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BIBLIOGRAFIA ADHD LUGLIO 2011

**ANALYSIS OF SUBTYPES AND OTHER ASSOCIATED CONDITIONS OF ATTENTION DEFICIT AND HYPERACTIVITY DISORDER (ADHD) IN SCHOOL POPULATION FROM 6 TO 12 YEARS OF AGE.**

Attention deficit hyperactivity disorder (ADHD) is a neurobehavioral developmental disorder that is usually diagnosed in children, with the appearance of symptoms up to seven years. The diagnosis was twice more frequently confirmed in boys than in girls. ADHD is characterized by symptoms of inattention and/or impulsiveness and hyperactivity, which can seriously affect many aspects of behaviour and performance in school and at home. ADHD may be accompanied by other disorders, such as oppositional defiant disorder, conduct disorder, anxiety or depression. The study involved 400 participants. For the measurement of ADHD symptoms, the Vanderbilt-teacher rating scale and Vanderbilt-parent rating scale were used. According to the teacher rating scale, a subtype of attention deficit and the opposite-defiant disorder were dominant conditions. From the parent rating scale - predominantly hyperactive/impulsive type of disorder, as well as the oppositional defiant disorder.

**EXERCISE IMPACT ON SUSTAINED ATTENTION OF ADHD CHILDREN, METHYLPHENIDATE EFFECTS.**

Attention deficit hyperactivity disorder (ADHD) is related to a deficiency of central catecholamines (CA) in cognitive, biochemical, and physical tests, and pharmaceutical intervention may have no effect if it is not accompanied by changes in the environment. The objective of our study was to test the hypothesis that central CA are responsible for the increase in speed reaction seen after physical activity (PA) and to measure the impact of high intensity PA on the sustained attention of 25 children diagnosed with ADHD consistent with the Disease Statistical Mental-IV (DSM-IV) criteria. It is possible that practicing sports assists in the management of the disorder. The children were divided between users (US) and non-users (NUS) of methylphenidate (MTP), and the groups were compared to evaluate the effect of the drug on cognition after PA. Post-exercise performance on Conner’s Continuous Performance Test-II (CPT) was not affected by MTP, we observed significant improvements in response time, and we saw normalization in the

*Per la ricerca degli articoli pubblicati nella letteratura scientifica nel mese in esame sono state consultate le banche dati Medline, Embase, PsycINFO e PsycArticle utilizzando le seguenti parole chiave (o i loro sinonimi): 'Attention deficit disorder', 'Attention deficit hyperactivity disorder', 'Infant', 'Child', 'Adolescent', 'Human'. Sono qui riportate le referenze considerate rilevanti e pertinenti.*
impulsivity and vigilance measures. These results suggest that the improvements in cognition after physical
effort are not CA dependent. Additionally, our results suggest that children’s attention deficits can be
minimized through PA irrespective of treatment with MTP. Additional studies are necessary to confirm that
exercise mitigates the harmful symptoms of ADHD.

MINOR DIFFERENCES IN ADHD-RELATED DIFFICULTIES BETWEEN BOYS AND GIRLS TREATED WITH ATOMOXETINE
FOR ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER.
Wiehmeier PM, Schacht A, Dittmann RW, et al.
Atomoxetine may improve ADHD-related difficulties and hence the quality of life (QoL) in children and
adolescents. Perception of these difficulties may differ with the rater perspective (patient, parent, physician)
or patients' sex. The objective of this study was to investigate QoL as reflected by perceived ADHD-related
difficulties perceived from these three perspectives and compare boys and girls. Patients aged 6-17 with
ADHD were treated with atomoxetine (target dose 0.5-1.2 mg/kg/day) in two studies. In both studies,
ADHD-related difficulties were assessed after 8 and 24 weeks using the Global Impression of Perceived
Difficulties (GIPD) instrument, which can be taken to reflect the patient's QoL from the three perspectives.
Data from the two studies were combined and analyzed together in order to compare boys and girls. Four
hundred and twenty-one patients were treated with atomoxetine, 338 boys and 83 girls. Three hundred
and fifty-five patients completed the 8-week study period. QoL, as reflected by perceived ADHD related
difficulties (measured with GIPD), improved over time. Mean GIPD total scores showed a similar course
over time for all rater groups, although the patients rated the degree of difficulties significantly lower than
parents and physicians. The sexes did not differ significantly in mean GIPD total scores. The GIPD scores
over time suggest that patients’ QoL, as reflected by perceived ADHD-related difficulties, improved with
time on atomoxetine. However, improvement did not differ significantly between boys and girls. Trial
Registration: ClinicalTrials.gov Identifiers NCT00191516 and NCT00191737.

ADHD Atten Deficit Hyperact Disord. 2010;2:31-42.
A PILOT STUDY OF COMBINED WORKING MEMORY AND INHIBITION TRAINING FOR CHILDREN WITH AD/HD.
Building on recent favourable outcomes using working memory (WM) training, this study examined the
behavioural and physiological effect of concurrent computer- based WM and inhibition training for children
with attention-deficit hyperactivity disorder (AD/HD). Using a double-blind active-control design, 29 children
with AD/ HD completed a 5-week at-home training programme and pre- and post-training sessions which
included the assessment of overt behaviour, resting EEG, as well as task performance, skin conductance
level and event-related potentials (ERPs) during a Go/Nogo task. Results indicated that after training,
children from the high-intensity training condition showed reduced frequency of inattention and
hyperactivity symptoms. Although there were trends for improved Go/Nogo performance, increased arousal
and specific training effects for the inhibition-related N2 ERP component, they failed to reach standard
levels of statistical significance. Both the low- and high-intensity conditions showed resting EEG changes
(increased delta, reduced alpha and theta activity) and improved early attention alerting to Go and Nogo
stimuli, as indicated by the N1 ERP component, post-training. Despite limitations, this preliminary work
indicates the potential for cognitive training that concurrently targets the interrelated processes of WM and
inhibition to be used as a treatment for AD/HD.

INFLAMMATION: GOOD OR BAD FOR ADHD?

Donev R, Thome J.

Attention deficit hyperactivity disorder (ADHD) is characterised by the typical behavioural core symptoms of inattentiveness, hyperactivity and impulsiveness. ADHD is a usually chronic health condition, mostly diagnosed in childhood, creating a significant challenge for youth, their families and professionals who treat it. This disorder requires long-term treatments, including psychotherapeutic and pharmacological interventions, which in some cases may lead to adverse effects. Understanding the mechanism by which ADHD risk factors affect the biochemical processes in the human brain and consequentially the behaviour will help to identify novel targets for the development of therapeutics with less adverse results and better efficacy including higher responder rates. Although inflammatory responses in the brain have been recognised for years as critical in neurodegeneration and behaviour in a number of neurological and psychiatric disorders, their role for the development, treatment and prevention of ADHD has been so far largely overlooked, although historically, ADHD symptoms were initially observed in patients who survived an ONJ infection, i.e. inflammation. In this review, we discuss the interrelationship between different ADHD risk factors and inflammation with respect to the triggered molecular mechanisms and the contribution they are likely to have to this disorder. This paper provides a rationale for future studies on ADHD with an intent to inspiring the development of new agents for a more efficient management of this disorder.


THE "YOUNGER-SIBLING-AT-RISK DESIGN": A PILOT STUDY OF ADOLESCENTS WITH ADHD AND AN OLDER SIBLING WITH SUBSTANCE USE DISORDER.

Donovan SJ, Levin FR.

Introduction: This article introduces a "younger at-risk sibling" design to study progression from other psychopathologies to their substance use disorder (SUD) complications. The design selects not-yet-SUD adolescents with high-risk-for-SUD psychopathology only if an older sibling has SUD. This "proof of concept" pilot study examines the design's feasibility if the younger sibling has attention deficit hyperactivity disorder (ADHD).

Method: Subjects were recruited from families at substance abuse treatment centers that had a non-SUD younger child with ADHD, from families at behavior disorder clinics that had a younger child with ADHD and SUD older child, and through general advertisements. Subjects were seen weekly for at least 3 months and monthly thereafter for 3 months. All were treated with open-label lisdexamfetamine dimesylate 3070 mg per day. Outcomes explored were recruitment, compliance, diversion, ADHD improvement, and substance use interest.

Results: 25 families were screened, 13 evaluated, and 8 began medication. ADHD Rating Scale-IV scores obtained by parentadolescent consensus improved as expected with a stimulant. Rating forms could quantify substance use interest in subjects with some drug culture exposure but encountered a floor effect in those without. The design's complexity and implicit commentary on family dynamics complicated recruitment but may have facilitated retention.

Conclusion: Sibling pairs in which the older sibling has substance use and the younger sibling has ADHD exist. Such younger siblings can be recruited into a treatment study. The design may shed light on the pathogenesis and prevention of SUD complications from ADHD and theoretically other SUD comorbidities.


COMMUNITY SURVEY OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AMONG PRIMARY SCHOOL PUPILS IN BENIN CITY, NIGERIA.

Ambuabunos EA, Ofovwe EG, Ibadin MO.

Background: Attention-deficit/hyperactivity disorder (ADHD) is a common childhood neuro-developmental condition with early onset. ADHD affects children worldwide. However, there is a variation in the prevalence across different countries. In Nigeria, there is paucity of information on the prevalence. To provide the
relevant information, a cross-sectional study was conducted between February and August 2006 among 1473 public primary school pupils aged 6-12 years selected systematically among pupils in Egor Local Government Area of Edo State. Materials and Methods: All the 1473 pupils were screened with the Disruptive Behavior Disorder (DBD) Rating Scale to identify children who had ADHD symptoms as contained in the DSM -IV. Such children were compared with randomly selected controls. The academic records of both the groups were also compared. Results: The prevalence of ADHD was 7.6%. The prevalence was higher in boys (9.4%) when compared to girls (5.5%) (P = 0.003). Of the three different subtypes of ADHD, the predominantly inattentive subtype (ADHD-I) was the most prevalent (47.3% of the ADHD population) followed by the combined type (ADHD-C; 31.3%), while the least prevalent was the hyperactive/impulsive subtype (ADHD-HI; 21.4%). There was no statistically significant difference in the prevalence of ADHD amongst the different age cohorts. Conclusion: The prevalence of ADHD was relatively high when compared to the figures available for other countries. For this reason, there is a need to pay increased attention to this condition in Nigeria. Community screening under the umbrella of the School Health Program could be of assistance.

A FUNCTIONAL VARIANT OF THE SEROTONIN TRANSPORTER GENE (SLC6A4) MODERATES IMPULSIVE CHOICE IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER BOYS AND SIBLINGS.
Background: Impulsive drive for immediate reward (IDIR) and delay aversion are dissociable elements of the preference for immediate over delayed rewards seen in attention-deficit/hyperactivity disorder (ADHD). We hypothesized that IDIR would be associated with dopamine regulating genes and delay aversion would be associated with serotonin-regulating genes.
Methods: Impulsive drive for immediate reward and delay aversion were measured in 459 male children and adolescents (328 ADHD and 131 unaffected siblings) with a laboratory choice task. The sample was genotyped for the 5HTT (SLC6A4) promoter serotonin-transporter-linked polymorphic region polymorphism and a DAT1 (SLC6A3) 40-base pair variable number tandem repeat located in the 3'-untranslated region of the gene.
Results: There was no effect of dopamine transporter (DAT)1 on IDIR. As predicted, serotonin-transporter-linked polymorphic region s-allele carriers were more delay averse. This effect was driven by the s/l genotype in the ADHD group. These Results: were not altered by taking account of the rs25531 A/G single nucleotide polymorphism and were independent of age, IQ, and oppositional defiant disorder symptoms.
Conclusions: The Results: support the genetic distinctiveness of IDIR and delay aversion in ADHD and implicate serotonin function in delay aversion. Possible explanations of the heterosis effect in the ADHD cases are presented.

METHYLPHENIDATE NORMALIZES FRONTOCINGULATE UNDERACTIVATION DURING ERROR PROCESSING IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.
Rubia K, Halari R, Mohammad AM, et al.
Background: Children with attention-deficit/hyperactivity disorder (ADHD) have deficits in performance monitoring often improved with the indirect catecholamine agonist methylphenidate (MPH). We used functional magnetic resonance imaging to investigate the effects of single-dose MPH on activation of error processing brain areas in medication-naive boys with ADHD during a stop task that elicits 50% error rates.
Methods: Twelve medication-naive boys with ADHD were scanned twice, under either a single clinical dose of MPH or placebo, in a randomized, double-blind design while they performed an individually adjusted tracking stop task, designed to elicit 50% failures. Brain activation was compared within patients under either drug condition. To test for potential normalization effects of MPH, brain activation in ADHD patients under either drug condition was compared with that of 13 healthy age-matched boys.
**Results:** During failed inhibition, boys with ADHD under placebo relative to control subjects showed reduced brain activation in performance monitoring areas of dorsomedial and left ventrolateral prefrontal cortices, thalamus, cingulate, and parietal regions. MPH, relative to placebo, upregulated activation in these brain regions within patients and normalized all activation differences between patients and control subjects. During successful inhibition, MPH normalized reduced activation observed in patients under placebo compared with control subjects in parietotemporal and cerebellar regions.

**Conclusions:** MPH normalized brain dysfunction in medication-naive ADHD boys relative to control subjects in typical brain areas of performance monitoring, comprising left ventrolateral and dorsomedial frontal and parietal cortices. This could underlie the amelioration of MPH of attention and academic performance in ADHD.

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**MAY POSTERROR PERFORMANCE BE A CRITICAL FACTOR FOR BEHAVIORAL DEFICITS IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER?**


**Background:** Although the performance of children with attention-deficit/ hyperactivity disorder (ADHD) is impaired in a variety of cognitive tasks, the specific capacity of strategic readaptation after errors as a source of behavioral deficits is not sufficiently understood. This study used an extended and refined behavioral parameterization to assess performance monitoring and posterror adaptation in children with ADHD.

**Methods:** Twenty-eight healthy control subjects and 47 ADHD patients (716 years of age, all males, matched for age and IQ) performed a visual flanker task in which targets were congruent or incongruent with preceding flankers. Posterror adaptation was measured for response speed (posterror slowing), accuracy, and variability by using normalized individual rates of change. Markers of error detection and general performance were also analyzed.

**Results:** Postcorrect response speed and accuracy did not differ between the groups, in contrast to posterror behaviors. Whereas posterror slowing was not evident in any of the groups, the error rate and performance instability (reaction time variance) substantially increased after errors only in ADHD patients, not in control subjects. No reliable between-group differences were found for error detection and general performance.

**Conclusions:** In healthy children, posterror adaptation preserves performance at its ongoing level. No such adaptation was evident in ADHD, leading to consecutive errors and increased behavioral instability. Performance deficits in ADHD were only present after error but not after correct behaviors, which shapes the general profile of performance impairment in ADHD. The findings have practical implications for strategic designs of behavioral therapy in ADHD.

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**INCREASED INTRAINDIVIDUAL VARIABILITY IS A MARKER OF ADHD BUT ALSO OF DYSEXIA: A STUDY ON HANDWRITING.**

Borella E, Chicherio C, Re AM, et al.

It has been suggested that intraindividual variability (IIV) in neuropsychological tasks may be a specific characteristic of Attention-Deficit Hyperactivity Disorder (ADHD), but previous research has not thoroughly examined whether IIV also concerns academic performance or other types of developmental disabilities. The present study investigates the role of IIV in 15 children with ADHD without reading difficulties, 15 children with dyslexia without associated symptoms of ADHD, and 15 typically developing children (TDC) in a simple response time (SRT) task and in a skill more directly related with school learning-handwriting. Results show that children with ADHD and those with dyslexia have a greater IIV than the TDC in both tasks. However, the pattern of the relationship between IIV in SRT and handwriting was different in children with ADHD and dyslexia: the IIV in the handwriting task was found to depend on IIV in the SRT task only in children with dyslexia. These findings support the crucial role of IIV not only in ADHD but also in other...
developmental disabilities, but suggest that in children with ADHD it may present specific aspects related with motor control.


**SUPERIOR PARIETAL LOBULE DYSFUNCTION IN A HOMOGENEOUS GROUP OF DYSLEXIC CHILDREN WITH A VISUAL ATTENTION SPAN DISORDER.**

Peyrin C, Demonet JF, N'Guyen-Morel MA, et al.

A visual attention (VA) span disorder has been reported in dyslexic children as potentially responsible for their poor reading outcome. The purpose of the current paper was to identify the cerebral correlates of this VA span disorder. For this purpose, 12 French dyslexic children with severe reading and VA span disorders and 12 age-matched control children were engaged in a categorisation task under fMRI. Two flanked and isolated conditions were designed which both involved multiple-element simultaneous visual processing but taxed visual attention differently. For skilled readers, flanked stimuli processing activated a large bilateral cortical network comprising the superior and inferior parietal cortex, the inferior temporal cortex, the striate and extrastriate visual cortex, the middle frontal cortex and the anterior cingulate cortex while the less attention-demanding task of isolated stimuli only activated the inferior occipito-temporal cortex bilaterally. With respect to controls, the dyslexic children showed significantly reduced activation within bilateral parietal and temporal areas during flanked processing, but no difference during the isolated condition. The neural correlates of the processes involved in attention-demanding multi-element processing tasks were more specifically addressed by contrasting the flanked and the isolated conditions. This contrast elicited activation of the left precuneus/superior parietal lobule in the controls, but not in the dyslexic children. These findings provide new insights on the role of parietal regions, in particular the left superior parietal lobule, in the visual attention span and in developmental dyslexia.


**IMPACTS D’UN PROGRAMME D’INTERVENTIONS MULTIDIMENSIONNEL CONÇU POUR LES PARENTS ET LEUR ENFANT AYANT UN TDAH SUR LE STRESS PARENTAL ET LA RELATION PARENT–ENFANT.**


The behaviours that characterize ADHD (Attention-Deficit/Hyperactivity Disorder) often lead to impairments in the parent–child relationship and contribute to increased stress amongst parents of children with the disorder. The main objective of this research is to evaluate the impact of a multimodal intervention program (Multi-Propulsions) on parental stress and on parent–child relationship as perceived by parents. The program combines: (1) a cognitive-behavioural program for ADHD children including physical activities in an adapted gymnasium; (2) a cognitive-behavioural parent training program; (3) joint activities with children and parents under the supervision of professionals. Sample contents 23 families with ADHD children aged between 6 and 12 years old from the ADHD clinic of the Rivière-des-Prairies Hospital in Montreal. Participants were randomly assigned to treatment or waiting group. Results highlight the efficiency of Multi-Propulsions program for diminishing parental stress, particularly stress associated with child's characteristics, and these therapeutic gains were maintained four months after the treatment. Furthermore, the results show an improvement in the quality of parent–child relationship.
IMPROVED FUNCTIONALITY, HEALTH RELATED QUALITY OF LIFE AND DECREASED BURDEN OF DISEASE IN PATIENTS WITH ADHD TREATED WITH OROS(R) MPH: IS TREATMENT RESPONSE DIFFERENT BETWEEN CHILDREN AND ADOLESCENTS?

Berek M, Kordon A, Hargarter L, et al.

Background: To compare clinical and health-related quality of life (HRQoL) outcomes between children and adolescents with ADHD treated with OROS(R) MPH, using data from two large similarly-designed multicenter, prospective, open-label, single-arm, non-interventional studies.

Methods: Pooled analysis (42603ATT4037, 42603 - ATT - 4001) including patients (6 to 18 years) with a confirmed diagnosis of ADHD. Patients were treated with OROS(R) MPH for 12 weeks; ADHD symptoms, functioning, HRQoL, safety and tolerability parameters were assessed.

Results: 822 patients (583 children [6-12 years], 239 adolescents [13-18 years]) were included in the pooled analysis. Mean daily OROS(R) MPH starting doses in the child and adolescent subgroups were 29.0 ± 11.7 and 37.6 ± 15.6 mg, respectively (p < 0.001). At study end (week 12), the overall mean daily dose was 35.5 ± 14.0 mg, with children and adolescents receiving 32.8 ± 12.7 and 42.0 ± 15.1 mg/day, respectively (p < 0.001). Significant (p < 0.0001: overall population, children, adolescents) symptomatic, functional and HRQoL improvements were observed from baseline to study end using the Conners' Parents Rating Scale (overall: 29.2 ± 10.7 [baseline] to 19.3 ± 11.3 [endpoint]), Children's Global Assessment Scale (overall: 58.5 ± 14.5 [baseline] to 69.6 ± 16.1 [endpoint]), and ILC-LQ0-28. At week 12, between-age group differences were seen in the individual ILC-LQ0-28 parameters: school performance (p = 0.001 [parents' assessment], p = 0.032 [children's assessment]), global QoL (p = 0.012 [parents']) and interests and hobbies (p = 0.023 [childrens']). Treating physician's planned continued use of OROS(R) MPH in 76.9%, 86.0% and 79.3% of children, adolescents and the total population, respectively, at study end (p = 0.029 between-age subgroups). 195 of 822 patients (23.7%) experienced at least one treatment emergent adverse event; most commonly reported AEs in the total group (> 4%): insomnia (7.2%), anorexia (4.3%) and involuntary muscle contractions (4.1%). No clinically relevant changes in body weight or vital signs were observed.

Conclusions: Clinically relevant differences between children and adolescents with ADHD are present. Adolescents appeared to have a lower health related quality of life and functioning compared to children at baseline, however, they were able to reach comparable ratings at endpoint for most items. Similarly, burden of disease decreased in patients and their carers. OROS MPH was generally safe and well tolerated.

TIME COURSES OF IMPROVEMENT AND SYMPTOM REMISSION IN CHILDREN TREATED WITH ATOMOXETINE FOR ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: ANALYSIS OF CANADIAN OPEN-LABEL STUDIES.

Dickson RA, Maki E, Gibbins C, et al.

Background: The relatively short durations of the initial pivotal randomized placebo-controlled trials involving atomoxetine HCl for the treatment of attention-deficit/hyperactivity disorder (ADHD) provided limited insight into the time courses of ADHD core symptom responses to this nonstimulant, selective norepinephrine reuptake inhibitor. The aim of this analysis was to evaluate time courses of treatment responses or remission, as assessed by attainment of prespecified scores on the ADHD Rating Scale-Iv-Parent Version: Investigator Administered and Scored (ADHRS-IV-P1) and the Clinical Global Impressions-ADHD-Severity (CGI-ADHD-S) scales, during up to 1 year of atomoxetine treatment in children with ADHD.

Methods: Using pooled data from three Canadian open-label studies involving 338 children ages 6-11 years with ADHD who were treated with atomoxetine for 3, 6 and 12 months, and survival analysis methods for interval-censored data, we estimated the time to: 1) improvement and robust improvement defined by (greater-than or equal to)25% and (greater-than or equal to)40% reductions from baseline ADHRS-IV-P1 total scores, respectively; and 2) remission using two definitions: a final score of ADHRS-IV-P1 (less-than or equal to)18 or a final score of CGI-ADHD-S (less-than or equal to)2.
**Results:** The median time to improvement was 3.7 weeks (~1 month), but remission of symptoms did not occur until a median of 14.3 weeks (~3.5 months) using the most stringent CGI-ADHD-S threshold. Probabilities of robust improvement were 47% at or before 4 weeks of treatment; 76% at 12 weeks; 85% at 26 weeks; and 96% at 52 weeks. Probabilities of remission at these corresponding time points were 30%, 59%, 77%, and 85% (using the ADHDRS-IV scale) and 8%, 47%, 67%, and 75% (using the CGI-ADHD-S scale). The change from atomoxetine treatment month 5 to month 12 of -1.01 (1.03) was not statistically significant (p = .33).

**Conclusions:** Reductions in core ADHD symptoms during atomoxetine treatment are gradual. Although approximately one-half of study participants showed improvement at 1 month of atomoxetine treatment, remission criteria were not met until about 3 months. Understanding the time course of children's responses to atomoxetine treatment may inform clinical decision making and also influence the durations of trials comparing the effects of this medication with other ADHD treatments. Trial Registrations: clinicaltrials.gov: NCT00191633, NCT00216918, NCT00191880.

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Usage of Quantitative Electroencephalography (QEEG) and Neurofeedback in Diagnosis and Treatment of ADHD

**Nosrat Abadi M, Rostami R, Borjali A.**

The aim of this study was twofold a) examining clinical utility and diagnostic accuracy of QEEG in diagnosing AD/HD and b) examining effects of a 2-month Neurofeedback comparing with drug therapy and no treatment. Participants were 36 ADHD children, and 5 healthy children with the same age of ADHD children. All participants were analyzed with QEEG. In the second phase, 36 ADHD children were assigned to the Neurofeedback group (N=12), drug therapy group (N=12) and control group (N=12). In this phase, All ADHD participants were asked to complete Child Behavior Checklist (CBCL) and T.O.V.A before and after treatment. Results from first phase of study showed that QEEG is an effective and reliable instrument with high diagnostic accuracy in diagnosing ADHD. Results from second phase showed that both Neurofeedback and drug therapy were associated with improvements relatively on all subscales of the T.O.V.A and CBCL compared to control group. There was no statistically significant difference between Neurofeedback and drug therapy on any CBCL and T.O.V.A. subscales. These findings suggest that Neurofeedback was efficient treatment of ADHD in children with effectiveness the same as drug therapy that did not have drug therapy side effects.

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Attention Deficit/Hyperactivity Disorder: Is There a Correlation Between Dopamine Transporter Density and Cerebral Blood Flow?

**Da S, Jr., Szobot CM, Anselmi CE, et al.**

Attention deficit/hyperactivity disorder (ADHD) is one of the most frequent behavioral problems in school-age children. Although the etiology remains unclear, the involvement of the dopaminergic system has been suggested by genetic studies that report an overexpression of the dopamine transporter (DAT) gene. In spite of these abnormalities being directly related to the decrease of dopamine (DA) in the striatum (STR), abnormalities in brain perfusion have also been observed in cortical-subcortical structures. Functional neuroimaging studies have suggested that the DA concentration may cause changes in the cerebral blood flow (CBF). The objective of our study was to evaluate the relationship between DAT density in STR and cortical-subcortical impairment in CBF. Based on the hypothesis that there is a correlation between DA availability and brain perfusion, we postulated that individuals with ADHD, with a higher DAT density in the basal ganglia, will have lower perfusion in the fronto-striatal-cerebellar networks. We used Tc-99m TRODAT-1 SPECT to measure DAT density and Tc-99m ECD SPECT to assess brain perfusion. Ten adolescents diagnosed with ADHD by Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition criteria were investigated. Analysis with Statistical Parametric Mapping 5 corrected for multiple comparisons, using small volume correction, showed a significant negative correlation between the DAT
density in the STR and CBF in the cingulate gyrus, frontal lobe, temporal lobe, and cerebellum (pFDR <0.01). Our findings suggest that higher DAT density in the STR was associated with a decrease in the regional CBF in the cortical and subcortical attention network.


**COMPUTER-BASED ATTENTION TRAINING IN THE SCHOOLS FOR CHILDREN WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER: A PRELIMINARY TRIAL.**

Steiner NJ, Sheldrick RC, Gotthelf D, et al.

**Objective.** This study examined the efficacy of 2 computer-based training systems to teach children with attention deficit/hyperactivity disorder (ADHD) to attend more effectively.

**Design/methods.** A total of 41 children with ADHD from 2 middle schools were randomly assigned to receive 2 sessions a week at school of either neurofeedback (NF) or attention training through a standard computer format (SCF), either immediately or after a 6-month wait (waitlist control group). Parents, children, and teachers completed questionnaires pre- and postintervention.

**Results.** Primary parents in the NF condition reported significant (P <.05) change on Conners's Rating Scales-Revised (CRS-R) and Behavior Assessment Scales for Children (BASC) subscales; and in the SCF condition, they reported significant (P <.05) change on the CRS-R Inattention scale and ADHD index, the BASC Attention Problems Scale, and on the Behavioral Rating Inventory of Executive Functioning (BRIEF).

**Conclusion.** This randomized control trial provides preliminary evidence of the effectiveness of computer-based interventions for ADHD and supports the feasibility of offering them in a school setting.

Complement Ther Med. 2011.

**COMPLEMENTARY MEDICINES (HERBAL AND NUTRITIONAL PRODUCTS) IN THE TREATMENT OF ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD): A SYSTEMATIC REVIEW OF THE EVIDENCE.**

Sarris J, Kean J, Schweitzer I, et al.

**Overview:** Complementary and Alternative Medicines (CAMs) are frequently given to children and adolescents for reputed benefits in the treatment of hyperkinetic and concentration disorders such as Attention Deficit Hyperactivity Disorder (ADHD). In such vulnerable populations high quality evidence is required to support such claims. Aims: The aim of the paper is to assess the current evidence of herbal and nutritional interventions for ADHD using a systematic search of clinical trials meeting an acceptable standard of evidence. Methods: PubMed, PsycINFO, Cochrane Library and CINAHL were searched up to May 26th, 2011 for randomised, controlled clinical trials using CAM products as interventions to treat ADHD. A quality analysis using a purpose-designed scale, and an estimation of effect sizes (Cohen's d) where data were available, were also calculated. Results: The review revealed that 16 studies met inclusion criteria, with predominant evidentiary support found for zinc, iron, Pinus marinus (French maritime pine bark), and a Chinese herbal formula (Ningdong); and mixed (mainly inconclusive) evidence for omega-3, and l-acetyl carnitine. Current data suggest that Ginkgo biloba (ginkgo), and Hypericum perforatum (St. John's wort) are ineffective in treating ADHD. Conclusion: The research suggests only some CAMs may be beneficial in ADHD, thus clinicians need to be aware of the current evidence. Promising candidates for future research include Bacopa monniera (brahmi) and Piper methysticum (kava), providing potential efficacy in improving attentional and hyperkinetic disorders via a combination of cognitive enhancing and sedative effects.
UPDATE ON ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND TIC DISORDERS: A REVIEW OF THE CURRENT LITERATURE.
Simpson HA, Jung L, Murphy TK.
Tic disorders impact quality of life, but when they are co-occurring with attention-deficit/hyperactivity disorder, the combined impact takes a toll on psychosocial functioning and adds another layer of complexity to treatment approaches. A review of the current literature supports evidence of a unique relationship between comorbid attention-deficit/hyperactivity disorder and tic disorders, emphasizing the intricate phenotype and impairment associated with these co-occurring conditions. The complexity of these symptoms requires careful diagnosis and appropriate treatment as determined by the level of impairment and can include pharmacotherapy, behavioral interventions, or a combination of therapies. To achieve the greatest benefits in improving quality of life and eliminating further comorbidity, an ideal treatment plan would include a comprehensive evaluation as well as a hierarchical treatment approach involving education of the child, family, and teachers; careful medication management; and cognitive and behavioral training.

UPDATE ON ENVIRONMENTAL RISK FACTORS FOR ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.
Froehlich TE, Anixt JS, Loe IM, et al.
Attention-deficit/hyperactivity disorder (ADHD) is a prevalent neurobehavioral disorder affecting 5% to 10% of children. Although considered to be a highly familial disorder, ADHD heritability estimates of 60% to 80% highlight the considerable role that environmental factors may still play in disorder susceptibility. Proposed ADHD environmental risk factors include prenatal substance exposures, heavy metal and chemical exposures, nutritional factors, and lifestyle/psychosocial factors. This paper reviews the literature published in 2010 investigating the association between environmental risk factors and ADHD or related symptomatology. Sources of risk factor exposure and the proposed mechanism by which each exposure is linked to ADHD-related neurobehavioral changes are also reported. Methodologic limitations of the current literature are discussed, and guidelines for future study are proposed. An improved understanding of the role that environmental factors play in ADHD etiology is critical to future ADHD prevention efforts.

DIETARY AND NUTRITIONAL TREATMENTS FOR ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: CURRENT RESEARCH SUPPORT AND RECOMMENDATIONS FOR PRACTITIONERS.
Hurt EA, Arnold LE, Lofthouse N.
Evidence for dietary/nutritional treatments of attention-deficit/hyperactivity disorder (ADHD) varies widely, from double-blind, placebo-controlled trials to anecdotal. In guiding patients, clinicians can apply the SECS versus RUDE rule: treatments that are Safe, Easy, Cheap, and Sensible (SECS) require less evidence than those that are Risky, Unrealistic, Difficult, or Expensive (RUDE). Two nutritional treatments appear worth general consideration: Recommended Daily Allowance/Reference Daily Intake multivitamin/mineral supplements as a pediatric health intervention not specific to ADHD and essential fatty acids, especially a mix of eicosapentaenoic acid, docosahexaenoic acid, and (gamma)-linolenic acid as an ADHD-specific intervention. Controlled studies support the elimination of artificial food dyes to reduce ADHD symptoms, but this treatment may be more applicable to the general pediatric population than to children with diagnosed ADHD. Mineral supplementation is indicated for those with documented deficiencies but is not supported for others with ADHD. Carnitine may have a role for inattention, but the evidence is limited. Dimethylaminoethanol probably has a small effect. Herbs, although “natural,” are actually crude drugs, which along with homeopathic treatments have little evidence of efficacy. Consequences of delayed proven treatments need consideration in the risk-benefit assessment of dietary/nutritional treatments.
Epilepsy Behav. 2011;21:228-32.
Efficacy and safety of methylphenidate in treating ADHD symptoms in children and adolescents with uncontrolled seizures: A Brazilian sample study and literature review.
Koneski JAS, Casella EB, Agertt F, et al.
Objective: Attention-deficit/hyperactivity disorder (ADHD) is observed in 30% of children and adolescents with epilepsy. Recent studies have demonstrated the safety of methylphenidate (MPH) in patients with controlled epilepsy. There are few studies of patients with uncontrolled epilepsy. The goal was to study the efficacy and safety of MPH use in children and adolescents diagnosed with ADHD and uncontrolled epilepsy.
Methods: We evaluated 24 patients ranging from 7 to 16. years of age who took MPH for 6. months. Inclusion criteria were at least two epileptic seizures in the previous 6. months and a diagnosis of ADHD based on DSM-IV criteria.
Conclusion: Patients were classified according to ADHD subtype as follows: 41.7% inattentive type, 37.5% combined, and 20.8% hyperactive/impulsive type; 58.3% had partial epilepsy and 41.7% generalized epilepsy. There was an overall improvement in ADHD symptoms in 70.8% of patients, and there was no increase in frequency of epileptic seizures in 22 patients (91.6%).

ADHD AND NEANDERTHALS.
Medina JA, Netto TL, Muszkat M.
Introduction: Genes with characteristics of ADHD populations, the allele gene DRD4-7R, had great proliferation at 40,000 years ago [1], Europe was shared by nomads’ Neanderthals and Cro-Magnons.
Objective: To describe interactions between Paleolithic environment and DRD4-7R characteristics.
Methods: It's an investigation for scientific evidences in scientific sites.
Results: The presence of gene DRD4-7R in nomads is associated with better nutritional indices than that observed on assented condition, this nutritional advantage is linked with mass free of fat [2]. Humans needed, during his journey to Ardipithecus from Homo sapiens, to be endurance runners, face the necessity of to hunt.
Discussion: ADHD individuals show during exercises lower values of acid lactic, suggesting better performance on endurance sports. Nutritional aspects associated to the active nomad way of life may had positive influence, face that aerobic training programs induce increase in gray matter on cortex cingulate anterior [3], the same brain area quoted like dysfunctional in ADHD populations. Conclusion: Active way of life associated to nutritional strategies may help on development of ADHD children and perhaps, DRD4-7R could be result of hybridism.

SCREENING FOR THE ATTENTION DEFICIT HYPERACTIVITY DISORDER PHENOTYPE USING THE STRENGTH AND DIFFICULTIES QUESTIONNAIRE.
Ullebo AK, Posserud MB, Heiervang E, et al.
The strengths and difficulties questionnaire (SDQ) is a broad-band child mental health instrument, which has been reported to be a good screener for the ADHD phenotype. Questionnaires containing the SDQ and the 18 SNAP-IV items corresponding to the DSM-IV ADHD symptoms were completed by parents and teachers for 66% (N = 6,233) of all 7- to 9-year-olds in the city of Bergen, Norway, 2002. Screening properties of the five-item SDQ hyperactivity-inattention subscale for the DSM-IV ADHD phenotype were examined. Using the DSM-IV ADHD phenotype based on both informants as the gold standard (5.2% of the sample), the receiver operating characteristics (ROC) analyses demonstrated an area under the curve of 0.91 (95% CI: 0.90-0.92) for parent and 0.95 (95% CI: 0.94-0.95) for teacher SDQ hyperactivity-inattention subscale ratings. The SDQ hyperactivity-inattention predictive algorithm identified 74% of those with the ADHD combined subtype as possible or probable cases, but only 22% of those with the inattentive subtype. The 5-item long SDQ hyperactivity-inattention subscale is a shorter substitute for the 18-item
ADHD symptom list. The SDQ predictive algorithm had an acceptable sensitivity for the ADHD combined subtype, but low sensitivity for the ADHD inattentive and the ADHD hyperactive subtypes.

**COMPARISON OF SLEEP PROBLEMS IN CHILDREN WITH ANXIETY AND ATTENTION DEFICIT/HYPERACTIVITY DISORDERS.**

**Hansen BH, Skirbekk B, Oerbeck B, et al.**

This cross-sectional case-control study compared sleep problems in consecutively referred children aged 7-13 years meeting DSM-IV criteria for anxiety disorder, attention deficit/hyperactivity disorder (ADHD), comorbid anxiety disorder and ADHD, and a group of control children of similar age and gender. Diagnoses were assessed with the Kiddie-SADS PL interview, parent form, and the sleep problems with a standardized sleep questionnaire, the Children’s Sleep Habits Questionnaire (CSHQ), as reported by the mother. A total of 141 children were included (anxiety disorder (n = 41), ADHD (n = 39), comorbid condition (n = 25), controls (n = 36)). Children in the clinical groups had more sleep problems than controls. Children with anxiety disorders and children with comorbid condition were reported to have more sleep problems than children with ADHD alone. Night waking was associated with comorbid anxiety disorder and ADHD. Bedtime resistance was associated with anxiety disorder, while daytime sleepiness affected all clinical groups. Clinical management of children with ADHD and anxiety disorders needs to include assessment of sleep problems.

**ATTENTION-DEFICIT HYPERACTIVITY DISORDER IN CHILDREN CHRONICALLY EXPOSED TO HIGH LEVEL OF VEHICULAR POLLUTION.**

**Siddique S, Banerjee M, Ray MR, et al.**

The purpose of this study is to explore whether sustained exposure to vehicular air pollution affects the behavior and activities of children. The prevalence of attention-deficit hyperactivity disorder (ADHD) was assessed in two childhood populations. In a cross-sectional study 969 school-going children (9-17 years) and 850 age- and sex-matched children from rural areas were assessed, following the criteria of Diagnostic and Statistical Manual of conduct disorders (DSM-IV) of American Pediatric Association. Data of ambient particulate matter with a diameter of less than 10 (\(\mu\))m (PM10) were obtained from Central Pollution Control Board and aerosol monitor. ADHD was found in 11.0% of urban children in contrast to 2.7% of the control group (p<0.001). Major risk factors were male gender, lower socioeconomic status, 12-14 year age group, and PM10 level in breathing air. ADHD was more prevalent among boys both in urban and rural areas. It was prevalent among 18.0% of the boys enrolled in Delhi against 4.0% of the girls, giving a male/female ratio of 4.5:1. Inattentive type of ADHD was predominant followed by hyperactive-impulsive type and combined type of ADHD. Controlling potential confounder, ambient PM10 level was positively correlated with ADHD (OR=2.07; 95% CI, 1.08-3.99). Conclusion: The results of this study point to a possible association between air pollution and behavioral problems in children. Though gender, socioeconomic status, and age play a very important factor in ADHD prevalence, the association is highest and strongest between particulate pollution and prevalence of ADHD.

**ARE STIMULANTS EFFECTIVE IN THE TREATMENT OF EXECUTIVE FUNCTION DEFICITS? RESULTS FROM A RANDOMIZED DOUBLE BLIND STUDY OF OROS-METHYLPHENIDATE IN ADULTS WITH ADHD.**

**Biederman J, Mick E, Fried R, et al.**

The objective of this study was to evaluate the association between executive function deficits (EFDs) and response to methylphenidate treatment in ADHD in adults. We conducted a 6-week, parallel design,
randomized, placebo controlled study in adults with DSM-IV ADHD. Our psychometric index of executive function used standardized neuropsychological testing. We assessed behaviors reflective of EFDs using the Behavior Rating Inventory of Executive Function - Adult Version (BRIEF-A). Subjects with available measures of executive functioning (OROS-MPH N= 40; Placebo N= 47) were included for analysis. There was no difference in the percent of subjects completing the 6-week acute efficacy Phase I of the trial (100% N= 40) vs. 98% (N= 46), p= 0.4). The mean daily dose at Phase I endpoint was 84.6 (plus or minus) 31.6. mg (1.04 (plus or minus) 0.29. mg/kg) OROS-MPH and 100.5 (plus or minus) 21.9. mg (1.20 (plus or minus) 0.11. mg/kg) placebo (p= 0.0007). Based on the neuropsychological testing at the baseline assessment, 40% of the ADHD subjects (N= 35/87) were considered to have EFDs but 93% (N= 81) of subjects had (greater-than or equal to) 2 BRIEF-A clinical scale T-scores > 65. Regardless of the definition used, however, EFDs did not impact the clinical response to OROS-MPH. This randomized clinical trial showed that executive function deficits do not moderate the response to methylphenidate and measures of executive function deficits are not associated with response to OROS-MPH.

Eur Psychiatry. 2011 Apr;26:166-75.

IS PSYCHOEDUCATION FOR PARENTS AND TEACHERS OF CHILDREN AND ADOLESCENTS WITH ADHD EFFICACIOUS? A SYSTEMATIC LITERATURE REVIEW.

Montoya A, Colom F, Ferrin M.

Objective: To identify evidence from comparative studies on the effects of psychoeducation programs on clinical outcomes in children and adolescents with ADHD.

Method: Articles published between January 1980 and July 2010 were searched through electronic databases and hand search. A qualitative systematic review of comparative studies of psychoeducation in ADHD was performed. Psychoeducation was considered if studies use a specific therapeutic program focusing on the didactically communication of information and provide patients and families with coping skills.

Results: Seven studies were identified (four randomized-controlled trials, three uncontrolled pre-post treatment designs). Studies differed on whether psychoeducation approaches were applied to parents of ADHD children (three studies), to ADHD children/adolescents and their families (three studies) or to their teachers (one study). Positive outcomes measured as improvement on a number of different variables, including patient's behavior, parent and child satisfaction, child's knowledge of ADHD, children's opinion of the use of medication and adherence to medical recommendations were found.

Conclusions: Although available evidence is limited and some findings may be difficult to be interpreted, the positive role of psychoeducation and other educational interventions in children and adolescents with ADHD in regard to several outcome measures is supported by most of the literature referenced in this review.


ASSESSMENT OF PARENTS' PREFERENCES FOR THE TREATMENT OF SCHOOL-AGE CHILDREN WITH ADHD: A DISCRETE CHOICE EXPERIMENT.

Fegert JM, Slawik L, Wermelskirchen D, et al.

Objectives: Treatment decisions for children with attention-deficit/ hyperactivity disorder (ADHD) should include parents' preferences, since parents acceptance and support are crucial for ensuring treatment adherence and, as a consequence, good clinical outcomes. Discrete choice experiments (DCEs, also known as conjoint experiences) are an important technique for identification and assessment of preferences for different treatment characteristics. In this study, a DCE was performed to analyze and to discuss parents' preferences regarding ADHD treatment for their school-aged children.

Methods: This article presents a mixed-method approach; qualitative and quantitative methods were used to ascertain the attributes that might influence a parent's choices for the optimal management of their child with ADHD. Parents of patients with ADHD in Germany completed a self-administered survey. Relevant characteristics of an ideal ADHD treatment were collected by reviewing the literature and by conducting a
qualitative study with focus groups. The study involved a subgroup of parents of school-age children aged 6-14 years (n = 121). Attitudes were measured and analyzed using a classic rating scale (5-point Likert format). Preferences were elicited using a DCE; scenarios were analyzed using a random-effects logit model.

**Results:** A total of 121 questionnaires were completed by caregivers (101 mothers, 16 fathers and four others) on behalf of their school-age children (6-14 years, 87% male). Six main attributes were investigated regarding their impact on parent preferences for ADHD treatment. While all were statistically significant in the DCE, improvements in the child's social situation (coefficient: 2.812; odds ratio: 16.64) and emotional state (coefficient: 1.610; odds ratio: 5.00) were rated as the most important by parents.

**Conclusion:** The study provides a valuable insight into parents’ preferences regarding treatment for their child with ADHD. If physicians can incorporate this information into their treatment plans for children with ADHD, greater concordance regarding treatment goals, adherence with therapy and, ultimately, clinical outcomes may be achieved.

**ATTENTIONAL PROCESSES IN CHILDREN WITH ADHD: AN EVENT-RELATED POTENTIAL STUDY USING THE ATTENTION NETWORK TEST.**
A variety of event-related potential (ERP) based studies have shown differences in neuronal processes underlying attention, inhibition and error processing in children with attention-deficit/hyperactivity disorder (ADHD) compared to controls. However, so far there are no studies that have compared children with ADHD and typically developing (TD) children regarding effects in ERP components associated with the attention network test (ANT). The ANT allows to differentiate between three particular aspects of attention: alerting, orienting, conflict. Twenty-five children with ADHD and 19 TD children (comparable with respect to age, sex, and IQ) performed the ANT while ERPs were recorded. Based on DSM-IV, the group of children with ADHD was divided in an inattentive (ADHD. in, n=10) and a combined (ADHD. com, n=15) subgroup. On the performance level, the ADHD group showed a significantly higher variability of reaction times. Concerning ERP measures, smaller cue-P3 amplitudes were found in the ADHD group indicating that children with ADHD allocate less attentional resources for cue processing. In addition, the target-P3 in ADHD showed smaller amplitudes. Subgroup analysis revealed reduced cue-P3 amplitudes in both subgroups and reduced target-P3 amplitudes in ADHD. in compared to TD children. Except for a higher alerting score in ADHD after correction for cue-P3 group differences, performance data revealed no group differences specific for the three attention networks. No group differences related to the attention networks were observed at the ERP level. Our results suggest that deviant attentional processing in children with ADHD is only partly related to ANT-specific effects. Findings are compatible with the model of a suboptimal energetic state regulation in ADHD. Furthermore, our results suggest that deviant cue processing in ADHD and related differences in task modulations should be accounted for in data analysis.

**A LONGITUDINAL TWIN STUDY ON THE ASSOCIATION BETWEEN INATTENTIVE AND HYPERACTIVE-IMPULSIVE ADHD SYMPTOMS.**
DSM-IV distinguishes two symptom domains of attention deficit hyperactivity disorder (ADHD): inattentiveness and hyperactivity-impulsivity. The present study examines the aetiologies and developmental relations underlying the associations between inattentiveness and hyperactivity-impulsivity over time, based on a representative population sample from the United Kingdom of approximately 7,000 twin pairs. ADHD symptoms were assessed as continuous dimensions using the DSM-IV items from the Conners’ Parent Rating Scale at two ages: middle childhood (age 1) and early adolescence (age 2). Quantitative genetic cross-lagged analyses showed that the association of the ADHD dimensions over time
is influenced by stable as well as newly developing genetic factors. Moreover the longitudinal relationship
between the ADHD dimensions appears to be unidirectional, with hyperactivity-impulsivity in middle
childhood predicting the presence of inattentiveness in early adolescence, but not vice versa. Thus,
hyperactivity-impulsivity may serve to exacerbate inattentiveness over time. Findings are discussed in the
context of developmental changes in ADHD symptoms.

RECEIVING TREATMENT FOR ATTENTION-DEFICIT HYPERACTIVITY DISORDER: DO THE PERSPECTIVES OF
ADOLESCENTS MATTER?
Purpose This study describes the perspectives of parents and adolescents regarding clinical need for and
attitudes toward care for attention-deficit hyperactivity disorder (ADHD). In addition, it explores as to how
these views relate to past year usage of mental health services. Methods Parents and adolescents were
interviewed 6 years after the school district was screened for ADHD. Using standardized measures, mental
health service usage, adolescent and parent perceived clinical needs (ADHD symptoms, disruptive
behavior disorders, anxiety and/or depression, functioning), and enabling attitudes (treatment receptivity,
ADHD stigma), as well as parent factors (caregiver strain, distress, instrumental social support) were
assessed. Nested logistic regression modeling was used to determine the hierarchical contribution of
parent and adolescent perspectives on past year service usage, after adjusting for previous usage of
mental health services. Stepwise regression was conducted to identify the variables that were most
predictive of service usage. Results Among the adolescents who were at a high risk for ADHD, 79% had a
history of lifetime mental health service usage, but only 42% had received any kind of mental health
services in the past year. In hierarchical modeling, only parent inattention ratings and medication receptivity
and adolescent ADHD stigma perceptions contributed significantly toward improved model fit. Stepwise
regression confirmed these three variables to be predictors (OR: 1.2, 3.8, and .2, respectively) and
identified adolescents-reported functioning as an additional predictor of service usage (OR: 1.1).
Conclusion Perceptions of adolescents regarding the stigma related to ADHD are influential in treatment
receipt. Quality improvement interventions for adolescents with ADHD should include psychoeducational
interventions for adolescents and their parents that target medication receptivity and the stigma related to
ADHD.

J Affective Disord. 2011 Apr;130:155-61.
CHILDHOOD CBCL BIPOLAR PROFILE AND ADOLESCENT/YOUNG ADULT PERSONALITY DISORDERS: A 9-YEAR
FOLLOW-UP.
Background: To assess the late adolescent psychiatric outcomes associated with a positive Child
Behavior Checklist-Juvenile Bipolar Disorder Phenotype (CBCL-JBD) in children diagnosed with ADHD and
followed over a 9-year period.
Methods: Parents of 152 children diagnosed as ADHD (ages 7–11 years) completed the CBCL. Ninety of
these parents completed it again 9 years later as part of a comprehensive evaluation of Axis I and II
diagnoses as assessed using semi-structured interviews. As previously proposed, the CBCL-JBD
phenotype was defined as T-scores of 70 or greater on the Attention Problems, Aggression, and
Anxiety/Depression subscales.
Results: The CBCL-JBD phenotype was found in 31% of those followed but only 4.9% of the sample
continued to meet the phenotype criteria at follow-up. Only two of the sample developed Bipolar Disorder
by late adolescence and only one of those had the CBCL-JBD profile in childhood. The proxy did not
predict any Axis I disorders. However, the CBCL-JBD proxy was highly predictive of later personality
disorders.
Limitations: Only a subgroup of the original childhood sample was followed. Given this sample was confined to children with ADHD, it is not known whether the prediction of personality disorders from CBCL scores would generalize to a wider community or clinical population.

Conclusions: A positive CBCL-JBD phenotype profile in childhood does not predict Axis I Disorders in late adolescence; however, it may be prognostic of the emergence of personality disorders.

**CLINICAL RESPONSE TO METHYLPHENIDATE IN A PATIENT WITH SELF-INDUCED PHOTOSENSITIVE EPILEPSY.**  
The classification of epilepsy includes a group of generalized idiopathic epilepsies that are triggered by a specific mode of activation, known as reflex epilepsies. Photosensitive epilepsy is the most common type. Some patients with photosensitive epilepsy use this sensitivity to induce seizures or epileptiform discharges on the electroencephalogram. In some patients, psychopharmacological treatment, for instance with selective serotonin reuptake inhibitors and neuroleptics, has demonstrated benefit insofar as self-induction of seizures is concerned. However, so far as we know, there are no documented cases of treatment with methylphenidate in patients with this type of seizure. Our purpose is to report the case of an 8-year-old girl with attention-deficit hyperactivity disorder (ADHD) and self-induced photosensitive epilepsy whose behavior in general, and self-inducing behavior in particular, improved dramatically following treatment with methylphenidate.

**VARIABILITY IN POST-ERROR BEHAVIORAL ADJUSTMENT IS ASSOCIATED WITH FUNCTIONAL ABNORMALITIES IN THE TEMPORAL CORTEX IN CHILDREN WITH ADHD.**  
**Spinelli S, Vasa RA, Joel S, et al.**  
**Background:** Error processing is reflected, behaviorally, by slower reaction times (RT) on trials immediately following an error (post-error). Children with attention-deficit hyperactivity disorder (ADHD) fail to show RT slowing and demonstrate increased intra-subject variability (ISV) on post-error trials. The neural correlates of these behavioral deficits remain unclear. The dorsal anterior cingulate cortex (ACC) and lateral prefrontal cortex (PFC) are key regions implicated in error processing and subsequent behavioral adjustment. We hypothesized that children with ADHD, compared to typically developing (TD) controls, would exhibit reduced PFC activation during post-error (versus post-correct inhibition) trials and reduced dACC activation during error (versus correct inhibition) trials.

**Methods:** Using functional Magnetic Resonance Imaging (fMRI) and a Go/No-Go task, we analyzed the neural correlates of error processing in 13 children with ADHD and 17 TD children.

**Results:** Behaviorally, children with ADHD showed similar RT slowing but increased ISV compared to controls. The post-error contrast revealed a relative increase in blood-oxygen-level dependent (BOLD) signal in the middle/inferior temporal cortex (TempC), the ACC/supplementary motor area (SMA) and the somatosensory/auditory cortex (AudC) in children with ADHD compared to controls. Importantly, in the ADHD group, increased post-error temporal cortex activity was associated with lower ISV. During error (versus correct inhibition) trials, no between-group differences were detected. However, in children with ADHD lower ISV was associated with decreased insula and increased precentral gyrus activity.

**Conclusions:** In children with ADHD, post-error neural activity suggests, first, a shift of attention towards task-irrelevant stimuli (AudC), and second, a recruitment of compensatory regions that resolve stimulus conflict (TempC) and improve response selection/execution (ACC/SMA). ADHD children with higher temporal cortex activation showed lower ISV, suggesting that functional abnormalities in the compensatory temporal regions contribute to increased variability. Moreover, increased ISV may be related to an over-sensitivity to negative outcomes during error trials in ADHD (insula correlation).

**Task-related default mode network modulation and inhibitory control in ADHD: Effects of motivation and methylphenidate.**


**Background:** Deficits characteristic of attention deficit/hyperactivity disorder (ADHD), including poor attention and inhibitory control, are at least partially alleviated by factors that increase engagement of attention, suggesting a hypodopaminergic reward deficit. Lapses of attention are associated with attenuated deactivation of the default mode network (DMN), a distributed brain system normally deactivated during tasks requiring attention to the external world. Task-related DMN deactivation has been shown to be attenuated in ADHD relative to controls. We hypothesised that motivational incentives to balance speed against restraint would increase task engagement during an inhibitory control task, enhancing DMN deactivation in ADHD. We also hypothesised that methylphenidate, an indirect dopamine agonist, would tend to normalise abnormal patterns of DMN deactivation.

**Method:** We obtained functional magnetic resonance images from 18 methylphenidate-responsive children with ADHD (DSM-IV combined subtype) and 18 pairwise-matched typically developing children aged 9–15 years while they performed a paced Go/No-go task. We manipulated motivational incentive to balance response speed against inhibitory control, and tested children with ADHD both on and off methylphenidate.

**Results:** When children with ADHD were off-methylphenidate and task incentive was low, event-related DMN deactivation was significantly attenuated compared to controls, but the two groups did not differ under high motivational incentives. The modulation of DMN deactivation by incentive in the children with ADHD, off-methylphenidate, was statistically significant, and significantly greater than in typically developing children. When children with ADHD were on-methylphenidate, motivational modulation of event-related DMN deactivation was abolished, and no attenuation relative to their typically developing peers was apparent in either motivational condition.

**Conclusions:** During an inhibitory control task, children with ADHD exhibit a raised motivational threshold at which task-relevant stimuli become sufficiently salient to deactivate the DMN. Treatment with methylphenidate normalises this threshold, rendering their pattern of task-related DMN deactivation indistinguishable from that of typically developing children.

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**Twin study on transplacentally-acquired antibodies and attention deficit/hyperactivity disorder - A pilot study.**


**Objective:** We hypothesize that maternal transplacentally acquired antibodies may cause Attention Deficit/Hyperactivity Disorder (ADHD) symptoms years after birth, and tested the hypothesis in twins discordant for ADHD symptoms.

**Method:** In a pre-screened sample of 7793 same sex twin pair's (4-18. years) questionnaire data on hyperactivity and inattention was collected. Blood samples taken 5. days after birth from 190 ADHD-score discordant pairs (15% MZ) were analyzed for antibodies.

**Results:** Pneumococcus Polysaccaride 14 (PnP14) was present in the ADHD high scoring twin more often than in the lower scoring twin (P=0.04).

**Conclusion:** Although the study provides no strong support for the hypothesis, infection or immunological factors may be one among several causes of ADHD. The genetic control obtained in a twin design may reduce the exposure contrast and a larger sample is needed to further explore the role of PnP14 in the etiology of ADHD.

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SYMPTOMS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDREN ARE ASSOCIATED WITH CORTISOL RESPONSES TO PSYCHOSOCIAL STRESS BUT NOT WITH DAILY CORTISOL LEVELS.


We tested associations of diurnal hypothalamic-pituitary adrenal axis (HPAA) activity and its response to stress with behavioral symptoms of Attention Deficit Hyperactivity Disorder (ADHD) among 272 eight-year-old children. We measured their diurnal salivary cortisol and salivary cortisol responses to the Trier Social Stress Test for Children (TSST-C). Mothers rated their child's behavior with the ADHD-IV Rating Scale and the Child Behavior Checklist (CBCL). There were no significant associations between ADHD symptoms and diurnal cortisol concentrations. The boys with predominantly inattentive symptoms of ADHD (ADHD-I; scores at or above the 90th percentile) had 26% lower mean salivary cortisol levels during the TSST-C than the boys with scores below this cutoff. In the girls with symptoms of ADHD-I, initial salivary cortisol levels prior to the TSST-C were higher and fell more rapidly during and after the TSST-C, which was not seen in the remaining girls (P=0.007 for interaction 'ADHD-I null sampling time'). Controlling for Oppositional Defiant Disorder/Conduct Disorder and Anxiety Disorder or excluding children with these comorbid problems did not substantially affect these findings. We conclude that the boys and the girls with behavioral symptoms of ADHD-I had reduced HPAA responsiveness to stress, which is also seen in people after traumatic events or with chronic stress. Their diurnal cortisol rhythm was not affected. Thus, ADHD-I may be associated with dysregulation of the HPAA or reduced engagement with stressful stimuli.

TREATMENT OF ADHD IN PATIENTS UNRESPONSIVE TO METHYLPHENIDATE.

Hechtman L.

Presents a case report of a R.B., an 8-year-old boy with a history of attention-deficit/hyperactivity disorder (ADHD) that was first diagnosed at age 4 years. When he was referred at age 8, he was in grade 3 but failing most of his subjects. He was also found to have oppositional defiant disorder at home and at school and, despite normal intelligence, a substantial learning disability in expressive and receptive language. R.B. first started stimulant medication at 5 years old: 5, 10 and finally 20 mg of methylphenidate taken in the morning and again at noon. The medication did not greatly alleviate symptoms; poor compliance (many doses at school were forgotten or missed) and poor coverage between doses were thought to be the reasons for the poor medication response. Despite maximum dosages of atomoxetine combined with a fairly high dosage of methylphenidate, R.B. continued to have attentional, behavioral and learning problems at school and at home. This case illustrates several important issues. First, children with ADHD often have other comorbid conditions that need to be addressed and treated, as stimulant medication is not likely to correct everything. Second, although many individuals (45%) respond equally well to methylphenidate or amphetamine products, some (28%) respond preferentially to methylphenidate whereas others (17%) respond preferentially to amphetamines and about 10% respond to neither group of stimulants.

DIFFERENT NEURAL PATTERNS ARE ASSOCIATED WITH TRIALS PRECEDING INHIBITORY ERRORS IN CHILDREN WITH AND WITHOUT ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Spinelli S, Joel S, Nelson TE, et al.

Objective: Attention-deficit/hyperactivity disorder (ADHD) is associated with difficulty inhibiting impulsive, hyperactive, and off-task behavior. However, no studies have examined whether a distinct pattern of brain activity precedes inhibitory errors in typically developing (TD) children and children with ADHD. In healthy adults, increased activity in the default mode network, a set of brain regions more active during resting or internally focused states, predicts commission errors, suggesting that momentary lapses of attention are related to inhibitory failures.

Method: Event-related functional magnetic resonance imaging and a go/no-go paradigm were used to explore brain activity preceding errors in 13 children with ADHD and 17 TD controls.
**Results:** Comparing pre-error with pre-correct trials, TD children showed activation in the precuneus/posterior cingulate cortex and parahippocampal and middle frontal gyri. In contrast, children with ADHD demonstrated activation in the cerebellum, dorsolateral prefrontal cortex (DLPFC), and basal ganglia. Between-group comparison for the pre-error versus pre-correct contrast showed that children with ADHD showed greater activity in the cerebellum, DLPFC, and ventrolateral PFC compared with TD controls. Results of region-of-interest analysis confirmed that the precuneus/posterior cingulate cortex are more active in TD children compared with children with ADHD.

**Conclusions:** These preliminary data suggest that brain activation patterns immediately preceding errors differ between children with ADHD and TD children. In TD children, momentary lapses of attention precede errors, whereas pre-error activity in children with ADHD may be mediated by different circuits, such as those involved in response selection and control.

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**EXAMINING THE INTERPLAY AMONG NEGATIVE EMOTIONALITY, COGNITIVE FUNCTIONING, AND ATTENTION DEFICIT/HYPERACTIVITY DISORDER SYMPTOM SEVERITY.**

Healey DM, Marks DJ, Halperin JM.

Cognition and emotion, traditionally thought of as largely distinct, have recently begun to be conceptualized as dynamically linked processes that interact to influence functioning. This study investigated the moderating effects of cognitive functioning on the relationship between negative emotionality and attention deficit/hyperactivity disorder (ADHD) symptom severity. A total of 216 (140 hyperactive/inattentive; 76 typically developing) preschoolers aged 3-4 years were administered a neuropsychological test battery (i.e., NEPSY). To avoid method bias, child negative emotionality was rated by teachers (Temperament Assessment Battery for Children-Revised), and parents rated symptom severity on the ADHD Rating Scale (ADHD-RS-IV). Hierarchical Linear Regression analyses revealed that both negative emotionality and Perceptual-Motor & Executive Functions accounted for significant unique variance in ADHD symptom severity. Significant interactions indicated that when negative emotionality is low, but not high, neuropsychological functioning accounts for significant variability in ADHD symptoms, with lower functioning predicting more symptoms. Emotional and neuropsychological functioning, both individually and in combination, play a significant role in the expression of ADHD symptom severity.

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**MOTOR ABILITY AND ADAPTIVE FUNCTION IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.**

Wang HY, Huang TH, Lo SK.

Attention deficit hyperactivity disorder (ADHD) is a common neuropsychiatric disorder. Previous studies have reported that children with ADHD exhibit deficits of adaptive function and insufficient motor ability. The objective of this study was to investigate the association between adaptive function and motor ability in children with ADHD compared with a group of normal children. The study group included 25 children with ADHD (19 boys and 6 girls), aged from 4.6 years to 8.6 years (mean (plus or minus) standard deviation, 6.5 (plus or minus) 1.2). A group of 24 children without ADHD (normal children) were selected to match the children with ADHD on age and gender. The Movement Assessment Battery for Children, which includes three subtests, was used to assess the motor ability of the children of both groups. The Chinese version of Adaptive Behavior Scales, which consists of 12 life domains, was used to assess adaptive function of the children with ADHD. Compared with the normal children, children with ADHD exhibited poorer motor ability on all the three subtests of motor assessment. In the ADHD group, nine (36%) children had significant motor impairments and seven (28%) were borderline cases. A total of 10 (40%) children with ADHD had definite adaptive problems in one or more adaptive domains. With statistically controlling of IQ for the ADHD group, those children with impaired motor ability had significantly poorer behaviors in the adaptive domain of home living ($p = 0.035$). Moreover, children with ADHD who had severely impaired manual dexterity performed worse than the control group in the adaptive domains of home living ($r = -0.47$, $p = 0.018$), socialization ($r = -0.49$, $p = 0.013$), and self-direction ($r = -0.41$, $p = 0.040$). In addition, children with
poorer ball skills had worse home living behavior ($r = -0.56$, $p = 0.003$). Children who had more impaired balance exhibited poorer performance in social behavior ($r = -0.41$, $p = 0.040$). This study found significant correlation between motor ability and adaptive function in children with ADHD, especially in their adaptive domains of home living, socialization, and self-direction. In clinical settings, identification of motor difficulties may have important implications for the understanding of relative factors in effective management of the adaptive dysfunction in children with ADHD.


**EVIDENCE FOR HIGHER REACTION TIME VARIABILITY FOR CHILDREN WITH ADHD ON A RANGE OF COGNITIVE TASKS INCLUDING REWARD AND EVENT RATE MANIPULATIONS.**


**Objective:** The purpose of the research study was to examine the manifestation of variability in reaction times (RT) in children with attention deficit hyperactivity disorder (ADHD) and to examine whether RT variability presented differently across a variety of neuropsychological tasks, was present across the two most common ADHD subtypes, and whether it was affected by reward and event rate (ER) manipulations.

**Method:** Children with ADHD-combined type ($n = 51$), ADHD-predominantly inattentive type ($n = 53$), and 47 controls completed five neuropsychological tasks (Choice Discrimination Task, Child Attentional Network Task, Go/No-Go task, Stop Signal Task, and N-back task), each allowing trial-by-trial assessment of RTs. Multiple indicators of RT variability including RT standard deviation, coefficient of variation and ex-Gaussian tau were used.

**Results:** Children with ADHD demonstrated greater RT variability than controls across all five tasks as measured by the ex-Gaussian indicator tau. There were minimal differences in RT variability across the ADHD subtypes. Children with ADHD also had poorer task accuracy than controls across all tasks except the Choice Discrimination task. Although ER and reward manipulations did affect children's RT variability and task accuracy, these manipulations largely did not differentially affect children with ADHD compared to controls. RT variability and task accuracy were highly correlated across tasks. Removing variance attributable to RT variability from task accuracy did not appreciably affect between-groups differences in task accuracy.

**Conclusions:** High RT variability is a ubiquitous and robust phenomenon in children with ADHD.


**ATTENTION DEFICIT HYPERACTIVITY DISORDER AND ENURESIS IN CHILDREN AND ADOLESCENTS.**

*Zavadenko NN, Kolobova NM, Suvorinova NY.*

The incidences of comorbid disorders and the status of neuropsychological executive functions were evaluated in two groups of patients aged 5–14 years: patients with attention deficit hyperactivity disorder (ADHD) in combination with enuresis (53 patients) and ADHD without enuresis (71 patients). Most cases of enuresis among patients of group 1 (50 of 53) had primary nocturnal enuresis. This group showed a significant increase in the total number of cases of comorbidity with such disorders as oppositional-defiant behavioral disorder, anxiety disorders, tics, and encopresis, seen in 77.7% of cases as compared with 60.6% in group 2. The presence of enuresis in patients with ADHD was associated with a significant increase in the incidence of anxiety disorders (54.7% as compared with 39.4%). In addition, at age 5–9 years, patients with ADHD with enuresis had a tendency to a higher frequency of oppositional-defiant behavioral disorder and encopresis; those aged 10–14 years showed an increase in the proportion with obsessive-compulsive disorder and tics as compared with patients with ADHD without enuresis. Assessment of measures of executive functions using the Wisconsin card sorting test revealed no differences between patients of the two groups.
USE OF BALL BLANKET IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER SLEEPING PROBLEMS.

Hvolsby A, Bilenberg N.

Objectives: Based on actigraphic surveillance, attention-deficit/hyperactivity disorder (ADHD) symptom rating and sleep diary, this study will evaluate the effect of Ball Blanket on sleep for a sample of 8–13-year-old children with ADHD. Design: Case–control study.

Setting: A child and adolescent psychiatric department of a teaching hospital.

Participants: 21 children aged 8–13 years with a diagnosis of ADHD and 21 healthy control subjects.

Intervention: Sleep was monitored by parent-completed sleep diaries and 28 nights of actigraphy. For 14 of those days, the child slept with a Ball Blanket.

Main outcome measures: The sleep latency, number of awakenings and total length of sleep was measured, as was the possible influence on parent- and teacher-rated ADHD symptom load.

Results: The results of this study will show that the time it takes for a child to fall asleep is shortened when using a Ball Blanket. The time it takes to fall asleep when using the Ball Blanket is found to be at the same level as the healthy control subjects. Teacher rating of symptoms show an improvement in both activity levels and attention span of approximately 10% after using the Ball Blankets.

Conclusions: The results of this study show that the use of Ball Blankets is a relevant and effective treatment method with regard to minimizing sleep onset latency. We find that the use of Ball Blankets for 14-days improves the time it takes to fall asleep, individual day-to-day variation and the number of awakenings to a level that compares with those found in the healthy control group. Furthermore, we find that the use of Ball Blankets significantly reduces the number of nights that the ADHD child spends more than 30 min falling asleep from 19% to 0%.

ARTIFICIAL FOOD DYES AND ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Kanarek RB.

Attention deficit hyperactivity disorder (ADHD) is one of the most common behavioral disorders in children. Symptoms of ADHD include hyperactivity, low frustration tolerance, impulsivity, and inattention. While the biological pathways leading to ADHD are not clearly delineated, a number of genetic and environmental risk factors for the disorder are recognized. In the early 1970s, research conducted by Dr. Benjamin Feingold found that when hyperactive children were given a diet free of artificial food additives and dyes, symptoms of hyperactivity were reduced. While some clinical studies supported these findings, more rigorous empirical studies conducted over the next 20 years were less positive. As a result, research on the role of food additives in contributing to ADHD waned. In recent years, however, interest in this area has revived. In response to more recent research and public petitions, in December 2009 the British government requested that food manufacturers remove most artificial food dyes from their products. While these strictures could have positive effects on behavior, the removal of food dyes is not a panacea for ADHD, which is a multifaceted disorder with both biological and environmental underpinnings.

USING FREELISTING TO UNDERSTAND SHARED DECISION MAKING IN ADHD: PARENTS’ AND PEDIATRICIANS’ PERSPECTIVES.

Fiks AG, Gafen A, Hughes CC, et al.

Objective: To compare and contrast notions of ADHD among pediatricians and parents of affected children to understand the perspectives they bring to shared decision making (SDM).

Methods: In this freelisting study, 60 parents of children with ADHD and 30 primary care pediatricians listed words reflecting their understanding of (1) Attention Deficit Hyperactivity Disorder (ADHD), (2) getting/ offering help for ADHD, (3) talking to doctors/families about ADHD, and (4) “mental health.” Smith’s salience score established terms that were salient and cultural consensus analysis identified variation within subgroups of participants.
Results: Parents’ terms reflected ADHD’s effects on the child and family, while clinicians often mentioned school. Lists suggested differing needs and goals for clinicians and subgroups of parents in SDM: “time” for clinicians, “learning” and “understanding” for non-college educated parents, and “comfort” and “relief” for college educated parents. Neither parents nor clinicians framed ADHD in the same way as “mental health.”

Conclusion: Parents and clinicians, who conceptualize ADHD differently, should negotiate a shared understanding of ADHD as a basis for SDM. Treatment discussions should be tailored to encompass families’ varied emotional and educational needs.

Practice implications: Fostering SDM in primary care is consonant with notions of ADHD as distinct from mental health.

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**COMPUTER-ASSISTED MANAGEMENT OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.**


OBJECTIVES: Medication management of attention-deficit/hyperactivity disorder (ADHD) is often suboptimal. We examined whether (1) brief physician training plus computer-assisted medication management led to greater reduction in ADHD symptoms and (2) adherence to the recommended titration protocol produced greater symptomatic improvement.

METHODS: A randomized medication trial was conducted that included 24 pediatric practices. Children who met criteria for ADHD were randomly assigned by practice to treatment-as-usual or a specialized care group in which physicians received 2 hours of didactic training on medication management of ADHD plus training on a software program to assist in monitoring improvement. Parent and teacher reports were obtained before treatment and 4, 9, and 12 months after starting medication.

RESULTS: Children in both specialized care and treatment-as-usual groups improved on the ADHD Rating Scales and SNAP-IV, but there were no group differences in improvement rates. Brief physician training alone did not produce improvements. When recommended titration procedures were followed, however, outcomes were better for total and inattentive ADHD symptoms on both the ADHD Rating Scales and SNAP-IV parent and teacher scales. Results were not attributable to discontinuation because of adverse effects or failure to find an effective medication dose.

CONCLUSIONS: Brief physician training alone did not lead to reductions in ADHD symptoms, but adherence to a protocol that involved titration until the child's symptoms were in the average range and had shown a reliable change led to better symptom reduction. Computer-assisted medication management can contribute to better treatment outcomes in primary care medication treatment of ADHD.

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**ASSOCIATION OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND CELIAC DISEASE: A BRIEF REPORT.**

Niederhofer H.

Objective: A possible association of celiac disease with psychiatric and psychological disturbances such as attention-deficit/hyperactivity disorder (ADHD) has been reported repeatedly. The objective of this study was to observe whether a gluten-free diet could alleviate the behavioral symptoms in patients with celiac disease and ADHD.

Method: Sixty-seven subjects aged 7 to 42 years (mean = 11.4 years) with ADHD were enrolled in the study in South Tyrol, Italy, from 2004 to 2008. Hypescheme, an operational criteria checklist that incorporates DSM-IV and ICD-10 criteria, was used to assess ADHD-like symptomatology. Additionally, blood serum levels of all subjects were assessed for possible celiac disease by examining antigliadine and antiendomysium antibodies. A gluten-free diet was initiated for at least 6 months in celiac disease-positive patients with ADHD.

Results: Of the 67 patients with ADHD, 10 were positive for celiac disease. After initiation of the gluten-free diet, patients or their parents reported a significant improvement in their behavior and functioning compared to the period before celiac diagnosis and treatment, which was evident in the overall mean score on the Hypescheme questionnaire (t = 4.22, P = .023).
Conclusions: Celiac disease is markedly overrepresented among patients presenting with ADHD. A gluten-free diet significantly improved ADHD symptoms in patients with celiac disease in this study. The results further suggest that celiac disease should be included in the ADHD symptom checklist.

Psychiatric Annals. 2011 May;41:249-51.
A 7-YEAR-OLD BOY WITH ADHD.
Chalemian BA, Amir A, Jadapalie SLK.
Presents a case report of a 7-year-old white boy who had been diagnosed with attention-deficit/hyperactivity disorder (ADHD), inattentive type. He also had a reading disorder with verbal comprehension impairment. He was brought into the emergency room for agitation and self-injurious behavior while at a day camp. His mother reported that he had recurrent upper respiratory tract infections (Streptococcus) between 1 and 3 years, and he also had five episodes of scarlatina. With the possible diagnosis of pediatric autoimmune neuropsychiatry disorder associated with streptococcal infection (PANDAS) and pervasive developmental disorder (PDD), recommendations to monitor antibody ASO titers on a regular basis were made. The patient was started on risperidone two times a day for aggression. The patient currently is following up with a child psychiatrist and a specialist in PANDAS. The child responded well to the occupational therapy, individualized education, and the psychiatric interventions. Thus, children who suffer from streptococcal infection may present with behavioral changes consistent with PDD disorder related to PANDAS beginning 4 to 6 weeks after the resolution of the acute physical symptoms.

INFLUENCE OF CAREGIVERS’ EXPERIENCES ON SERVICE USE AMONG CHILDREN WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER.
Objective: This study examined how prior experiences of caregivers of children with attention-deficit hyperactivity disorder (ADHD) leading up to treatment related to later service use.
Methods: The investigators interviewed caregivers of 48 children with ADHD recruited from outpatient clinic settings and recorded the children’s medication use and clinic attendance six and 12 months later. Interview transcripts were analyzed to identify characteristic experiences, or themes, felt by the caregivers before seeking treatment. The investigators also looked for patterns in the way themes were endorsed.
Results: Caregivers’ experiences with the children's ADHD were characterized by six main themes - caregiver strain, attribution of meaning, perception of responsibility, problem-solving approach, beliefs about ADHD treatment, and response to societal influences. Based on distinct patterns in which they endorsed the six themes, caregivers were classified as motivated by observation (high on theme of perception of responsibility and low on theme of caregiver strain; 27%), motivated by experience (positive attribution of meaning and beliefs about ADHD treatment and low on strain; 19%), motivated by strain (high on strain, uncertain attribution of meaning, and contradictory societal influences; 23%), and struggling with meaning (high on strain, nonmedical attribution of meaning; 31%). At 12 months, children of caregivers who were motivated by experience were the most likely and those struggling with meaning were the least likely to attend clinic appointments (89% and 53%, respectively, p=.017). The groups did not vary in medication use.
Conclusions: Early identification of the factors influencing caregivers’ use of services for children with ADHD may have implications for treatment retention.

**THE ATTENUATION OF DYSFUNCTIONAL EMOTIONAL PROCESSING WITH STIMULANT MEDICATION: AN fMRI STUDY OF ADOLESCENTS WITH ADHD.**


Functional neuroimaging studies of attention-deficit/hyperactivity disorder (ADHD) have focused on the neural correlates of cognitive control. However, for many youths with ADHD, emotional lability is an important clinical feature of the disorder. We aimed to identify the neural substrates associated with emotional lability that were distinct from impairments in cognitive control and to assess the effects that stimulants have on those substrates. We used functional magnetic resonance imaging (fMRI) to assess neural activity in adolescents with (N = 15) and without (N = 15) ADHD while they performed cognitive and emotional versions of the Stroop task that engage cognitive control and emotional processing, respectively. The participants with ADHD were scanned both on and off stimulant medication in a counterbalanced fashion. Controlling for differences in cognitive control, we found that during the emotional Stroop task, adolescents with ADHD as compared with controls demonstrated atypical activity in the medial prefrontal cortex (mPFC). Stimulants attenuated activity in the mPFC to levels comparable with controls.

Schizophr Res. 2011.

**CHILDHOOD SYMPTOMS OF INATTENTION-HYPERACTIVITY PREDICT CANNABIS USE IN FIRST EPISODE PSYCHOSIS.**

*Cassidy CM, Joober R, King S, et al.*

**Background:** A history of childhood symptoms of inattention-hyperactivity is often reported in first episode psychosis (FEP) as is cannabis use. In the general population childhood ADHD predicts future cannabis use but the relationship has not been tested in FEP.

**Method:** Parents of patients with a first episode of psychosis (n = 75) retrospectively assessed their affected child for symptoms of early-life disorders, namely, attention deficit hyperactivity disorder (ADHD), conduct disorder (CD) and oppositional defiant disorder (ODD) using the Child Behaviour Checklist (CBCL). Assessments were made prospectively of cannabis use over two years following a FEP and of SCID diagnosis of cannabis-use disorder.

**Results:** Childhood hyperactivity-inattention symptoms predicted inability to maintain abstinence from cannabis following treatment (Wald = 8.4, p = .004) and lifetime cannabis-use diagnosis (Wald = 5.3, p = .022) in a logistic regression controlling for relevant covariates including symptoms of CD and ODD from ages 12 to 18. When the symptom of inattention was considered in place of the hyperactivity-inattention syndrome it predicted cannabis-use diagnosis (Wald = 6.4, p = .011) and persistent abstinence from cannabis (Wald = 5.3, p = .021). Symptoms of CD and ODD did not predict cannabis use when hyperactivity-inattention symptoms were controlled for.

**Conclusions:** Symptoms of childhood inattention-hyperactivity predict subsequent cannabis use in FEP.


**PATIENT-REPORTED PEDIATRIC QUALITY OF LIFE INVENTORY(TM) 4.0 GENERIC CORE SCALES IN PEDIATRIC PATIENTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND COMORBID PSYCHIATRIC DISORDERS: FEASIBILITY, RELIABILITY, AND VALIDITY.**


**Objectives:** The primary objective of the study was to evaluate the feasibility, reliability, and validity of the Pediatric Quality of Life Inventory(tm) (PedsQL) 4.0 Generic Core Scales as a patient self-reported health-related quality of life measurement instrument in pediatric patients with attention-deficit/hyperactivity disorder (ADHD) and physician-diagnosed comorbid psychiatric disorders being seen in a pediatric psychiatric clinic. The secondary objective was to evaluate parent proxy-reported PedsQL in this population.

**Methods:** One hundred seventy-nine children with ADHD and comorbid psychiatric disorders ages 5 to 18 years and 181 parents completed the PedsQL 4.0 Generic Core Scales and parents also completed the Vanderbilt ADHD Diagnostic Rating Scales. Known-groups discriminant validity comparisons were made...
between the sample of pediatric patients with ADHD and comorbid psychiatric disorders and healthy, cancer, and type 1 diabetes samples.

**Results:** The PedsQL evidenced minimal missing responses for patient self-report and parent proxy-report (0.2% and 0.5%, respectively), demonstrated no significant floor or ceiling effects, and achieved excellent reliability for the Total Scale Score ((alpha) = 0.85 patient self-report, 0.92 parent proxy-report). Pediatric patients with ADHD and comorbid psychiatric disorders and their parents reported statistically significantly worse PedsQL scores than healthy children, with large effect sizes across all domains, supporting known-groups discriminant validity. Pediatric patients with ADHD and comorbid psychiatric disorders and their parents reported worse PedsQL scores compared to pediatric patients with cancer and diabetes with the exception of physical health, in which pediatric cancer patients manifested lower physical health, indicating the relative severe impact of ADHD and comorbid psychiatric disorders. More severe ADHD symptoms were generally associated with more impaired PedsQL scores, supporting construct validity.

**Conclusions:** These data demonstrate the feasibility, reliability, and validity of patient self-reported PedsQL 4.0 Generic Core Scales in this high risk population of pediatric patients and highlight the profound negative impact of ADHD and comorbid psychiatric disorders on generic health-related quality of life, comparable to or worse than serious pediatric chronic physical diseases.


**COGNITIVE AND EMOTIONAL EMPATHY IN CHILDREN WITH ADHD AND CONDUCT DISORDER.**

**Schwenck C, Schmitt D, Sievers S, et al.**

**Objectives:** This study assesses the cognitive and emotional empathic competence in groups of children and adolescents with psychiatric disorders compared to a nonclinical control group. Subjective and objective diagnostic measures were employed.

**Methods:** A total of 96 boys were tested: 20 with attention-deficit/hyperactivity disorder (ADHD) predominantly inattentive subtype (ADHD-I); 20 with ADHD combined subtype (ADHD-C); 20 with conduct disorder (CD); 36 healthy boys (control group; CG). Mean age was 12.0 years (SD = 2.36). As aspects of cognitive and emotional empathy emotional reactivity, we tested emotion recognition and perspective taking with subjective questionnaires and objective tasks, using as subjective questionnaires the Interpersonal Reactivity Index (IRI; Davis, 1983) and the Index of Empathy for Children and Adolescents (IECA; Bryant, 1982). As objective tasks, we adopted the Empathy Response Task (ERT; Ricard & Kamberk-Kilicci, 1995) and a task measuring emotion recognition according to Buitelaar et al. (1999).

**Results:** The CG outperformed participants with ADHD-C and CD in objective tasks assessing perspective taking, particularly when complex tasks were applied as stimuli. Children with ADHD-I showed significantly more emotional empathy than boys with ADHD-C when presented with simple tasks. No group differences were found for emotion recognition and subjective questionnaires.

**Discussion:** Deficits in perspective taking and emotional empathy were found for children with ADHD-C and CD, largely in accordance with the literature. Similar to the processing of cognitive information, the processing of emotional information seems to differ in ADHD subtypes. Objective tasks and tasks with a high ecological validity seem suitable for the measurement of empathy.


**THE TRAINING OF SOCIAL SKILLS IN CHILDREN WITH ADHD - RESULTS OF A PILOT STUDY.**

**Schmitman Gen Pothmann M, Petermann U, Petermann F, et al.**

**Objective:** Insufficient social competence belongs to the most frequent concomitants of ADHD. This is the first therapeutic concept for the training of social skills adapted to the specific deficits of children with ADHD and developed in the German-speaking region.

**Method:** In a two-group, pre-posttest design with untreated waiting control group, 40 children between 7 and 13 years with the diagnoses F90.0, F90.1, and F98.8 were examined; 15% were female, 85% male. In groups of three they took part in the newly developed 10-h training TEAM. The record sheet of social skills
for parents (ESF-E) was used to measure social competence. In addition, we recorded attention performances (FBB ADHS) and concomitant psychic factors.

**Results**: Significant effects of the training were demonstrated for almost all social skills (MANOVA/GLM). The outcomes on the different components of attention and the psychosocial concomitant factors are without uniformity. The strongest effects appeared in the areas of conflict management, regulation of emotions, and the capacity for empathy.

**Conclusions**: Training of social skills is a sensible and effective supplement in the therapy of ADHD. An examination of long-term effects still needs to be done.

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**EVALUATION DES NEUROPSYCHOLOGISCHEN GRUPPENPROGRAMMS ATTENTIONER ZUR AUFMERKSAMKEITSTHERAPIE BEI KINDERN UND JUGENDLICHEN.**

**Tischler L, Karpinski N, Petermann F.**

The neuropsychological group training ATTENTIONER to treat children and adolescents with attention deficit disorders allows the targeted treatment of attention control. The present study examined a sample of N = 17 boys and girls aged seven to 13 years who participated in the ATTENTIONER-training. By means of the TAP the changes in the attention control (Divided Attention and Go/Nogo ½) were investigated in a pre-pre-post design. In addition to improvements in the parallel processing of stimuli in particular the children's inhibition skills increased significantly. This is of special importance to the role of impulsive behavior, such as for conduct disorders.

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**WAS WISSEN WIR ÜBER LANGZEITEFFEKTE VON METHYLPHENIDATBEHANDLUNG AUF DIE HIRNENTWICKLUNG VON KINDERN UND JUGENDLICHEN MIT EINER AUFMERKSAMKEITSDEFIZIT-/HYPERAKTIVITÄTSTÖRUNG (ADHS)? EINE ÜBERSICHT ÜBER METHYLPHENIDAT (MPH) – EFFEKTE AUF KOGNITION, MOTIVATION UND HIRNENTWICKLUNG.**

**Gilsbach S, Günther T, Konrad K.**

Psychostimulants such as methylphenidate belong to the treatment of first choice in multimodal intervention plans for children with ADHD. However, still little is known about possible long-term effects of stimulant treatment. Although, there is much evidence of a positive short term effect of psychostimulants, the clinical and neuropsychological outcome of a long term medication or medications given during early childhood is mostly unknown. Several studies suggest an effect of a long-term treatment with psychostimulants on the structural as well as functional brain development. Furthermore, possible cognitive and motivational side effects of methylphenidate should be taken into account. Overall, study results have been rather heterogeneous and there is a lack of studies with a sufficient statistical power.
Calendario degli incontri
Tutti gli incontri avranno inizio alle ore 9.00

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2011 - 2012

PROGETTO REGIONALE
CONDIVISIONE DI PERCORSI DIAGNOSTICO-TERAPEUTICI
PER L’ADHD
IN LOMBARDIA

Seminari
di informazione e approfondimento per pediatri sui disturbi dell’attenzione e dell’iperattività
Programma dell’incontro

1 giornata suddivisa nei seguenti moduli:

MODULO N° 1: Cos'è l’ADHD

- Quadro clinico e classificazione diagnostica
- Diagnosi differenziale e comorbidità
- Epidemiologia: presentazione di dati internazionali e nazionali
- Presentazione di casi

MODULO N° 2: Il ruolo del Pediatra

- Modalità di screening da parte del pediatra
- Modalità di invio e accesso ai centri per la diagnosi specialistica: alleanza terapeutica tra pediatra e NPI
- Trattamenti farmacologici
- Trattamenti multimodali

Per informazioni e chiarimenti:
Dr Gianluca Daffi
NPI Ospedale dei Bambini,
Spedali Civili di Brescia
Centro capofila di progetto
daffi.gianluca@gmail.com

Aspetti organizzativi

La serie di seminari proposti si inserisce all’interno delle attività di formazione e informazione previste dal progetto regionale “Condivisione di percorsi diagnostico-terapeutici per l’ADHD in Lombardia”.

L’incontro in questione, ripetuto secondo standard condivisi presso ognuno dei 18 centri, aderenti e a cura dei referenti di ogni centro, è rivolto ai pediatri del territorio i quali, partecipando a una delle edizioni proposte, avranno modi di implementare le seguenti competenze:

- Conoscere e riconoscere il quadro clinico caratteristico dell’ADHD
- Conoscere le principali diagnosi differenziali e gli elementi di comorbidità
- Conoscere la diffusione epidemiologica del disturbo
- Conoscere le corrette modalità di invio e accesso ai centri territoriali
- Conoscere le principali forme di trattamento multimodale

La partecipazione all’incontro è gratuita, ogni incontro avrà durata massima di 4 ore.

Ai partecipanti verranno riconosciuti 1 relativo crediti ECM
ADHD Master School 2011 – Cagliari

La Master Schools su ADHD, si svolgerà presso il dipartimento di Neuropsichiatria infantile dell’azienda Ospedaliera Universitaria di Cagliari nelle seguenti date:

- 12/16 settembre 2011
- 03/08 ottobre 2011
- 24/29 ottobre 2011

Si tratta di un Progetto Formativo a valenza nazionale, che prevede una parte teorica ed una parte pratica di Formazione sul campo.

Il corso prevede in particolare: 1. Una parte teorica, in cui verranno esposti in modo frontale le principali nozioni inerenti la definizione diagnostica, l’epidemiologia, l’eziofisiopatogenesi, la psicopatologia, la comorbidità neuropsichiatrica e le strategie di presa in carico (farmacologica e non farmacologica). 2. Una parte pratica in cui i discenti apprenderanno, affiancati da un Tutor che lavora nella struttura, l’utilizzo degli strumenti diagnostici e seguiranno le modalità e il razionale per comunicare la diagnosi, impostare e effettuare il follow up del trattamento.

Per ogni data del corso è previsto un numero massimo di tre partecipanti (eventuali costi di viaggio e soggiorno saranno a carico dell’organizzazione).

Per la partecipazione sarà necessario inviare la richiesta di adesioni al seguente indirizzo e-mail Ilenia.mando@regiacongressi.it La risposta dell’eventuale accettazione sarà comunicata entro e non oltre la prima settimana di settembre.
Newsletter – ADHD
luglio 2011

Info

Sede dell’Incontro
Sala Convegni Centro di Spiritualità - Ostuni
Via San Giovanni Bosco 5.5. 16 Sud
Ostuni (BR) tel. 0831.345801

ECM
Accreditamento ECM per Medici (Neuropsichiatri Infantili, Pediatri, Neurologi, ecc), Psicologi, Pedagogisti, Fisioterapisti, Terapisti della Neuropsicomotorietà, Terapisti Occupazionali, Logopedisti, Educatori professionali, Infermieri.
Predeterminati n.25 crediti formativi per la partecipazione alle tre giornate.

Quota di iscrizione
Il costo (comprendente di materiale didattico, attestato di partecipazione, attestato ECM e light lunch) è di:
Euro 150,00
Euro 100,00 per i dipendenti de “La Nostra Famiglia”

Modalità di iscrizione
Per iscriversi è necessario inviare entro il 01.06.2011 la Scheda di iscrizione unitamente alla copia del versamento dello euro di partecipazione, via posta o via fax presso:
IRCSS “E. Medea” - Associazione “La Nostra Famiglia”
Polo Regionale di Ostuni - Brindisi
Sede di Brindisi
Ex Complesso Ospedaliero Regionale “A. Di Summa”
Piazza A. Di Summa 72100 Brindisi
Tel. 0831.345111 Fax 0831.345214
WWW.EMEDEA.IT SECRETARIO@O3.LINK.IT

Corso di Aggiornamento

LA TERAPEUTICA
COGNITIVO-COMPORTAMENTALE
NEI DISURBIRI PSICOPATOLÓGICI
DELL’ETÀ EVOLUTIVA

Istituto di Ricovero e Cura a Carattere Scientifico “Eugenio Medea”
Polo di Ostuni - Brindisi
Sede di Brindisi
Ex Complesso Ospedaliero Regionale “A. Di Summa”
Piazza A. Di Summa 72100 Brindisi
Centrale: 0831.349111
WWW.EMEDEA.IT IRCCS@O3.LINK.IT

OSTUNI (BR)
10 - 17 - 24 Settembre 2011

Con il Patrocinio della
Società Italiana di Neuropsichiatria
dell’Infanzia e dell’Adolescenza
La Terapia Cognitivo Comportamentale (TCC) è una psicoterapia sviluppata negli anni ’60 da A.T. Beck. È una terapia strutturata, direttiva, di breve durata, ed orientata al presente. Essa è finalizzata a modificare i pensieri distorsori, le emozioni disfunzionali e i comportamenti disattivi del paziente, producendo la riduzione e l’elminazione del sintomo e sostenendo miglioramenti duraturi nel tempo.

La TCC poggia su una base sperimentale e un metodo scientifico. È stato convalidato da numerosissimi studi la sua efficacia nel trattamento di diversi disturbi psicosociali sia dell’età adulta che dell’età evolutiva.

La TCC viene indicata come fondamentale e (all’interno di un approccio multifattoriale) nel trattamento dei Disturbi dello Spirito Autistico, dei Disturbi dell’Attività e dell’Attivazione (ADHD), dei Disturbi comportamentali ed emozionali di vario tipo, disturbi d’ansia, dell’umore, del comportamento alimentare.

Sul piano clinico quotidiano l’indicazione attuale della TCC è molto frequente, ma non sempre trova possibilità applicative e non sempre è adeguatamente consapevole. Abbiamo per questo chiamato a circa il 10% dei professionisti motivi e autorevoli in alcuni fra i più frequenti e complessi disturbi in quest’area.

Inoltre abbiamo pensato di affrontare le tematiche dei Disturbi d’Ansia e del Disturbo da Opioidi e di Disturbi del Comportamento (ADHD, DOP, DCD) del Disturbo dello Spirito Autistico.

Le giornate sono organizzate partendo da un breve intervento clinico dei Disturbi da trattare, seguito da un ampio spazio lasciato alla lettura magistrale dell’esperienza di TCC e con una seconda parte della giornata dedicata alla discussione interattiva con i clinici su materiali portati dagli stessi esperti.

L’Incontro si rivolge a
Medici (Neuropsichiatrici Infantili, Pediatri, Neurologi etc.), Psicologi, Pedagogisti, Logopedisti, Fisioterapisti, Terapisti della Neuropsicomotorietà, Terapisti Occupazionali, Educatori Professionali, Infermieri.

Segreteria Scientifica
Dr. Angela Massaghi
Neuropsicologia Infantile
Direttore U.O.C. di Psicopatologia dello Sviluppo
Referente Scientifico di Polo
I.R.C.C.S. “E. Medea” Polo di Ostuni - Brindisi

10 SETTEMBRE 2011

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| Insegnamento clinico dei Disturbi d’Ansia in età evolutiva
Dr. Angela Massaghi |
| 10.00             |
| La Terapia Cognitivo Comportamentale nei Disturbi d’Ansia in età evolutiva
Dr. Angela Massaghi |
| 12.00             |
| Dalla teoria alla pratica: presentazione di casi clinici
Tutor: Drs. Laura Guarnieri, Dr. Angelina Massaghi, Dr. Dàrda Fettina |
| 15.00             |
| Pausa pranzo       |

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| Laboratorio di gruppo: La teoria del modello interattivo cognitivo comportamentale nei Disturbi d’Ansia in età evolutiva
Tutor: Drs. Laura Guarnieri, Dr. Angelina Massaghi, Dr. Dàrda Fettina |
| 17.00                |
| Discussione          |
| 17.30                |
| Riflessioni conclusive
Tutor: Drs. Laura Guarnieri, Dr. Angelina Massaghi |

17 SETTEMBRE 2011

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| Insegnamento clinico dei Disturbi DDC del Comportamento (ADHD, DOP, DCD)
Dr. Angela Massaghi |
| 10.00             |
| La Terapia Cognitivo Comportamentale nei Disturbi DDC del Comportamento (ADHD, DOP, DCD)
Dr. Angela Massaghi |
| 12.00             |
| Dalla teoria alla pratica: presentazione di casi clinici
Tutor: Drs. Claudia Vicino, Dr. Angelina Massaghi, Dr. Dàrda Fettina |
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| 17.00                |
| Discussione          |
| 17.30                |
| Riflessioni conclusive
Tutor: Dr. Claudia Vicino, Dr. Angelina Massaghi |

RELATORI

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Per ricevere la newsletter iscriversi al seguente indirizzo:
http://crc.marionegri.it/bonati/adhdnews/subscribe.html

Iniziativa nell’ambito del Progetto di Neuropsichiatria dell’Infanzia e dell’Adolescenza
Il Progetto è realizzato con il contributo, parziale, della Regione Lombardia
(in attuazione della D.G. sanità n. 3250 del 11/04/2011)
Capofila Progetto: UONPIA Azienda Ospedaliera “Spedali Civili di Brescia”
“Condivisione dei percorsi diagnostico-terapeutici per l’ADHD in Lombardia”.  

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