4.6(plus or minus)0.8 vs. 3.4(plus or minus)0.8,  $P < 0.0005$ , respectively) as

well as in aggressive behavior (Aggression CGI-S: 3.5(plus or minus)1.3 vs. 1.8(plus or minus)0.5,  $P < 0.001$ ). MPH was well tolerated. MPH may be useful and well tolerated in treating some shared symptoms of ADHD and BPD among female adolescents. Controlled studies are needed to substantiate these findings.  
(copyright) 2008 Wolters Kluwer Health | Lippincott Williams & Wilkins

---

Clin Neurophysiol. 2009;120:73-79.

### **Do children with ADHD and/or PDD-NOS differ in reactivity of alpha/theta ERD/ERS to manipulations of cognitive load and stimulus relevance?**

**Gomarus HK, Wijers AA, Minderaa RB, et al.**

**Objective:** We examined whether the method of event-related (de-)synchronization (ERD/ERS) revealed differential effects of selective attention and working memory load in children (8-11 years) with pervasive developmental disorder - not otherwise specified (PDD-NOS) or attention-deficit/hyperactivity disorder (ADHD).

**Methods:** Fifteen healthy controls and three equally large groups of children with symptoms of PDD-NOS, ADHD or both (PDD/HD) performed a visual selective memory search task. The EEG was recorded from which occipital alpha and frontal theta were derived.

**Results:** The effects of the overall task manipulations of task load, relevance and target/nontarget were clearly present in the overall analyses of alpha and theta ERD/ERS. However, no significant differences with respect to these manipulations existed between any of the subject groups.

**Conclusions:** The results supply no evidence for a distinction in information processing abilities of selective attention and working memory as reflected by alpha and theta ERD/ERS between children diagnosed with either ADHD, PDD-NOS or healthy controls.

**Significance:** Alpha and theta ERD/ERS are sensitive to manipulations of task load, relevance and target/nontarget, but supply no additional information on possible group differences in comparison to the more frequently used method of event-related potentials.

(copyright) 2008 International Federation of Clinical Neurophysiology

---

Clin Neurophysiol. 2009;120:60-72.

### **ERP correlates of selective attention and working memory capacities in children with ADHD and/or PDD-NOS.**

**Gomarus HK, Wijers AA, Minderaa RB, et al.**

**Objective:** We examined whether children (8-11 years) diagnosed with Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) or Attention-Deficit/Hyperactivity Disorder (ADHD) showing primarily hyperactive behavior, differed in selective attention and working memory (WM) abilities.

**Methods:** Healthy controls and children with ADHD, PDD-NOS or symptoms of both disorders (PDD/HD) ( $n=15$  in each group) carried out a visual selective memory search task while their EEG was recorded from which event-related potentials were derived.

**Results:** Compared to the control group, all patient groups made more omissions while hyperactive children also exhibited more false alarms. Regarding the process of WM-controlled search, significant group differences in ERP data were found between the control group and each of the clinical groups.

**Conclusions:** The results point to less efficient WM-functioning in all patient groups. Whereas the clinical groups differed from each other at the behavioral level as measured by questionnaires, no distinction between the clinical groups could be made with respect to performance or ERP measures of WM capacity and selective attention.

**Significance:** The results suggest that a possible differentiation in selectivity and working memory capacities between PDD-NOS and ADHD is hard to find. This may agree with clinical practice, where differential diagnosis is a subject of discussion.

(copyright) 2008 International Federation of Clinical Neurophysiology

---

Child Psychiatry Hum Dev. 2009 Jun;40:257-68.

### **Objective sleep measurement in typically and atypically developing preschool children with ADHD-like profiles.**

**Goodlin-Jones BL, Waters S, Anders TF.**

**OBJECTIVE:** This study investigated the association between preschool children's sleep patterns measured by actigraphy and parent-reported hyperactivity symptoms. Many previous studies have reported sleep problems in children with attention deficit hyperactivity disorder (ADHD)-like symptoms.

**METHODS:** This study examined a cross-sectional sample of 186 preschoolers age 2-5 years in three groups: children with autism, children with developmental delay without autism, and typically developing children recruited from the general population. One week of actigraphic sleep data plus a parent report of the

presence or absence of a current sleep problem were collected. Parents completed the child behavior checklist; a subset of children in preschool had teachers who completed the caregiver-teacher report form. Sleep behavior was compared for those children with and without clinical levels of attention-deficit/hyperactivity symptoms (T scores  $\geq 65$ ).

**RESULTS:** The prevalence of a parent-defined sleep problem across the entire sample was 36.1%. Thirty-four percent of the sample had a parent-reported ADHD composite in the clinical range. Those children with a clinical ADHD profile were more likely to be described by parents as having a sleep problem. However, no significant differences in actigraphic sleep patterns or night-to-night sleep-wake variability were found for children with an ADHD profile in the clinical range.

**CONCLUSIONS:** In this non-clinical sample of preschool age children, parental reports of clinical ADHD profiles were significantly associated with parental reports of sleep problems but not with actigraphically recorded sleep-wake data.

---

Am J Psychiatry. 2009 Jun;166:711-17.

**Validation and extension of the endophenotype model in ADHD patterns of inheritance in a family study of inhibitory control.**

**Goos LM, Crosbie J, Payne S, et al.**

**OBJECTIVE:** Endophenotypes, markers of underlying liability to psychiatric disorders, can improve the power to detect genetic risks relative to a complex clinical endpoint. Motor response inhibition is a prime candidate endophenotype in ADHD. In this study, the authors sought to extend the endophenotype model and further demonstrate its utility by investigating the parental origin of shared genetic risk in ADHD.

**METHOD:** Inhibitory control was studied in children with ADHD, unaffected siblings, and their biological parents. Covariation in inhibitory control within families was investigated. Differential covariation as a function of parental sex was also studied. A number of validity criteria for inhibitory control as an endophenotype were assessed, including sensitivity to the disorder and presence in unaffected relatives.

**RESULTS:** The results confirmed an inhibitory control deficit in children with ADHD as well as in their parents, independent of symptom severity in both generations. Inhibitory control ability in children was significantly predicted by the ability of their parents, particularly their fathers.

**CONCLUSIONS:** These findings indicate that an inhibitory control deficit is a cognitive marker of genetic risk shared by parents and offspring. The endophenotype model is also extended by evidence of differential parental contributions to this risk, consistent with findings of parent-of-origin effects in the transmission of certain risk alleles observed in molecular analyses. The identification of these effects at the endophenotype level and their incorporation in genetic modeling can improve both linkage detection and localization of quantitative trait loci.

---

Res Dev Disabil. 2009 Jul;30:727-34.

**The psychometric properties of the Attention-Distraction, Inhibition-Excitation Classroom Assessment Scale (ADIECAS) in a sample of children with moderate and severe intellectual disabilities.**

**Guerin S, Buckley S, Mcevoy J, et al.**

The Attention-Distraction, Inhibition-Excitation Classroom Assessment Scale (ADIECAS) [Evans, P. L. C. (1975). Inhibition and stimulus generalization in the discrimination learning of ESN(S) and ESN(M) children. Unpublished Ph.D. thesis. Manchester, UK: University of Manchester] assesses attention-related difficulties in children with intellectual disabilities (ID). The present study explored the psychometric properties of the ADIECAS with a sample of 84 children with moderate and severe ID whose teachers completed the ADIECAS and the Conners' Teachers Rating Scale [Goyette, C. H, Conners, C. K., & Ulrich, R. F. (1978). Normative data on revised Conners' parent and teachers rating scales. *Journal of Abnormal Child Psychology*, 6, 221-236]. Following factor analysis the Evans and Hogg [Evans, P. L. C., & Hogg, J. (1984). A classroom rating scale for use with mentally retarded children. *British Journal of Clinical Psychology*, 23, 187-194] structure was the most appropriate for use with this sample. Moderate to strong positive relationships were found between the ADIECAS and the Conners', and the ADIECAS factors were significant predictors of the Conners' subscales. This study provides further support for the ADIECAS as a reliable and valid measure of ADHD-related symptoms among children with moderate and severe ID.

---



Chin J Contemp Pediatr. 2009;11:371-73.

### **Correlation between ABO blood type gene and attention-deficit hyperactivity disorder in children.**

**Guo XS, Jiao BQ, Xu T.**

**Objective:** To investigate the correlation between ABO blood type gene and attention-deficit hyperactivity disorder (ADHD) in children.

**Methods:** ABO blood types were determined using glass sheet method in 96 children with ADHD and their parents. O gene was identified using polymerase, chain reaction and restriction fragment length polymorphism in patients with A or B blood type. Haplotype-based haplotype relative risk (HHRR), transmission disequilibrium test (TDT) and Chi-square test were used to examine the association between ABO gene and ADHD.

**Results:** TDT results showed significant differences in the allele of ABO between the 96 children with ADHD and within family controls ( $\chi^2 = 6.017$ ,  $df = 2$ ,  $P < 0.05$ ). Chi-square test results showed differences in the allele of A and B ( $\chi^2 = 3.289$ ,  $df = 1$ ,  $P = 0.07$ ) as well as O and B ( $\chi^2 = 3.629$ ,  $df = 1$ ,  $P = 0.057$ ) between ADHD children and within-family controls. The frequencies of O and A genes were higher than that of B gene in ADHD children.

**Conclusions:** There was correlation between ABO blood type gene and ADHD in children. The risk of ADHD is increased in the presence of alleles O and A, but the risk is reduced in the presence of allele B.

---

Z Kinder- Jugendpsychiatr Psychother. 2009;37:13-25.

### **Alternative agents used in ADHD.**

**Hassler F, Duck A, Reis O, et al.**

Attention-deficit/hyperactivity disorder (ADHD) is, with a prevalence of 2% to 6%, one of the most common neurobehavioral disorder affecting children and adolescents, persisting into adulthood. Comorbidity and psychosocial circumstances enter into the choice of intervention strategies. Several agents have been demonstrated effective in treating individuals with ADHD. Direct or indirect attenuation of dopamine and norepinephrine neurotransmission appears closely related to both the stimulant and nonstimulant medications efficacious in ADHD. However, important differences concerning efficacy and side effects exist both between and with the specific classes of agents like neuroleptics, antidepressants, antiepileptics, (alpha)-agonists, (beta)-blockers, buspiron, l-dopa, melatonin, pycnogenol (registered trademark), zinc, magnesium, polyunsaturated fatty acids, and homeopathy. Elucidating the various mechanisms of action of ADHD medications may lead to better choices in matching potential response to the characteristics of individuals. We review the purported mechanism of action and available evidence for selected complementary and alternative medicine therapies for ADHD in childhood and adolescence. (copyright) 2009 by Verlag Hans Huber, Hogrefe AG.

---

Eur Child Adolesc Psychiatry. 2008;17:52-58.

### **How often are german children and adolescents diagnosed with ADHD? Prevalence based on the judgment of health care professionals: Results of the german health and examination survey (KiGGS).**

**Huss M, Holling H, Kurth BM, et al.**

**Background:** Attention deficit-/hyperactivity disorder (ADHD) is a chronic disorder with a substantial lifelong impact on personal and social functioning, academic performance, and the health system in general. Extended knowledge regarding its epidemiology will help to optimise the distribution of health resources and support affected children and adolescents.

**Objectives:** To report (1) the lifetime prevalence rates of ADHD in children and adolescents in Germany ages 3-17 years diagnosed by health care professionals, (2) the symptoms of hyperactivity and inattention in children and adolescents, and 3) the distributions and odds ratios for gender, age, socioeconomic status (SES), and history of migration.

**Methods:** Data were collected from May 2003 until May 2006 in 167 representatively selected sample points in Germany. A total of 17,461 children and adolescents (7,569 boys and 7,267 girls) were medically and physically examined, and their parents completed a self-administered questionnaire. Parent-reports of a lifetime ADHD diagnosis by a medical doctor or psychologist were taken as case definitions. Additional information was obtained via the parents from the strengths and difficulties questionnaire (SDQ) and also from trained observers.

**Results:** The overall lifetime prevalence of ADHD diagnosis was 4.8%. As expected, there was a significant gender difference between boys (7.7%) and girls (1.8%). Additionally, 4.9% of subjects had scores above threshold on the Inattention/ Hyperactivity subscale of the SDQ. As expected, a significant age effect was found for ADHD diagnosis (1.5% preschool age; 5.3% primary school; 7.1% secondary school). There were neither German east/west differences nor differences for rural versus urban areas. However, socioeconomic

status was significantly associated with the prevalence of diagnosis (low SES: 6.4%, medium SES: 5.0%; high SES: 3.2%).

**Conclusion:** The prevalence of diagnosed ADHD and the influence of its mediating factors found in our study are in line with those from other European countries, but our findings reflect a lower band of variation. (copyright) 2008 Steinkopff Verlag.

---

Med Sci Sports Exerc. 2008;40:1749-56.

#### **Emotional and behavioral problems in relation to physical activity in youth.**

**Kantomaa MT, Tammelin TH, Ebeling HE, et al.**

**Purpose:** Physical inactivity is known to be associated with mental health problems in adulthood, but the association in youth is unclear. This study evaluated the association between the level of physical activity and the prevalence of emotional and behavioral problems in Finnish adolescents.

**Methods:** The study population consisted of the Northern Finland Birth Cohort 1986 including 7002 adolescents who responded to a postal inquiry in 2001-2002 at the age of 15-16 yr. They completed the Youth Self-Report questionnaire assessing their emotional and behavioral problems and a questionnaire concerning their moderate- to vigorous-intensity physical activity (MVPA). The odds ratios (OR) and their 95% confidence intervals (95% CI) for having different emotional and behavioral problems were obtained in 2007 from logistic regression and adjusted for family type, income, parents' education, and body mass index.

**Results:** In boys, physical inactivity (1 h or less of MVPA per week) was associated with anxious/depressed symptoms (OR = 2.9, 95% CI = 1.5-5.7), withdrawn/depressed symptoms (OR = 2.8, 95% CI = 1.8-4.2), social problems (OR = 3.6, 95% CI = 1.8-5.1), thought problems (OR = 2.3, 95% CI = 1.1-5.2), and attention problems (OR = 1.9, 95% CI = 1.0-3.4) when compared to being physically active (4 h or more of MVPA per week). In girls, physical inactivity was associated with withdrawn/depressed symptoms (OR = 2.3, 95% CI = 1.5-3.6), somatic complaints (OR = 1.4, 95% CI = 1.0-1.9), social problems (OR = 3.2, 95% CI = 1.7-6.1), attention problems (OR = 2.1, 95% CI = 1.3-3.2), and rule-breaking behavior (OR = 1.8, 95% CI = 1.3-2.5) compared to being physically active.

**Conclusions:** Physical inactivity was associated with several emotional and behavioral problems in adolescents. Future research should investigate the mechanisms behind these associations and the effectiveness of physical activity in the treatment of emotional and behavioral problems among young people.

Copyright (copyright) 2008 by the American College of Sports Medicine

---

J Child Neurol. 2009;24:727-33.

#### **Attention-deficit disorders and epilepsy in childhood: Incidence, causative relations and treatment possibilities.**

**Kaufmann R, Goldberg-Stern H, Shuper A.**

At least 20% of children with epilepsy have clinical attention-deficit hyperactivity disorder (ADHD) compared to 3% to 7% of the general pediatric population. Several mechanisms may account for the high prevalence, such as a common genetic propensity, noradrenergic system dysregulation, subclinical epileptiform discharges, or even seizures, antiepileptic drug effects, and psychosocial factors. At the same time, children with attention-deficit hyperactivity disorder have a higher than normal rate of electroencephalography abnormalities (5.6-30.1% vs. 3.5%). Methylphenidate treatment is equally efficient in children with isolated attention-deficit hyperactivity disorder and in children with attention-deficit hyperactivity disorder and epilepsy (70%-77%). Electroencephalography screening in patients with attention-deficit hyperactivity disorder in the absence of other clinical indications or before starting methylphenidate treatment is not currently indicated. Methylphenidate is considered safe for use in children who are seizure-free. However, the few reports of seizure aggravation in methylphenidate-treated children with uncontrolled epilepsy have raised concern.

(copyright) 2009 Sage Publications

---

J Nerv Ment Dis. 2009 Jun;197:442-49.

#### **Effects of postnatal parental smoking on parent and teacher ratings of ADHD and oppositional symptoms.**

**Kollins SH, Garrett ME, McClernon FJ, et al.**

To assess the effects of postnatal parental smoking on subsequent parent and teacher ratings of DSM-IV attention deficit hyperactivity disorder (ADHD) symptoms and oppositional behaviors in children diagnosed with ADHD and their siblings. Children between 5 and 12 years of age with ADHD and their siblings were included. DSM-IV ADHD symptom subscales (Inattentive and hyperactive-impulsive), and oppositionality subscale scores from Conners' Rating Scales were predicted on the basis of parental smoking status in the first 7 years after birth using Generalized Estimating Equations controlling for a range of relevant covariates.

Postnatal parental smoking was associated with both parent and teacher ratings of ADHD symptoms and oppositional behavior. After controlling for a number of covariates, several of these relationships were still significant. The risk of maternal smoking for the development of ADHD symptoms does not end during pregnancy. Research on the mechanisms underlying the observed associations is needed.

Expert Rev Neurother. 2009;9:477-87.

**Interventions to promote the evidence-based care of children with ADHD in primary-care settings.**

**Langberg JM, Brinkman WB, Lichtenstein PK, et al.**

Attention-deficit/hyperactivity disorder (ADHD) is a commonly occurring behavioral disorder among children. Community-based physicians are often the primary providers of services for children with ADHD. A set of consensus guidelines has been published by the American Academy of Pediatrics that provides best-practice diagnostic procedures for primary-care physicians. These recommendations emphasize the importance of using the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition criteria as the basis for making an ADHD diagnosis and conducting systematic follow-up, including the collection of parent and teacher ratings scales to quantitatively assess response to treatment. Although these recommendations have been widely disseminated and their adoption actively promoted, guideline adherence, in general, is known to be poor. Two types of intervention models, ancillary service and office systems modification, have been proposed to promote adoption of evidence-based ADHD practice in primary-care settings. The present article reviews the efficacy of these intervention models, and discusses the cost and sustainability of each model as related to feasibility of intervention dissemination.

(copyright) 2009 Expert Reviews Ltd

Neuropsychology. 2009;23:367-80.

**Delay and Reward Choice in ADHD: An Experimental Test of the Role of Delay Aversion .**

**Marco R, Miranda A, Schlotz W, et al.**

Children with attention deficit/hyperactivity disorder (ADHD) choose smaller sooner (SS) over larger later (LL) rewards more than controls. Here we assess the contributions of impulsive drive for immediate rewards (IDIR) and delay aversion (DAv) to this pattern. We also explore the characteristics of, and the degree of familiarity in, ADHD SS responders. We had 360 ADHD probands; 349 siblings and 112 controls (aged between 6 to 17 years) chose between SS (1 point after 2 s) and LL reward (2 points after 30 s) outcomes on the Maudsley Index of Delay Aversion (Kuntsi, Oosterlaan, & Stevenson, 2001): Under one condition SS choice led to less overall trial delay under another it did not. ADHD participants chose SS more than controls under both conditions. This effect was larger when SS choice reduced trial delay. ADHD SS responders were younger, had lower IQ, more conduct disorder and had siblings who were more likely to be SS responders themselves. The results support a dual component model in which both IDIR and DAv contribute to SS choice in ADHD. SS choice may be a marker of an ADHD motivational subtype.

(copyright) 2009 American Psychological Association

J Abnorm Child Psychol. 2009 Apr;37:337-48.

**How do trait dimensions map onto ADHD symptom domains?**

**Martel MM, Nigg JT, Von Eye A.**

Theories of Attention-Deficit/Hyperactivity Disorder (ADHD) implicate dysfunctional regulation mechanisms that have been conceptually grouped into "top-down" control and "bottom-up" affective/reactive processes. This dual-process account can be invoked in relation to temperament or personality traits and may clarify how traits relate to ADHD. Two samples were examined to illuminate developmental effects. The younger sample was 179 youngsters aged 7 to 12 years (113 boys; 107 with ADHD). The older sample was 184 adolescents (109 boys; 87 with ADHD) aged 13 to 18 years. Structural equation models included parent-rated traits, teacher-rated ADHD symptoms, and laboratory-obtained executive functions. A control or factor included cognitive control and conscientiousness/effortful control. A second factor labeled affective or included neuroticism/negative emotionality, agreeableness, and reactive control. In the younger sample, these two factors were differentially and specifically related to inattention and hyperactivity, respectively. However, in the older sample, the first factor was related to inattention and hyperactivity, whereas the second factor was related to hyperactivity. Personality traits appear to map onto ADHD symptoms in a meaningful manner consistent with a dual-process model of temperament and ADHD.

(PsycINFO Database Record (c) 2009 APA, all rights reserved) (from the journal abstract)

Int J Psychophysiol. 2009 Jun;72:283-88.

**Decision-making patterns and sensitivity to reward and punishment in children with attention-deficit hyperactivity disorder.**

**Masunami T, Okazaki S, Maekawa H.**

Earlier studies have demonstrated that attention-deficit hyperactivity disorder (ADHD) is associated with aberrant sensitivity to rewards and punishments. Although some studies have focused on real-life decision making in children with ADHD using the Iowa gambling task, the number of good deck choices, a frequently used index of decision-making ability in the gambling task, is insufficient for investigating the complex decision-making strategies in subjects. In the present study, we investigated decision-making strategies in ADHD children, analyzing T-patterns with rewards, with punishments, and without rewards and punishments during the gambling task, and examined the relationship between decision-making strategies and skin conductance responses (SCRs) to rewards and punishments. We hypothesized that ADHD children and normal children would employ different decision-making strategies depending on their sensitivity to rewards and punishments in the gambling task. Our results revealed that ADHD children had fewer T-patterns with punishments and exhibited a significant tendency to have many T-patterns with rewards, thus supporting our hypothesis. Moreover, in contrast to normal children, ADHD children failed to demonstrate differences between reward and punishment SCRs, supporting the idea that they had an aberrant sensitivity to rewards and punishments. Therefore, we concluded that ADHD children would be impaired in decision-making strategies depending on their aberrant sensitivity to rewards and punishments. However, we were unable to specify whether large reward SCRs or small punishment SCRs is generated in ADHD children.

---

Sleep Medicine Clinics. 2009 Mar;4:19-25.

**Sleep problems in children with autism, ADHD, anxiety, depression, acquired brain injury, and typical development.**

**Mayes SD, Calhoun S, Bixler EO, et al.**

Comparative analysis of parent-reported sleep problems in clinical and typical children shows that (1) children with anxiety or depression sleep more than children with autism, ADHD-combined type, ADHD-inattentive type, acquired brain injury, and typical development; (2) children with autism have more sleep problems than children in the other diagnostic groups; (3) children with ADHD-inattentive type have the fewest sleep problems but have more daytime sleepiness than typical controls; (4) children with ADHD-combined type have more sleep problems than controls; (5) controls and children with ADHD-combined type have the least daytime sleepiness, and (6) children with brain injury have sleep problems scores in the midrange compared with all other groups.

(PsycINFO Database Record (c) 2009 APA, all rights reserved) (from the journal abstract)

---

Br J Psychiatry. 2009 Mar;194:273-77.

**Attention-deficit hyperactivity disorder: Treatment discontinuation in adolescents and young adults.**

**McCarthy S, Asherson P, Coghill D, et al.**

**Background:** Symptoms of attention-deficit hyperactivity disorder (ADHD) are known to persist into adulthood in the majority of cases.

**Aims:** To determine the prevalence of methylphenidate, dexamfetamine and atomoxetine prescribing and treatment discontinuation in adolescents and young adults.

**Method:** A descriptive cohort study using the UK General Practice Research Database included patients aged 15-21 years from 1999 to 2006 with a prescription for a study drug.

**Results:** Prevalence of prescribing averaged across all ages increased 6.23-fold over the study period. Overall, prevalence decreased with age: in 2006, prevalence in males dropped 95% from 12.77 per 1000 in 15-year-olds to 0.64 per 1000 in 21-year-olds. A longitudinal analysis of a cohort of 44 patients aged 15 years in 1999 demonstrated that no patient received treatment after the age of 21 years.

**Conclusions:** The prevalence of prescribing by general practitioners to patients with ADHD drops significantly from age 15 to age 21 years. The fall in prescribing is greater than the reported age-related decrease in symptoms, raising the possibility that treatment is prematurely discontinued in some young adults in whom symptoms persist.

(PsycINFO Database Record (c) 2009 APA, all rights reserved) (from the journal abstract)



Am J Epidemiol. 2009 Jun;169:1327-36.

**Association of early-life exposure to household gas appliances and indoor nitrogen dioxide with cognition and attention behavior in preschoolers.**

**Morales E, Julvez J, Torrent M, et al.**

The authors investigated the association of early-life exposure to indoor air pollution with neuropsychological development in preschoolers and assessed whether this association differs by glutathione-S-transferase gene (GSTP1) polymorphisms. A prospective, population-based birth cohort was set up in Menorca, Spain, in 1997-1999 (n = 482). Children were assessed for cognitive functioning (McCarthy Scales of Children's Abilities) and attention-hyperactivity behaviors (Diagnostic and Statistical Manual of Mental Disorders, 4th Edition) at age 4 years. During the first 3 months of life, information about gas appliances at home and indoor nitrogen dioxide concentration was collected at each participant's home (n = 398, 83%). Genotyping was conducted for the GSTP1 coding variant Ile105Val. Use of gas appliances was inversely associated with cognitive outcomes (beta coefficient for general cognition = -5.10, 95% confidence interval (CI): -9.92, -0.28; odds ratio for inattention symptoms = 3.59, 95% CI: 1.14, 11.33), independent of social class and other confounders. Nitrogen dioxide concentrations were associated with cognitive function (a decrease of 0.27 point per 1 ppb, 95% CI: -0.48, -0.07) and inattention symptoms (odds ratio = 1.06, 95% CI: 1.01, 1.12). The deleterious effect of indoor pollution from gas appliances on neuropsychological outcomes was stronger in children with the GSTP1 Val-105 allele. Early-life exposure to air pollution from indoor gas appliances may be negatively associated with neuropsychological development through the first 4 years of life, particularly among genetically susceptible children.

J Autism Dev Disord. 2009;39:197-209.

**Autism symptoms in attention-deficit/hyperactivity disorder: A familial trait which correlates with conduct, oppositional defiant, language and motor disorders.**

**Mulligan A, Anney R, O'Regan M, et al.**

It is hypothesised that autism symptoms are present in Attention-Deficit/ Hyperactivity Disorder (ADHD), are familial and index subtypes of ADHD. Autism symptoms were compared in 821 ADHD probands, 1050 siblings and 149 controls. Shared familiarity of autism symptoms and ADHD was calculated using DeFries-Fulker analysis. Autism symptoms were higher in probands than siblings or controls, and higher in male siblings than male controls. Autism symptoms were familial, partly shared with familiarity of ADHD in males. Latent class analysis using SCQ-score yielded five classes; Class 1(31%) had few autism symptoms and low comorbidity; Classes 2-4 were intermediate; Class 5(7%) had high autism symptoms and comorbidity. Thus autism symptoms in ADHD represent a familial trait associated with increased neurodevelopmental and oppositional/conduct disorders.

(copyright) 2008 Springer Science+Business Media, LLC

Assessment. 2009 Jun;16:193-208.

**Psychometric properties of teacher SKAMP ratings from a community sample.**

**Murray DW, Bussing R, Fernandez M, et al.**

This study examines the basic psychometric properties of the Swanson, Kotkin, Agler, M-Flynn, and Pelham Scale (SKAMP), a measure intended to assess functional impairment related to attention deficit hyperactivity disorder, in a sample of 1,205 elementary students. Reliability, factor structure, and convergent, discriminant and predictive validity are evaluated. Results provide support for two separate but related subscales, Attention and Department, and provide evidence that the SKAMP predicts school functioning above and beyond symptoms alone. Boys, African American children, and children living in poverty are rated as having higher impairment scores than girls, Caucasian children, and more advantaged peers. Norm-referenced data are provided by gender, race, and parental concern level. This study supports the reliability and validity of the SKAMP in a large, diverse community sample and broadens its clinical utility.

J Abnorm Child Psychol. 2009 Apr;37:443-53.

**PDD symptoms in ADHD, an independent familial trait?**

**Nijmeijer JS, Hoekstra PJ, Minderaa RB, et al.**

The aims of this study were to investigate whether subtle PDD symptoms in the context of ADHD are transmitted in families independent of ADHD, and whether PDD symptom familiarity is influenced by gender and age. The sample consisted of 256 sibling pairs with at least one child with ADHD and 147 healthy controls, aged 5-19 years. Children who fulfilled criteria for autistic disorder were excluded. The Children's Social Behavior Questionnaire (CSBQ) was used to assess PDD symptoms. Probands, siblings, and controls were compared using analyses of variance. Sibling correlations were calculated for CSBQ scores after

controlling for IQ, ADHD, and comorbid anxiety. In addition, we calculated cross-sibling cross-trait correlations. Both children with ADHD and their siblings had higher PDD levels than healthy controls. The sibling correlation was 0.28 for the CSBQ total scale, with the CSBQ stereotyped behavior subscale showing the strongest sibling correlation ( $r = 0.35$ ). Sibling correlations remained similar in strength after controlling for IQ and ADHD, and were not confounded by comorbid anxiety. Sibling correlations were higher in female than in male probands. The social subscale showed stronger sibling correlations in elder than in younger sibling pairs. Cross-sibling cross-trait correlations for PDD and ADHD were weak and not-significant. The results confirm that children with ADHD have high levels of PDD symptoms, and further suggest that the familiarity of subtle PDD symptoms in the context of ADHD is largely independent from ADHD familiarity. (PsycINFO Database Record (c) 2009 APA, all rights reserved) (from the journal abstract)

---

Res Dev Disabil. 2009 Jul;30:763-73.

**Autism, ADHD, mental retardation and behavior problems in 100 individuals with 22q11 deletion syndrome.**

**Niklasson L, Rasmussen P, Oskarsdottir S, et al.**

This study assessed the prevalence and type of associated neuropsychiatric problems in children and adults with 22q11 deletion syndrome. One-hundred consecutively referred individuals with 22q11 deletion syndrome were given in-depth neuropsychiatric assessments and questionnaire screens. Autism spectrum disorders (ASDs) and/or attention deficit/hyperactivity disorder (ADHD) were diagnosed in 44 cases. ASD was diagnosed in 23 cases of whom only 5 had autistic disorder. ADHD was diagnosed in 30 individuals. In nine of these cases with ASD or ADHD there was a combination of these diagnoses. Mental retardation (MR) with or without ASD/ADHD was diagnosed in 51 individuals. ASD, ADHD, and/or MR were present in 67 cases. Females had higher IQ than males. The results of this study showed that the vast majority of all individuals with 22q11 deletion syndrome have behavior and/or learning problems and more than 40% meet criteria for either ASD, ADHD or both. Neuropsychiatric and neuropsychological evaluations are indicated as parts of the routine clinical assessment of individuals with 22q11 deletion syndrome

---

Int J Epidemiol. 2009;38:698-705.

**Smoking during pregnancy and hyperactivity-inattention in the offspring - Comparing results from three Nordic cohorts.**

**Obel C, Linnet KM, Henriksen TB, et al.**

**Background:** Prenatal exposure to smoking has been associated with Attention Deficit Hyperactivity Disorder (ADHD) in a number of epidemiological studies. However, mothers with the ADHD phenotype may 'treat' their problem by smoking and therefore be more likely to smoke even in a society where smoking is not acceptable. This will cause genetic confounding if ADHD has a heritable component, especially in populations with low prevalence rates of smoking since this reason for smoking is expected to be proportionally more frequent in a population with few 'normal' smokers. We compared the association in cohorts with different smoking frequencies.

**Methods:** A total of 20 936 women with singleton pregnancies were identified within three population-based pregnancy cohorts in Northern Finland (1985-1986) and in Denmark (1984-1987 and 1989-1991). We collected self-reported data on their pre-pregnancy and pregnancy smoking habits and followed the children to school age where teachers and parents rated hyperactivity and inattention symptoms.

**Results:** Children, whose mothers smoked during pregnancy, had an increased prevalence of a high hyperactivity-inattention score compared with children of nonsmokers in each of the cohorts after adjustment for confounders but we found no statistical significant difference between the associations across the cohorts.

**Conclusion:** The estimated association was not strongest in the population with the fewest smokers which does not support the hypothesis that the association is entirely due to genetic confounding. (copyright) Published by Oxford University Press on behalf of the International Epidemiological Association.

(copyright) The Author 2008; all rights reserved

---

Pediatr Emerg Care. 2008;24:438-41.

**Comparing the frequency of unrecognized attention deficit hyperactivity disorder symptoms in injured versus noninjured patients presenting for care in the pediatric emergency department.**

**Pittsenbarger ZE, Grupp-Phelan J, Phelan KJ.**

**Introduction:** Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common pediatric mental health problems but often goes unrecognized. Children with ADHD have an increased risk of injuries.

Whether injured children presenting to the emergency department (ED) have an increased frequency of unrecognized ADHD symptoms compared to noninjured children is not known.

**PURPOSE:** Examine the association of medically unrecognized ADHD symptoms in injured compared to noninjured children presenting to a pediatric ED.

**Methods:** A prospective age- and sex-matched cross-sectional comparison design of parent reported ADHD symptoms based on the Vanderbilt Assessment Scale in injured and noninjured children ages 5 to 18 years. Families were excluded if ADHD was listed in the medical history by nurses or physicians or if the child was currently taking medications for ADHD. Injured children were matched with noninjured children who presented with medical complaints. Univariate and bivariate analyses were performed. Proportions of children with ADHD symptoms in injured and noninjured children were compared with the (chi) statistic.

**Results:** One hundred sixty-four mothers of children were enrolled into the study: 82 in the injured and 82 noninjured group. The frequency of parent reported ADHD symptoms was the same in the 2 groups (9.8%).

**Conclusions:** Children presenting with injuries are no more likely than a noninjured age- and sex-matched group to have unrecognized ADHD based on parental screen. Targeting injured children for ADHD screening is not supported by this study.

Copyright (copyright) 2008 by Lippincott Williams & Wilkins

---

Child Neuropsychol. 2009 Mar;15:147-62.

**Time perception in children with ADHD: The effects of task modality and duration.**

**Plummer C, Humphrey N.**

The purpose of the current study was to examine the performance of children with and without ADHD in time reproduction tasks involving varying durations and modalities. Twenty children with ADHD and 20 healthy controls completed time reproduction tasks in three modalities (auditory, visual, and a unique combined auditory/visual condition) and six durations (1 second, 4 seconds, 12 seconds, 24 seconds, 48 seconds, and 60 seconds). Consistent with our predictions, we found main effects of group (participants with ADHD were significantly less accurate than those without ADHD), duration (accuracy decreased as temporal duration increased), and modality (responses in the combined condition were more accurate than those in the auditory condition, which in turn were more accurate than those in the visual condition). Furthermore, predicted interactions between group and duration (the discrepancy in performance between the two groups grew as temporal duration increased), and group and modality (the modality effect was of greater for participants with ADHD) were supported. A marginal, nonsignificant interaction between group, modality, and duration was also found. These findings are discussed in relation to current theory on the nature of cognitive deficits evident in individuals with ADHD, and methodological limitations are noted.

(PsycINFO Database Record (c) 2009 APA, all rights reserved) (from the journal abstract)

---

Neuropsychology. 2009;23:381-91.

**Attention Problems, Inhibitory Control, and Intelligence Index Overlapping Genetic Factors: A Study in 9-, 12-, and 18-Year-Old Twins.**

**Polderman TJC, de Geus EJC, Hoekstra RA, et al.**

It is assumed that attention problems (AP) are related to impaired executive functioning. We investigated the association between AP and inhibitory control and tested to what extent the association was due to genetic factors shared with IQ. Data were available from 3 independent samples of 9-, 12-, and 18-year-old twins and their siblings (1,209 participants). AP were assessed with checklists completed by multiple informants. Inhibitory control was measured with the Stroop Color Word Task (Stroop, 1935), and IQ with the Wechsler Intelligence Scale for Children (Wechsler et al., 2002) or Wechsler Adult Intelligence Scale (Wechsler, 1997). AP and inhibitory control were only correlated in the 12-year-old cohort ( $r = .18$ ), but appeared non-significant after controlling for IQ. Significant correlations existed between AP and IQ in 9- and 12-year olds ( $r = -.26/- .34$ ). Inhibitory control and IQ were correlated in all cohorts ( $r = -.16, -.24$  and  $-.35$ , respectively). Genetic factors that influenced IQ also influenced inhibitory control. We conclude that the association between AP and inhibitory control as reported in the literature may largely derive from genetic factors that are shared with IQ.

(copyright) 2009 American Psychological Association

J Dev Behav Pediatr. 2009;30:2-6.

### **The Utility of a Continuous Performance Test Embedded in Virtual Reality in Measuring ADHD-Related Deficits.**

**Pollak Y, Weiss PL, Rizzo AA, et al.**

**OBJECTIVE:** Continuous performance tasks (CPT) are popular in the diagnostic process of Attention Deficit/Hyperactivity Disorder (ADHD), providing an objective measure of attention for a disorder with otherwise subjective criteria.

**Aims of the study were to:** (1) compare the performance of children with ADHD on a CPT embedded within a virtual reality classroom (VR-CPT) to the currently used Test of Variables of Attention (TOVA) CPT, and (2) assess how the VR environment is experienced.

**METHODS:** Thirty-seven boys, 9 to 17 years, with (n = 20) and without ADHD (n = 17) underwent 3 CPT's: VR-CPT, the same CPT without VR (No VR-CPT) and the TOVA. Immediately following CPT, subjects described their subjective experiences on the Short Feedback Questionnaire. Results were analyzed using analysis of variance with repeated measures.

**RESULTS:** Children with ADHD performed poorer on all CPT's. The VR-CPT showed similar effect sizes to the TOVA. Subjective feelings of enjoyment were most positive for VR-CPT.

**CONCLUSION:** The VR-CPT is a sensitive and user-friendly assessment tool to aid diagnosis in ADHD.

(copyright) 2008 Lippincott Williams & Wilkins

---

Mutat Res Fundam Mol Mech Mutagen. 2009;666:44-49.

### **Absence of cytogenetic effects in children and adults with attention-deficit/hyperactivity disorder treated with methylphenidate.**

**Ponsa I, Ramos-Quiroga JA, Ribases M, et al.**

Attention-deficit/hyperactivity disorder (ADHD) is the most common psychiatric condition with onset in childhood, and in more than 50% of cases it persists into adulthood as a chronic disorder. Over five million methylphenidate (MPH) prescriptions were issued in the USA in 2003, mostly for children. A previous report [R.A. El-Zein, S.Z. Abdel-Rahman, M.J. Hay, M.S. Lopez, M.L. Bondy, D.L. Morris and M.S. Legator Cytogenetic effects in children treated with methylphenidate, *Cancer Lett.* 230 (2005) 284-291.] described the induction of chromosome abnormalities by MPH in children treated for three months, contrary to most of the in vitro and in vivo studies reported since then. We present new relevant information concerning the cytogenetic effects of MPH in children and adults. We include a prospective sample of 12 children and 7 adults with a new diagnosis of ADHD and naive to MPH. We analyzed the cytogenetic effects on peripheral lymphocytes before and three months after starting MPH therapy. The cytogenetic analyses included a cytokinesis-block micronucleus (CBMN) assay, a sister chromatid exchange (SCE) analysis and the determination of chromosome aberrations (CA). Following the same strategy and analyzing the same cytogenetic endpoints that were investigated in the original report [R.A. El-Zein, S.Z. Abdel-Rahman, M.J. Hay, M.S. Lopez, M.L. Bondy, D.L. Morris and M.S. Legator Cytogenetic effects in children treated with methylphenidate, *Cancer Lett.* 230 (2005) 284-291.], we found no evidence of increased frequency of micronuclei, sister chromatid exchanges or chromosome aberrations induced by MPH in children and adult populations. MPH treatment of children and adults with ADHD resulted in no significant genomic damage (as suggested by the three endpoints studied), results that do not support a potential increased risk of cancer after exposure to MPH.

(copyright) 2009 Elsevier B.V. All rights reserved

---

Med J Aust. 2008;188:337-39.

### **Prescribing of psychostimulant medications for attention deficit hyperactivity disorder in children: Differences between clinical specialties.**

**Preen DB, Calver J, Sanfilippo FM, et al.**

**Objective:** To examine differences in psychostimulant prescribing between paediatricians and child/adolescent psychiatrists for treating children with attention deficit hyperactivity disorder (ADHD) in Western Australia.

**Design:** Using whole-population prescribing data, logistic and linear regressions were used to model the number of children (aged 2-17 years) treated with psychostimulants between August 2003 and December 2004 for ADHD and medication dose prescribed by clinical specialty, controlling for age, sex, body weight, and other medication use.

**Main outcome measures:** Mean number of patients treated by specialty; associations between prescriber specialty and patient characteristics; associations between stimulant dose and patient characteristics and prescriber specialty.



**Results:** 54 paediatricians and 23 child/adolescent psychiatrists prescribed stimulant medications for children with ADHD. The mean number of patients treated (per prescriber) was 159.8 (range, 1-1977) for paediatricians and 34.3 (range, 1-166) for psychiatrists. Boys were 32% more likely to be treated with stimulants by paediatricians ( $P = 0.002$ ). Psychiatrists were 2.9 times (95% CI, 2.4-3.3;  $P < 0.001$ ) more likely than paediatricians to treat patients with multiple psychotropic medications. When controlled for all other factors, psychiatrists prescribed higher stimulant doses (4.5mg/day greater; 95% CI, 2.0-7.0mg/ day;  $P < 0.001$ ) than paediatricians.

**Conclusion:** Treatment of children with stimulant medicines for ADHD differed between clinical specialties. Paediatricians treated more patients per prescriber, a greater proportion of boys, and a younger age demographic, but relied less on combined psychotropic pharmacotherapy and prescribed lower stimulant doses than psychiatrists.

---

Child Neuropsychol. 2009 Mar;15:163-78.

**Cognitive control in children with ADHD-C: How efficient are they?**

**Randall KD, Brocki KC, Kerns KA.**

The literature on children with attention deficit/hyperactivity disorder, combined type (ADHD-C), is currently inconclusive as to the nature of deficits in two forms of cognitive control's interference control and response selection (Nigg, 2006). This paper examined the performance of children with ADHD-C on interference control and response selection conflict tasks that required both speed and accuracy. The data was analyzed utilizing a new efficiency method to more effectively analyze overall responses. Both interference control and response selection conditions were combined within tasks allowing for a closer comparison of how children with ADHD-C perform on these specific types of cognitive control. Computerized tasks were administered to 62 boys, ages 7 to 12 (31 controls, 31 ADHD-C). Results revealed deficits in efficient performance for children with ADHD-C on interference control tasks and response selection tasks hypothesized to involve high cognitive control demand. These results highlight the utility of analyzing efficiency data to identify deficits in performance for children with ADHD-C and to foster an increased understanding of cognitive control functioning in this clinical population.

(PsycINFO Database Record (c) 2009 APA, all rights reserved) (from the journal abstract)

---

Pediatr Drugs. 2009;11:165-69.

**Multimodal treatments versus pharmacotherapy alone in children with psychiatric disorders: Implications of access, effectiveness, and contextual treatment.**

**Reeves G, Anthony B.**

Practice guidelines for the treatment of youth with mental health problems tend to endorse integrating psychopharmacologic treatment with psychosocial interventions, such as psychotherapy and parent skills training. However, poor access to pediatric mental health specialists and inadequate training of primary care physicians in psychosocial interventions make it difficult for families to receive this standard of care. Large pediatric randomized, multicenter trials, including the Multimodal Treatment Study of ADHD (attention deficit hyperactivity disorder) MTA and the Treatment for Adolescents with Depression Study (TADS), have begun to identify specific advantages of multimodal treatment compared with psychopharmacology alone. Advantages of combined treatment include improvement of both symptoms and family functioning. More research is needed to determine effective and appropriate multimodal interventions for complex and severe pediatric mental illness. Advantages of multimodal treatment must be balanced with the treatment burden on the family system.

(copyright) 2009 Adis Data Information BV. All rights reserved

---

J Dev Behav Pediatr. 2008;29:270-75.

**Combined type versus ADHD predominantly hyperactive-impulsive type: Is there a difference in functional impairment?**

**Riley C, Dupaul GJ, Pipan M, et al.**

**OBJECTIVE:** The purpose of this study was to evaluate whether preschool children with attention-deficit/hyperactivity disorder predominantly hyperactive-impulsive type (ADHD-HI) and ADHD combined type (ADHD-C) have different levels of functional impairment in four domains: externalizing (oppositional and disruptive) behaviors, internalizing (anxious) behaviors, social skills, and preacademic functioning.

**METHODS:** The subjects were 102 children 3 to 5 years of age, meeting DSM-IV criteria for ADHD. Children with ADHD-C versus ADHD-HI were compared across at least two measures for each of the four functional domains. Oppositional and anxious behaviors were assessed on the Conners Parent and Teacher Rating Scales. In addition, off-task and disruptive behaviors were assessed by direct observation in the preschool

setting. Social skills were assessed on the parent and teacher versions of the Social Skills Rating System and preacademic skills were assessed on the letter word identification, passage comprehension, and applied problems subtests of the Woodcock-Johnson III Tests of Achievement and the initial sound fluency subtest of the Dynamic Indicators of Basic Early Literacy Skills 5th Edition.

**RESULTS:** There were no significant differences between the groups on rating scale T scores for parent-reported oppositional symptoms (ADHD-C vs ADHD-HI; 66.7 (plus or minus) 13.5 vs 65.7 (plus or minus) 11.7;  $p = .73$ ); parent-reported anxious symptoms (53.5 (plus or minus) 11.1 vs 53.2 (plus or minus) 9.7;  $p = .90$ ); teacher-reported oppositional symptoms (70.9 (plus or minus) 15.6 vs 75.5 (plus or minus) 14.7;  $p = .17$ ); or teacher reported anxious symptoms (59.2 (plus or minus) 11.6 vs 58.5 (plus or minus) 12.2;  $p = .77$ ). No statistically significant differences were found between the groups when examining off-task and/or disruptive behavior during structured and free play observations at school. No significant differences between the subtypes were found for social skills or preacademic functioning.

**CONCLUSIONS:** Across the four areas of functioning assessed in this study, preschool children with ADHD-HI and those with ADHD-C demonstrated similar levels of functioning. This study, in combination with data from longitudinal studies demonstrating that most children with ADHD-HI are later diagnosed with ADHD-C, suggests that ADHD-HI may represent an earlier form of ADHD-C as opposed to a distinct subtype.

(copyright) 2008 Lippincott Williams & Wilkins

J Autism Dev Disord. 2009;39:549-56.

### **Differentiating among children with PDD-NOS, ADHD, and those with a combined diagnosis on the basis of WISC-III profiles.**

**Scheirs JGM, Timmers EA.**

Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) and Attention Deficit/Hyperactivity Disorder (ADHD) have partly overlapping symptoms. It can also be debated whether a third diagnostic category exists: children with a combined diagnosis. In this study an attempt was made to distinguish among the three groups on the basis of intelligence (WISC-III) profiles. It was found that the PDD-NOS group had higher verbal and performance IQ's, as well as higher WISC-III index scores than the ADHD group. Subtests Block Design and Mazes discriminated best. It was concluded that based on intelligence scores, only PDD-NOS and ADHD emerged as distinct categories, whereas the combined diagnosis did not. Future research on the distinctiveness of these diagnostic groups, however, should include variables other than IQ.

J Psychiatr Res. 2009;43:941-45.

### **Exploring the genetic link between RLS and ADHD.**

**Schimmelmann BG, Friedel S, Nguyen TT, et al.**

Attention deficit/hyperactivity disorder (ADHD) is a highly heritable neurodevelopmental disorder of childhood onset. Clinical and biological evidence points to shared common central nervous system (CNS) pathology of ADHD and restless legs syndrome (RLS). It was hypothesized that variants previously found to be associated with RLS in two large genome-wide association studies (GWA), will also be associated with ADHD. SNPs located in MEIS1 (rs2300478), BTBD9 (rs9296249, rs3923809, rs6923737), and MAP2K5 (rs12593813, rs4489954) as well as three SNPs tagging the identified haplotype in MEIS1 (rs6710341, rs12469063, rs4544423) were genotyped in a well characterized German sample of 224 families comprising one or more affected sibs (386 children) and both parents. We found no evidence for preferential transmission of the hypothesized variants to ADHD. Subsequent analyses elicited nominal significant association with haplotypes consisting of the three SNPs in BTBD9 ( $(\chi^2) = 14.8$ ,  $df = 7$ , nominal  $p = 0.039$ ). According to exploratory post hoc analyses, the major contribution to this finding came from the A-A-A-haplotype with a haplotype-wise nominal p-value of 0.009. However, this result did not withstand correction for multiple testing. In view of our results, RLS risk alleles may have a lower effect on ADHD than on RLS or may not be involved in ADHD. The negative findings may additionally result from genetic heterogeneity of ADHD, i.e. risk alleles for RLS may only be relevant for certain subtypes of ADHD. Genes relevant to RLS remain interesting candidates for ADHD; particularly BTBD9 needs further study, as it has been related to iron storage, a potential pathophysiological link between RLS and certain subtypes of ADHD.

(copyright) 2009 Elsevier Ltd. All rights reserved

Z Kinder- Jugendpsychiatr Psychother. 2009;37:69-75.

### **ADHD among boys in childhood: Quality of life and parenting behavior.**

**Schreyer I, Hampel P.**

Recent studies suggest that psychological adjustment is impaired in children with attention-deficit/hyperactivity disorder (ADHD). Additionally, psychosocial functioning of significant others is also

affected. The present study examined the quality of life (QoL) in two age groups of children with ADHD (8-9 vs. 10-11 years) compared to healthy controls matched by age, verbal intelligence, and education level. Furthermore, the QoL and the parenting behavior of mothers were investigated. In total, N = 58 mothers rated their own QoL and that of their children. In addition, they made judgments about their own parenting behavior. Age effects did not reach statistical significance, but QoL was impaired in children with ADHD when compared to healthy controls. Moreover, the mental and the physical well-being of mothers of a child with ADHD were negatively affected. Finally, a more negative parenting behavior of mothers of a child with ADHD was found compared to parents of a healthy child. These results underline the need for family-oriented interventions in ADHD that take into account the psychosocial adjustment of significant others.

(copyright) 2009 by Verlag Hans Huber, Hogrefe AG

---

J Dev Behav Pediatr. 2008;29:414.

**An early male adolescent with externalizing behaviors, school failure, and a colostomy.**

**Sedberry D, Tarbell S, Stein MT.**

**CASE:** Jeff is a 14 1/2 years old ninth grader who presents with his mother, father, and step-father because he is failing in school. Jeff was born with an imperforate anus, and he had several surgical procedures in the first few years of life. He has a colostomy, but it is not clear how well he cares for it independently. Jeff's parents state that their other concern is that to prepare for school each morning or for other activities, they literally remind him of each step. Jeff has been active and disruptive since preschool, but is also described as "charming." School work and peer relations improved following a diagnosis of attention-deficit hyperactivity disorder (ADHD) in the second grade and treatment with a long-acting stimulant medication. An Independent Education Plan (IEP) in second grade included achievement tests that demonstrated above grade level scores. Jeff continued to have problems with written expression, but did quite well in verbal expression. By seventh grade, Jeff complained to his parents that he "wasn't fun to be around," and refused to take medication for ADHD. He increasingly refused to do most of his homework or class work. Grades were approaching failing levels in the eighth grade when he was suspended twice for impulsive behaviors—drawing a picture of a gun pointed at another student, and signing a petition stating that a classmate was gay. After his second suspension, he was sent to a continuation school, where he resisted doing the required work, failed each subject, and socialized with peers. Jeff is failing in ninth grade although his teachers describe him as respectful in the classroom. His parents divorced when Jeff was a preschooler, and they do not agree on how to manage Jeff. Jeff's father has not supported medication for the treatment of ADHD. The parents tried numerous strategies to help Jeff, including improving organizational skills, offering rewards and punishments and counseling; they have participated in parenting classes. The parents acknowledge that Jeff always tries to negotiate with them and they often give in. There is no known substance abuse or illegal behavior, although he has demonstrated destructiveness and stealing at home. Jeff's mother remarried a year ago, and her husband backed her in setting more strict limits for Jeff; at Jeff's request, he is currently living with his father most of the time.

(copyright) 2008 Lippincott Williams & Wilkins

---

Neuropediatrics. 2008;39:323-27.

**Visual attention deficits contribute to impaired facial emotion recognition in boys with attention-deficit/hyperactivity disorder.**

**Shin DW, Lee SJ, Kim BJ, et al.**

The purpose of the present study was to examine whether attention deficits contribute to dysfunctional facial emotion recognition in boys with ADHD. The first hypothesis was that ADHD patients would commit more errors in facial emotion recognition than the control group. The second hypothesis was that attention deficits, which were measured by a computerized continuous performance test (CPT), would be responsible for the errors in facial emotion recognition in boys with ADHD. A revised emotional recognition test (ERT) was used to assess the subjects' ability to recognize emotions. The ADHD diagnostic system (ADS), a computerized continuous performance test (CPT), was used to evaluate attention performance. Subjects with ADHD showed significantly lower scores of contextual understanding than the controls ( $t = -2.569$ ,  $df = 67$ ,  $P = 0.012$ ). Among age, IQ, and ADS scores, only the score of omission errors on the ADS accounted significantly for the score of contextual understanding in ADHD (effect size 3.4%,  $P < 0.05$ ). Attention deficits in boys with ADHD seemed to account for their difficulty in recognizing facial expressions of emotion. Effective treatment for attention deficits is expected to have a beneficial effect on facial emotion recognition in boys with ADHD.

(copyright) Georg Thieme Verlag KG Stuttgart

Thyroid. 2009;19:395-401.

**Impact of neonatal thyroid hormone insufficiency and medical morbidity on infant neurodevelopment and attention following preterm birth.**

**Simic N, Asztalos EV, Rovet J.**

**Background:** Infants born preterm are at risk of both transiently reduced thyroid hormone levels and impaired neurocognitive development, including attention deficits. The objective of this study was to examine the effects of reduced thyroid hormone levels on general neurodevelopment and attention at 3 months corrected age.

**Methods:** Sixty-four infants born 24 to 35 weeks gestation were stratified into four gestational age groups: Group A, 23-26 weeks (n = 10); Group B, 27-29 weeks (n = 23); Group C, 30-32 weeks (n = 20); Group D, 33-35 weeks (n = 11). Controls were 33 healthy infants born full-term (Group E). In preterm only, free thyroxine (FT4), triiodothyronine (T3), and thyrotropin (TSH) were measured at 2 and 4 weeks of life and at 40 weeks postconceptional age. At 3 months corrected age, all infants were assessed with the Bayley Scales of Infant Development-Second Edition (BSID-II), from which both mental development index (MDI) and psychomotor development index (PDI) scores and four indices of attention were derived: sustained attention, selective attention, attention shift, and total attention.

**Results:** Gestational age-stratified preterm groups differed significantly in T3 and FT4 levels at 2 and 4 weeks of life in infants born less than 27 weeks gestation. Preterm infants overall scored significantly below full-term on BSID-II MDI and PDI, selective, sustained, and total attention scales. In the preterm group, FT4 levels were positively associated with PDI and selective, sustained, and total attention.

**Conclusions:** Reduced levels of thyroid hormone in the neonatal period in preterm infants are associated with a reduced neurocognitive outcome in the attention domain at 3 months corrected age.

(copyright) 2009 Mary Ann Liebert, Inc

Psychol Assess. 2009 Jun;21:231-34.

**An Internet version of the Diagnostic Interview Schedule for Children (DISC-IV): Correspondence of the ADHD section with the paper-and-pencil version.**

**Steenhuis MP, Serra M, Minderaa RB, et al.**

The authors recently developed an Internet version of the Diagnostic Interview Schedule for Children's Version 4 (DISC-IV), parent version (D. Shaffer, P. Fisher, C. P. Lucas, M. K. Dulcan, & M. E. Schwab-Stone, 2000), with the main purpose of using it at home without an interviewer. This offers many advantages (e.g., extended applicability, fast communication, reduction of costs) but requires thorough study of correspondence between diagnostic outcomes of the interview and self-administered Internet versions. This is the 1st study to report on Internet administration of the DISC-IV. Using the attention-deficit/hyperactivity disorder (ADHD) section, the authors investigated whether the 2 versions yielded the same diagnostic outcome. Parents (N = 120) of patients visiting a child and adolescent psychiatry outpatient clinic were randomly divided into 4 groups, each completing 1 test and about 2 weeks later another according to 1 of these patterns: Internet's interview, interview's Internet, interview's interview, and Internet's Internet. Correspondence between the Internet and interview versions at the level of symptom scores was excellent, and correspondence with respect to the presence/absence of ADHD was good. Although highly comparable diagnostic outcomes between self-administration through the Internet and interviewer administration were found, further study using other DISC-IV modules is required.

(PsychINFO Database Record (c) 2009 APA, all rights reserved). (from the journal abstract)

Yeni Symp. 2009;47:3-8.

**Psychosocial developmental aspects of children and adolescents with attention deficit and hyperactivity complaints in a child psychiatry out patient unit.**

**Tas FV, Emiroglu FNI, Akay A, et al.**

**Purpose:** We aimed to investigate the psycho-social development features of the patients admitted to our outpatient clinic and evaluated for attention deficit and/or hyperactivity.

**Method:** The data of the patients admitted to our outpatient clinic primarily for attention deficit and/or hyperactivity and evaluated between the years 1999-2003 were assessed retrospectively. Psychosocial development features, familial psychiatric disorder history, peer relationships and intelligence quality test results were recorded.

**Findings:** Of all cases 542 were boys (77.7%) and 156 were girls (22.3%). Average age was 8.43(plus or minus)3.6 years for all cases. There was not any significant difference between the genders for average ages (p= 0.645). Average age at the time of first walking was 19.7(plus or minus)10.8 months, speaking was 33.9(plus or minus)11.4 months and toilet training was 25.9(plus or minus)10.6 months. There was not any significant difference between the genders for three developmental areas. The average scores of Weschler



Intelligence Scale Test for Children were compared it was significantly higher in boys than girls. Discussion and

**Conclusion:** As a result, majority of the cases were not retarded when compared with normal scales of psycho-social development, but had higher number of medical diseases, familial psychiatric disease history, and peer relation difficulties. The children with these complaints had significantly higher IQ scores in boys. In these patients it is necessary to evaluate the developmental history in detail.

---

Psychiatry Clin Neurosci. 2009;63:336-43.

**Differentiation between attention-deficit/hyperactivity disorder and pervasive developmental disorders with hyperactivity on objective activity levels using actigraphs.**

*Tsuji N, Okada A, Kaku R, et al.*

To clarify differences in objective activity levels between children with attention-deficit/hyperactivity disorder (ADHD) and those with pervasive developmental disorders (PDD) and hyperactivity.

**Method:** Eighteen boys with combined type ADHD, 10 boys with PDD with hyperactivity, and 18 control boys wore actigraphs for 1 week while attending elementary school. In addition to the average activity level, the standard deviation in the activity levels were compared for two continuous situations: (i) in-seat classes, in which the participants were expected to sit in their own seats and learn quietly; and (ii) free recess periods following the in-seat classes.

**Results:** All the groups were affected by the situational shift, the average activity level of each the groups was higher and the standard deviation was smaller than those during the in-seat classes. The boys with ADHD exhibited a still smaller standard deviation than the controls and the boys with PDD and hyperactivity during the free recess period; no difference between the controls and the boys with PDD was seen. The boys with PDD exhibited a significantly lower average activity level than the other groups. No differences among the groups in the average activity levels and standard deviation were seen during the in-seat classes.

**Conclusions:** The observed objective activity levels in each group reflect the degree to which the boys are able to tolerate changes in situations. Objective measurement of activity levels may be useful to differentiate hyperactivity in children with ADHD from that in children without ADHD.

(copyright) 2009 Japanese Society of Psychiatry and Neurology

---

Hum Brain Mapp. 2009;30:638-49.

**Altered small-world brain functional networks in children with attention-deficit/hyperactivity disorder.**

*Wang L, Zhu C, He Y, et al.*

In this study, we investigated the changes in topological architectures of brain functional networks in attention-deficit/hyperactivity disorder (ADHD). Functional magnetic resonance images (fMRI) were obtained from 19 children with ADHD and 20 healthy controls during resting state. Brain functional networks were constructed by thresholding the correlation matrix between 90 cortical and subcortical regions and further analyzed by applying graph theoretical approaches. Experimental results showed that, although brain networks of both groups exhibited economical small-world topology, altered functional networks were demonstrated in the brain of ADHD when compared with the normal controls. In particular, increased local efficiencies combined with a decreasing tendency in global efficiencies found in ADHD suggested a disorder-related shift of the topology toward regular networks. Additionally, significant alterations in nodal efficiency were also found in ADHD, involving prefrontal, temporal, and occipital cortex regions, which were compatible with previous ADHD studies. The present study provided the first evidence for brain dysfunction in ADHD from the viewpoint of global organization of brain functional networks by using resting-state fMRI.

(copyright) 2008 Wiley-Liss, Inc

---

J Abnorm Child Psychol. 2009 Apr;37:327-36.

**ERP correlates of effortful control in children with varying levels of ADHD symptoms.**

*Wiersema JR, Roeyers H.*

As effortful control (EC), the self-regulation aspect of temperament, has been argued to play a key role in the normal and psychopathological course of development, research adding to the construct validity of EC is needed. In the current study, interrelations between the temperament construct of EC and the efficiency of the executive attention network, argued to underlie EC, were investigated, using event-related potentials (ERPs). In general, children scoring low on EC questionnaires made more errors of commission in the Go/No-Go task and showed smaller No-Go N2 or No-Go P3 amplitudes, two ERP components related to the executive attention network. The two EC scales (Effortful Control Scale and Attentional Control Scale), used in the current study, were differentially related to the outcome, indicating that they may measure different constructs. No-Go P3 amplitude was noted to be associated more strongly with EC than No-Go N2

amplitude. EC was found to be implicated in Attention-Deficit Hyperactivity Disorder (ADHD) symptomatology, as children scoring high on ADHD symptoms scored low on EC questionnaires, made more errors of commission, and showed smaller No-Go P3 amplitudes.

(PsycINFO Database Record (c) 2009 APA, all rights reserved) (from the journal abstract)

---

Qualitative Health Research. 2009 Mar;19:352-65.

**Analysis of critical incidents and shifting perspectives: Transitions in illness careers among adolescents with ADHD.**

**Williamson P, Koro-Ljungberg ME, Bussing R.**

Adolescence represents a developmental period during which the severity of mental health problems for children with attention deficit/hyperactivity disorder (ADHD) might change. It is a time when teens are consolidating their self identity and possibly questioning the label of an ADHD diagnosis, treatment, and types of interventions. In this study we investigated the shared critical events related to help seeking reported by 8 teenagers with ADHD, their mothers, and their teachers and how the reported events and constructed shared focus on specific problems might explain teenagers' transitions in their illness careers. Data collected through a qualitative application of the experience sampling method illuminated diverse illness career transitions, including continuing treatment, transitioning from being treated to untreated or from being untreated to treated, and remaining untreated. Our findings support a model of shifting perspectives on illness and wellness among adolescents with ADHD, rather than a progression of adaptation to a chronic disorder.

(PsycINFO Database Record (c) 2009 APA, all rights reserved) (from the journal abstract)

---

Hum Brain Mapp. 2009;30:175-84.

**Abnormal cerebral cortex structure in children with ADHD.**

**Wolosin SM, Richardson ME, Hennessey JG, et al.**

**Objective:** Examination of cerebral cortical structure in children with Attention-Deficit/Hyperactivity Disorder (ADHD) has thus far been principally limited to volume measures. In the current study, an automated surface-based analysis technique was used to examine the ADHD-associated differences in additional morphologic features of cerebral cortical gray matter structure, including surface area, thickness, and cortical folding.

**Methods:** MPRAGE images were acquired from 21 children with ADHD (9 girls) and 35 typically developing controls (15 girls), aged 8-12 years. Statistical difference maps were used to compare mean cortical thickness between groups along the cortical surface. Cortical volume, surface area, mean thickness, and cortical folding were measured within regions of interest, including the right/left hemispheres, frontal, temporal, parietal, and occipital lobes within each hemisphere, and sub-lobar regions.

**Results:** Children with ADHD showed a decrease in total cerebral volume and total cortical volume of over 7 and 8%, respectively; volume reduction was observed throughout the cortex, with significant reduction in all four lobes bilaterally. The ADHD group also showed a decrease in surface area of over 7% bilaterally, and a significant decrease in cortical folding bilaterally. No significant differences in cortical thickness were detected.

**Conclusions:** Results from the present study reveal that ADHD is associated with decreased cortical volume, surface area, and folding throughout the cerebral cortex. The findings suggest that decreased cortical folding is a key morphologic feature associated with ADHD. This would be consistent with onset early in neural development and could help to identify neurodevelopmental mechanisms that contribute to ADHD.

(copyright) 2007 Wiley-Liss, Inc

---

Child Psychiatry Hum Dev. 2009 Jun;40:169-82.

**The relationship between theory of mind and executive function in a sample of children from mainland China.**

**Yang J, Zhou S, Yao S, et al.**

To explore the relationship between theory of mind (ToM) and executive function (EF) in a sample of individuals from mainland China, 20 children with autism spectrum disorders (ASD), 26 children with Attention Deficit Hyperactivity Disorder (ADHD), and 30 normal control subjects were compared on two batteries of ToM tasks and EF tasks. Children with ASD had a significant theory of mind impairment relative to the other controls, while non-verbal IQ removed group differences in executive function. ToM was significantly correlated with inhibitory control. Performance on inhibitory control tasks, however, did not affect performance on ToM tasks.

Int J Eating Disord. 2009;42:375-78.

**Attention-deficit hyperactivity symptoms and disorder in eating disorder inpatients.**

**Yates WR, Lund BC, Johnson C, et al.**

**Objective:** The objective of this study was to determine the prevalence of attention-deficit hyperactivity disorder (ADHD) symptoms and a DSM-IV ADHD diagnosis in women admitted for treatment of an eating disorder.

**Method:** One hundred eighty-nine inpatient women with an eating disorder were interviewed using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) and ADHD interview from the Multi-international Psychiatric Interview (MINI).

**Results:** Twenty-one percent of the sample reported at least six current ADHD symptoms, but the estimated prevalence rate for a diagnosis of ADHD in this population was only 5.8% (95% CI: 2.6%-9.5%). Most current ADHD inattentive symptoms appeared after childhood suggesting late-onset non-ADHD origins. Current inattention symptoms in those without a diagnosis of ADHD correlated with higher BMI ( $p < .0001$ ), symptoms of bulimia nervosa and current level of depression symptoms ( $p = .025$ ).

**Discussion:** Although current ADHD symptoms were commonly endorsed in this population, clinicians should carefully examine for childhood symptom-onset of ADHD.

(copyright) 2008 by Wiley Periodicals, Inc

Per ricevere la newsletter iscriversi al seguente indirizzo:

<http://crc.marionegri.it/bonati/adhdnews/subscribe.html>

Iniziativa nell'ambito del Progetto di ricerca indipendente AIFA

*“Sicurezza a lungo termine dei farmaci utilizzati nel trattamento di bambini in età scolare con sindrome da deficit di attenzione e iperattività ed epidemiologia della malattia nella popolazione italiana”.*

ISTITUTO DI RICERCHE FARMACOLOGICHE MARIO NEGRI

**DIPARTIMENTO DI SALUTE PUBBLICA**

**Laboratorio per la Salute Materno Infantile**

Via Giuseppe La Masa, 19 - 20156 Milano MI - Italia - [www.marionegri.it](http://www.marionegri.it)

tel +39 02 39014.511 - fax +39 02 3550924 - [mother\\_child@marionegri.it](mailto:mother_child@marionegri.it)