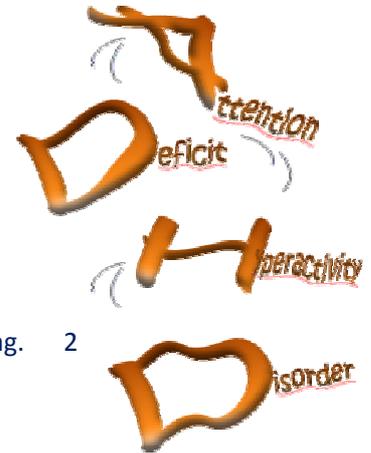


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Res Dev Disabil. 2012;33:2028-39.

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ATTENTION DISORDER OR NOT, PILLS TO HELP IN SCHOOL.

October 9, 2012; http://www.nytimes.com/2012/10/09/health/attention-disorder-or-not-children-prescribed-pills-to-help-in-school.html?pagewanted=1&_r=4&partner=rss&emc=rss&

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GIVE ME MY ADDERALL!

October 10, 2012; <http://www.nytimes.com/2012/10/09/health/attention-disorder-or-not-children-prescribed-pills-to-help-in-school.html?hpw>

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2. Segnalazioni

“SINDROME DA DEFICIT ATTENTIVO ED IPERATTIVITÀ”

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“ATTENZIONE ED EMOZIONI: LA COMPONENTE AFFETTIVO RELAZIONALE NEL DISTURBO DA DEFICIT DELL'ATTENZIONE E IPERATTIVITÀ”

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BIBLIOGRAFIA ADHD SETTEMBRE 2012

Acad Pediatr. 2012 Sep.

PARENTAL STRAIN, PARENTAL HEALTH, AND COMMUNITY CHARACTERISTICS AMONG CHILDREN WITH ATTENTION DEFICIT-HYPERACTIVITY DISORDER.

Hinojosa MS, Hinojosa R, Fernandez-Baca D, et al.

OBJECTIVE: It has been documented that parenting a child with attention deficit-hyperactivity disorder (ADHD) can cause family strain, but less is known about the added stress of additional child health diagnoses on levels of strain. This study explores the relationship between family stressors (such as child comorbid conditions) and family resources (such as social support, community characteristics, and parental health) on parental strain.

METHODS: We used the 2007 National Survey of Children's Health (NSCH) to identify children with ADHD and other comorbid mental and physical health conditions (n = 5473). Descriptive, bivariate, and multivariate analyses were conducted to explore the association between parental strain, social support, mother's mental health, and neighborhood amenities within groups of children with ADHD and comorbid conditions.

RESULTS: Parental strain was greatest when ADHD was paired with a conduct disorder, physical disorder, or other mental health disorder. Specifically, parental strain was greatest for children with ADHD plus a comorbid conduct disorder compared with ADHD alone. It was also greater for children with other mental and physical health diagnoses compared with children with ADHD alone. Better mental health of mothers in the sample is related to reduced parental strain. Greater access to social support and neighborhood amenities also are related to reduced parental strain.

CONCLUSIONS: Greater levels of social support and better mental health of parents is associated with decreased strain. Interventions aimed at relieving stress and building strategies to improve mental health can be beneficial for families with children with ADHD and comorbid conditions.

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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.

ADHD Atten Deficit Hyperact Disord. 2012;4:153-58.

ANXIETY AND METHYLPHENIDATE IN ATTENTION DEFICIT HYPERACTIVITY DISORDER: A DOUBLE-BLIND PLACEBO-DRUG TRIAL.

Moshe K, Karni A, Tirosh E.

To examine the relationship between attention and anxiety and the response to methylphenidate in children with attention deficit hyperactivity disorder (ADHD), a total of 57 boys, between the ages of 7-12 years, were assessed for their attention and level of anxiety. Methylphenidate was administered for a week in a randomized double-blind drug/placebo-drug cross-over design. The levels of anxiety were evenly distributed between the inattentive and hyperactive/impulsive types. Anxiety was significantly correlated with the attention as reported by both teachers and parents. The response to methylphenidate was inversely correlated with the reported anxiety level only in boys with the hyperactive/impulsive and combined types. The higher the level of anxiety, the lower level of response to methylphenidate was observed. In the assessment and treatment of children with ADHD, the level of anxiety should be evaluated and taken into account while planning and monitoring treatment regimen.

Aggress Behav. 2012 Sep.

STUDY OF THE CATECHOL-O-METHYLTRANSFERASE (COMT) GENE WITH HIGH AGGRESSION IN CHILDREN.

Hirata Y, Zai CC, Nowrouzi B, et al.

The etiology of childhood-onset aggression (COA) is poorly understood, but early COA can be considered as a strong risk factor for adult delinquency and criminal behavior. Callous-unemotional (CU) traits have been proposed as a developmental model of antisocial behavior. Catechol O-methyltransferase (COMT) has been associated with aggression, attention deficit/hyperactivity disorder (ADHD), and other psychiatric disorders. We report an association study between COMT single-nucleotide polymorphisms (SNPs), childhood aggression, and the CU trait in our sample of 144 children with scores at or exceeding the 90th percentile on the aggression subscale of the parent-reported Child Behavior Checklist and the Teacher's Report Form. The genotype analysis of rs6269 showed nominally significant association ($P = .019$) and rs4818 showed a trend ($P = .064$) with COA. Trends were observed for rs6269 and rs4818 with CU scores ($P < .10$) as well. The analyses stratified by ADHD, or gender showed no significant results. This is the first report to our knowledge evaluating COMT SNPs with the phenotype of high aggression in children with a possible role for the COMT marker in CU traits. Given the importance of CU traits in antisocial behavior, further investigation of COMT is warranted. Aggr. Behav. 00:1-7, 2012.

Arch Gen Psychiatry. 2012;69:952-61.

COMMON AND UNIQUE THERAPEUTIC MECHANISMS OF STIMULANT AND NONSTIMULANT TREATMENTS FOR ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Schulz KP, Fan J, Bedard ACV, et al.

Context: Attention-deficit/hyperactivity disorder (ADHD) is a highly prevalent and impairing psychiatric disorder that affects both children and adults. There are Food and Drug Administration - approved stimulant and nonstimulant medications for treating ADHD; however, little is known about the mechanisms by which these different treatments exert their therapeutic effects.

Objective: To contrast changes in brain activation related to symptomatic improvement with use of the stimulant methylphenidate hydrochloride vs the nonstimulant atomoxetine hydrochloride.

Design: Functional magnetic resonance imaging before and after 6 to 8 weeks of treatment with methylphenidate ($n = 18$) or atomoxetine ($n = 18$) using a parallelgroups design.

Setting: Specialized ADHD clinical research program at Mount Sinai School of Medicine, New York, New York.

Participants: Thirty-six youth with ADHD (mean [SD] age, 11.2 [2.7] years; 27 boys) recruited from randomized clinical trials.

Main Outcome Measures: Changes in brain activation during a go/no-go test of response inhibition and investigator-completed ratings on the ADHD Rating Scale-IV-Parent Version.

Results: Treatment with methylphenidate vs atomoxetine was associated with comparable improvements in both response inhibition on the go/no-go test and mean (SD) improvements in ratings of ADHD symptoms (55% [30%] vs 57% [25%]). Improvement in ADHD symptoms was associated with common reductions in bilateral motor cortex activation for both treatments. Symptomatic improvement was also differentially related to gains in task-related activation for atomoxetine and reductions in activation for methylphenidate in the right inferior frontal gyrus, left anterior cingulate/supplementary motor area, and bilateral posterior cingulate cortex. These findings were not attributable to baseline differences in activation.

Conclusions: Treatment with methylphenidate and atomoxetine produces symptomatic improvement via both common and divergent neurophysiologic actions in frontoparietal regions that have been implicated in the pathophysiology of ADHD. These results represent a first step in delineating the neurobiological basis of differential response to stimulant and nonstimulant medications for ADHD.

Attachment & Human Development. 2012 Jul;14:405-23.

ADHD-LIKE SYMPTOMS AND ATTACHMENT IN INTERNATIONALLY ADOPTED CHILDREN.

Abrines N, Barcons N, Marre D, et al.

Internationally adopted children seem to be more likely to show ADHD-like symptoms than non-adopted children. The aims of this study were to explore the existence of ADHD-like symptoms and/or diagnosis in a sample of internationally adopted children depending on their country of origin and to describe the links that may exist between the display of these symptoms and observed narrative-based attachment patterns. A Catalan sample of 58 adopted children aged 7-8 (24 from Eastern Europe, 23 from China, and 11 from Ethiopia) was assessed with the Behavioral Assessment System for Children to identify ADHD-like symptoms, and the Friends and Family Interview to identify children's attachment patterns. Results indicated that children adopted from Eastern Europe showed a trend toward more hyperactivity and significantly more attention problems than girls adopted from China. Children with a secure attachment showed significantly less attention problems and a trend toward less hyperactivity. More studies focusing on the etiology and treatment of these symptoms in adopted children are needed.

Atten Defic Hyperact Disord. 2012 Sep.

SEPARATE AND OVERLAPPING RELATIONSHIPS OF INATTENTION AND HYPERACTIVITY/IMPULSIVITY IN CHILDREN AND ADOLESCENTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER .

Smith LC, Tamm L, Hughes CW, et al.

There is debate regarding the dimensional versus categorical nature of attention-deficit/hyperactivity disorder (ADHD). This study utilized confirmatory factor analysis to examine this issue. ADHD symptoms rated on interviews and rating scales from a large sample of individuals (ages 3-17, 74 % male, 75 % Caucasian) with ADHD were examined (n = 242). Four potential factor structures were tested to replicate prior findings in a sample with a wide age range and included only participants who met DSM-IV-TR diagnostic criteria for ADHD. Correlations with executive function measures were performed to further assess the separability and validity of the derived factors. The data support a bifactor model with a general ADHD factor and two specific factors, inattention and hyperactivity/impulsivity. Importantly, the individual factors were also differentially correlated with executive functioning measures. This study adds to a growing literature suggesting both a general component to ADHD, as well as dimensional traits of inattention and hyperactivity/impulsivity, associated with distinct executive functioning profiles. The presence of a general underlying factor contraindicates separating the inattentive and combined subtypes of ADHD into distinct disorders.

Aust New Zealand J Psychiatry. 2012 Aug;46:697-99.

GETTING IN EARLY: IDENTIFICATION OF RISK IN EARLY CHILDHOOD.

Newman L.

Recent discussion about the potential risks and benefits of screening 3-year-old children for signs of psychosocial and developmental problems raises important questions about the concept of early intervention. Whilst it seems that the focus on youth mental health and early intervention for that age group has become a priority issue, the notion of earlier mental health problems and the need for intervention have been sidelined. Various commentators have stated that it is inadvisable to screen young children, that it leads to the use of stigmatizing, diagnostic labels, and that it is not possible to identify mental health problems in pre-school children. It has been stated that child psychiatrists have contributed to an epidemic of inappropriate diagnoses, such as attention deficit hyperactivity disorder (ADHD) and juvenile-onset bipolar disorder, with the implication that screening young children can only contribute to this. Early screening and identification of developmental risk is based on an understanding of the importance of early development and normative developmental processes. Parents and carers frequently seek professional advice about their infant's or child's development, and can benefit from support and psychoeducation about normal developmental milestones and challenges. Early adversity, including attachment disruption, maltreatment and neglect, are associated with poor developmental outcomes and increased risks for the range of mental disorders. Developmentally informed formulation resists premature diagnosis and reductionist models of mental disorder. Concerns about the perceived over use of the categories of ADHD and juvenile-onset bipolar disorder are cases in point where developmentalists have argued that there are possible multiple pathways to the development of syndromes of behavioral and emotional dysregulation. Intervention in the infant and early childhood period is a key strategy in the prevention of adverse psychosocial outcomes and mental disorder. Screening and identification, therefore, is only one component of a much-needed infant mental health system of developmentally informed early intervention. Whilst describing this as a 'mental illness check for toddlers' is misleading and alarmist, it reflects poor understanding of early risk and the difficulty of promoting the better message of a 'development and attachment check' for infants and young children. Promotion of healthy child development and better mental health outcomes starts with an understanding of developmental processes and context- concepts that inform our understanding of psychological and emotional disorders.

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BMC Medicine. 2012;99.

A SYSTEMATIC REVIEW AND ANALYSIS OF LONG-TERM OUTCOMES IN ATTENTION DEFICIT HYPERACTIVITY DISORDER: EFFECTS OF TREATMENT AND NON-TREATMENT.

Shaw M, Hodgkins P, Caci H, et al.

Background: In childhood, attention deficit/hyperactivity disorder (ADHD) is characterized by age-inappropriate levels of inattentiveness/disorganization, hyperactivity/impulsiveness, or a combination thereof. Although the criteria for ADHD are well defined, the long-term consequences in adults and children need to be more comprehensively understood and quantified. We conducted a systematic review evaluating the long-term outcomes (defined as 2 years or more) of ADHD with the goal of identifying long-term outcomes and the impact that any treatment (pharmacological, non-pharmacological, or multimodal) has on ADHD long-term outcomes.

Methods: Studies were identified using predefined search criteria and 12 databases. Studies included were peer-reviewed, primary studies of ADHD longterm outcomes published between January 1980 to December 2010. Inclusion was agreed on by two independent researchers on review of abstracts or full text. Published statistical comparison of outcome results were summarized as poorer than, similar to, or improved versus comparators, and quantified as percentage comparisons of these categories.

Results: Outcomes from 351 studies were grouped into 9 major categories: academic, antisocial behavior, driving, non-medicinal drug use/addictive behavior, obesity, occupation, services use, self-esteem, and social function outcomes. The following broad trends emerged: (1) without treatment, people with ADHD had poorer long-term outcomes in all categories compared with people without ADHD, and (2) treatment for ADHD improved long-term outcomes compared with untreated ADHD, although not usually to normal levels. Only English-language papers were searched and databases may have omitted relevant studies.

Conclusions: This systematic review provides a synthesis of studies of ADHD long-term outcomes. Current treatments may reduce the negative impact that untreated ADHD has on life functioning, but does not usually 'normalize' the recipients.

BMJ Open. 2012;2.

Protocol Evaluating the effectiveness of a school-based group programme for parents of children at risk of ADHD: the 'Parents, Teachers and Children WORKing Together (PATCHWORK)' cluster RCT protocol.

Sayal K, Daley D, James M, et al.

INTRODUCTION: Early intervention for childhood behavioural problems may help improve health and educational outcomes in affected children and reduce the likelihood of developing additional difficulties. The National Institute for Health and Clinical Excellence guidelines for attention deficit/hyperactivity disorder (ADHD), a common childhood behavioural disorder, recommend a stepped care approach for the identification and management of these problems. Parents of children with high levels of hyperactivity and inattention may benefit from intervention programmes involving behavioural management and educational approaches. Such interventions may be further enhanced by providing training and feedback to teachers about the strategies discussed with parents. In relation to children with high levels of hyperactivity, impulsiveness and inattention, we aim to test the feasibility and effectiveness of a parenting programme (with and without an accompanying teacher session) in primary schools.

METHODS AND ANALYSIS: This clustered (at the level of school) randomised controlled trial (RCT) focuses on children in their first four school years (ages 4-8 years) in the East Midlands area of England. Parents will complete a screening measure, the Strengths and Difficulties Questionnaire, to identify children with high levels of hyperactivity/inattention. Three approaches to reducing hyperactivity and attention problems will be compared: a group programme for parents (parent-only intervention); group programme for parents combined with feedback to teachers (combined intervention); and waiting list control (no intervention). Differences between arms on the short version of Conners' Parent and Teacher Rating Scales Revised will be compared and also used to inform the sample size required for a future definitive cluster RCT. A preliminary cost-effectiveness analysis will also be conducted.

ETHICS AND DISSEMINATION: The outcomes of this study will inform policy makers about the feasibility, acceptability and effectiveness of delivering targeted behavioural interventions within a school setting. The study has received ethical approval from the University of Nottingham Medical School Ethics Committee.

TRIAL REGISTRATION: ISRCTN87634685

Brain Dev. 2012;34:723-30.

FOCAL EEG ABNORMALITIES MIGHT REFLECT NEUROPATHOLOGICAL CHARACTERISTICS OF PERSISTENT DEVELOPMENTAL DISORDER AND ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Kawatani M, Hiratani M, Kometani H, et al.

Neurophysiological characteristics in electroencephalograms (EEG) were investigated for patients with pervasive developmental disorder (PDD) and for patients with attention-deficit/hyperactivity disorder (AD/HD). This study examined 64 PDD children and 22 AD/HD children with no history of epilepsy or progressive neurological or psychiatric disorder. We used multivariate analysis to compare EEG abnormalities, clinical symptoms, and intelligence levels between PDD and AD/AD patient groups. Paroxysmal discharges at the frontopolar-frontal (Fp-F) brain regions and background EEG abnormalities tended to be detected preferentially in the PDD group, although paroxysmal discharges at central-temporal (C-T) regions tended to be detected preferentially in the AD/HD group. The paroxysmal discharges observed in patients expressing persistence and impulsivity are apparently localized respectively in the Fp-F and C-T regions. A combination of EEG abnormalities, including background EEG abnormalities and paroxysmal discharges at Fp-F and C-T regions, might be useful diagnostic hallmarks to distinguish PDD with AD/HD from AD/HD alone using a logistic regression model. The dysfunction of specific brain areas

associated with EEG abnormalities might explain characteristics of clinical symptoms observed in PDD and AD/HD patients.

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Br J Psychiatry. 2012;201:207-14.

CIGARETTE SMOKING AS A RISK FACTOR FOR OTHER SUBSTANCE MISUSE: 10-YEAR STUDY OF INDIVIDUALS WITH AND WITHOUT ATTENTION-DEFICIT HYPERACTIVITY DISORDER.

Biederman J, Petty CR, Hammerness P, et al.

Background: We previously documented that cigarette smoking is a risk factor for subsequent alcohol and drug misuse and dependence in adolescent girls with attention-deficit hyperactivity disorder (ADHD).

Aims: To revisit this hypothesis with a large longitudinal sample of both genders followed up for 10 years into young adulthood.

Method: We used data from two identically designed, longitudinal, case-control family studies of boys and girls with and without ADHD ascertained from psychiatric and paediatric sources. We studied 165 individuals with ADHD and 374 controls followed up longitudinally and masked for 10 years. We assessed ADHD, smoking and substance use status using structured diagnostic interviews. We tested the association between cigarette smoking and subsequent substance use outcomes using Cox proportional hazard regression models.

Results: Youth with ADHD who smoked cigarettes (n=27) were significantly more likely to subsequently develop drug misuse and dependence compared with youth with ADHD who did not smoke (n = 138, P<0.05).

Conclusions: These results confirm that cigarette smoking increases the risk for subsequent drug and alcohol use disorders among individuals with ADHD. These findings have important public health implications, and underscore the already pressing need to prevent smoking in children with ADHD.

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Child's Nerv Syst. 2012;1-4.

NEUROFIBROMATOSIS TYPE 1 (NF1) ASSOCIATED WITH TUMOR OF THE CORPUS CALLOSUM.

Pascual-Castroviejo I, Pascual-Pascual SI.

Introduction: Neurofibromatosis type 1 (NF1), one of the most common neurocutaneous disorders, is a multisystemic disease associated with tumors in any organ of the body, especially in the central nervous system and also the peripheral nervous system. Pilocytic astrocytomas have been described in almost all intracranial regions in patients with NF1. However, only a few patients with NF1 and tumor of the corpus callosum have been reported to date.

Material and methods: An 11-year-old white Spanish boy was evaluated due to a family history of NF1 and low performance test scores in school. He was studied from the neurological and intellectual level points of view.

Results: Magnetic resonance (MR) study revealed a tumor in the anterior-middle portion of the corpus callosum and a Wechsler Intelligence Scale for Children-Revised showed verbal IQ of 92, a performance IQ of 108, and a total IQ of 100. In addition, he showed attention deficit and hyperactivity disorder.

Conclusions: Tumors of corpus callosum in patients with NF1 are very uncommon. The patient presented in this paper consulted due to family history of NF1, progressive hyperactivity, and below average school performance. The MR study showed tumor in the corpus callosum. Tumor histology was not investigated.

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Child Neuropsychol. 2012 Sep;18:449-66.

VERBAL LEARNING AND MEMORY AS MEASURED BY THE REY-AUDITORY VERBAL LEARNING TEST: ADHD WITH AND WITHOUT LEARNING DISABILITIES.

Vakil E, Blachstein H, Wertman-Elad R, et al.

The primary purpose of the present study is to examine the effects of attention deficits, learning disability, and the combined effects of both on the learning and memory processes, as measured by the Rey Auditory Verbal Learning Test (AVLT). Thirty children (age range 12–17) diagnosed with attention deficit/hyperactivity disorder (ADHD), 18 children (age range 11–17) diagnosed with learning disabilities (LD), and 64 children (age range 12–17) diagnosed with ADHD as well as with LD, and 28, 18, and 62 matched controls, respectively, participated in this study. It was found that the children diagnosed with ADHD did not differ in any of the verbal learning and memory measures derived from the Rey AVLT. The group with LD was impaired in the overall number of words recalled across the learning phase. Performance of the children diagnosed with ADHD +LD showed a similar impairment as the group with LD (i.e., overall amount of words learned) and, in addition, their retrieval efficiency was also impaired. In conclusion, this study indicates that verbal memory is preserved in children with ADHD if they have no LD and their intelligence is in the normal range or above. LD by itself leads to difficulties in acquisition, but the combination of ADHD+LD leads to additional impairment in retrieval processes.

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Child Neuropsychol. 2012 Sep;18:467-86.

RD, ADHD, AND THEIR COMORBIDITY FROM A DUAL ROUTE PERSPECTIVE.

de Jong CGW, Licht R, Sergeant JA, et al.

In order to achieve further insight into the comorbidity of reading disorder (RD) and attention deficit/hyperactivity disorder (ADHD), lexical processing and rapid naming were studied in RD and ADHD. The Dual Route Cascaded model postulates that lexical processing contains two parallel processes: lexical route processing and sublexical route processing. An orthographic decision task and a phonological decision task were used to measure lexical and sublexical route processing, respectively. In addition, a rapid naming task was used to compare 27 children with RD, 18 children with ADHD, 20 children with ADHD+RD, and 29 controls. RD and ADHD shared impairments in accuracy of orthographic and phonological decision making as well as in rapid naming, which suggest that RD and ADHD may be overlapping disorders that share deficits in both lexical route and sublexical route processing. RD was dissociated from ADHD by being slower in both orthographical and phonological decision making that indicates unique deficits in RD on lexical and sublexical speed.

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Child Neuropsychol. 2012 Sep;18:487-505.

HYPERACTIVITY IN BOYS WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER (ADHD): THE ASSOCIATION BETWEEN DEFICIENT BEHAVIORAL INHIBITION, ATTENTIONAL PROCESSES, AND OBJECTIVELY MEASURED ACTIVITY.

Alderson RM, Rapport MD, Kasper LJ, et al.

Contemporary models of ADHD hypothesize that hyperactivity reflects a byproduct of inhibition deficits. The current study investigated the relationship between children's motor activity and behavioral inhibition by experimentally manipulating demands placed on the limited-resource inhibition system. Twenty-two boys (ADHD = 11, TD = 11) between the ages of 8 and 12 years completed a conventional stop-signal task, two choice-task variants (no-tone, ignore-tone), and control tasks while their motor activity was measured objectively by actigraphs placed on their nondominant wrist and ankles. All children exhibited significantly higher activity rates under all three experimental tasks relative to control conditions, and children with ADHD moved significantly more than typically developing children across conditions. No differences in activity level were observed between the inhibition and noninhibition experimental tasks for either group, indicating that activity level was primarily associated with basic attentional rather than behavioral inhibition processes.

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Clin Neuropharmacol. 2012 Sep;35:227-30.

TREATMENT WITH PALIPERIDONE IN CHILDREN WITH BEHAVIOR DISORDERS PREVIOUSLY TREATED WITH RISPERIDONE: AN OPEN-LABEL TRIAL.

Fernandez-Mayoralas DM, Fernandez-Jaen A, Munoz-Jareno N, et al.

OBJECTIVES: Paliperidone is the main active metabolite of risperidone, with certain pharmacokinetic and tolerability characteristics that suggest it may be used in special groups, such as children. Our purpose is to document the clinical experience with the use of paliperidone in children with severe behavior problems that were partially refractory to treatment with risperidone and psychological treatment.

MATERIALS AND METHODS: This is a prospective 16-week open-label study of paliperidone in 18 patients (mean age, 13.4 years) with severe and excessive irritability in the context of generalized developmental disorders or attention-deficit/hyperactivity disorder. Patients who had exhibited an inadequate response to treatment with risperidone (1.5-2 mg/d) over a treatment period of 6 months were treated with paliperidone at 3 mg/d. Symptom severity at the beginning of the study and in response to paliperidone were rated with the Clinical Global Impression (CGI) scale and Overt Aggression Scale.

RESULTS: A significant difference was documented between the mean score before treatment and the score after the drug intervention with paliperidone. There was a noticeable clinical improvement in 50% of the cases, as reflected in the CGI. Severity of aggressive behavior, as assessed by the Overt Aggression Scale, decreased significantly after paliperidone treatment: mean (SD), 2.7 (0.92) before treatment versus 1.5 (0.60) after treatment. This compound was safe and well tolerated.

CONCLUSION: Half of the patients clearly responded to paliperidone extended release. Tolerance to this treatment was distinctly better than to risperidone. These preliminary results lay the foundation for further research into the use of paliperidone to treat pediatric disruptive behavior disorders within the context of randomized, double-blind, controlled clinical trials.

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Clin Ter. 2012 Jul;163:e189-e192.

ADHD OR CHILDHOOD-ONSET SCHIZOPHRENIA? A CASE REPORT.

Lia C, Cavaggioni G.

In the last decades there was an increasing interest in early detection of prodromal symptoms in schizophrenia and, more specifically, in detecting subjects at high risk for psychosis. However, especially in case of childhood-onset schizophrenia (COS), sometimes it is possible to don't recognize its early symptoms and to ascribe the observed clinical picture to other diseases, with consequent delay in diagnosis and treatment of these patients. In this case report we want to underline the importance of an early detection of schizophrenia, with a focus on differential diagnosis between Attention Deficit/Hyperactivity Disorder and schizophrenia.

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Clin Neurophysiol. 2012;123:1989-2005.

FIRST CLINICAL TRIAL OF TOMOGRAPHIC NEUROFEEDBACK IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: EVALUATION OF VOLUNTARY CORTICAL CONTROL.

Liechti MD, Maurizio S, Heinrich H, et al.

Objective: Tomographic neurofeedback (tNF) training was evaluated as a treatment for attention-deficit/hyperactivity disorder (ADHD). To investigate the specificity of the treatment, outcomes were related to learning during tNF.

Methods: Thirteen children with ADHD trained over 36 lessons to regulate their brain activity in the anterior cingulate cortex (ACC) using both theta-beta frequency and slow cortical potential (SCP) protocols. Thirty-channel electroencephalogram (EEG) was used to calculate low-resolution electromagnetic tNF and to assess the course of the training. Pre- and post-assessments included questionnaires, tests of attention, EEG recordings, and cognitive event-related potentials.

Results: Despite behavioural improvement and EEG artefact reduction, only partial learning was found for ACC parameters. Successful regulation was observed only for a simple feedback variant of SCP training,

but with ACC-specific effects. Over training, resting EEG analysis indicated individual frequency normalisation rather than unidirectional changes across subjects.

Conclusions: These results indicate that clinical improvement after ACC-tNF training can parallel artefact reduction without substantial learning of improved cortical control. However, individual normalisation of resting EEG activity and partial SCP control proved possible in this specific brain region affected in ADHD using tNF. Further studies are needed to clarify which critical aspects mediate region-specific learning in neurofeedback.

Significance: This study is the first to systematically investigate tNF in children suffering from a psychiatric disorder.

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Cochrane Database Syst Rev. 2012;9:CD008559.

ATYPICAL ANTIPSYCHOTICS FOR DISRUPTIVE BEHAVIOUR DISORDERS IN CHILDREN AND YOUTHS.

Loy JH, Merry SN, Hetrick SE, et al.

BACKGROUND: Disruptive behaviour disorders include conduct disorder, oppositional defiant disorder and disruptive behaviour not otherwise specified. Attention deficit hyperactivity disorder (ADHD) is frequently associated with disruptive behaviour disorders. The difficulties associated with disruptive behaviour disorders are demonstrated through aggression and severe behavioural problems. These often result in presentation to psychiatric services and may be treated with medications such as atypical antipsychotics. There is increasing evidence of a significant rise in the use of atypical antipsychotics for treating disruptive behaviour disorders in child and adolescent populations.

OBJECTIVES: To evaluate the effect and safety of atypical antipsychotics, compared to placebo, for treating disruptive behaviour disorders in children and youths.

SEARCH METHODS: We searched the following databases in August 2011: CENTRAL (2011, Issue 3), MEDLINE (1948 to August Week 1), EMBASE (1980 to 2011 Week 32), PsycINFO (1806 to August Week 2 2011), CINAHL (1937 to current), ClinicalTrials.gov (searched 15 August 2011), Australian New Zealand Clinical Trials Registry (ANZCTR) (searched 15 August 2011), CenterWatch (searched 15 August 2011) and ICTRP (searched 15 August 2011).

SELECTION CRITERIA: We included randomised controlled trials with children and youths up to and including the age of 18, in any setting, with a diagnosis of a disruptive behaviour disorder. We included trials where participants had a comorbid diagnosis of attention deficit hyperactivity disorder, major depression or an anxiety disorder.

DATA COLLECTION AND ANALYSIS: Two review authors independently selected the studies and disagreements were resolved by discussion. Two review authors extracted data independently. One review author entered data into Review Manager software and another checked it. We contacted trial authors for information about adverse effects and to provide missing data.

MAIN RESULTS: We included eight randomised controlled trials, spanning 2000 to 2008. Seven assessed risperidone and one assessed quetiapine. Three of the studies were multicentre. Seven trials assessed acute efficacy and one assessed time to symptom recurrence over a six-month maintenance period. We performed meta-analyses for the primary outcomes of aggression, conduct problems and weight changes but these were limited by the available data as different trials reported either mean change scores (average difference) or final/post-intervention raw scores and used different outcome measures. We also evaluated each individual trial's treatment effect size where possible, using Hedges' g. For aggression, we conducted two meta-analyses. The first included three trials (combined n=238) using mean difference (MD) on the Aberrant Behaviour Checklist (ABC) Irritability subscale. Results yielded a final mean score with treatment that was 6.49 points lower than the post-intervention mean score with placebo (95% confidence interval (CI) -8.79 to -4.19). The second meta-analysis on aggression included two trials (combined n=57) that employed two different outcome measures (Overt Aggression Scale (modified) (OAS-M) and OAS, respectively) and thus we used a standardised mean difference. Results yielded an effect estimate of -0.18 (95% CI -0.70 to 0.34), which was statistically non-significant. We also performed two meta-analyses for conduct problems. The first included two trials (combined n=225), both of which employed the Nisonger Child Behaviour Rating Form - Conduct Problem subscale (NCBRF-CP). The results yielded a final mean score with treatment that was 8.61 points lower than that with placebo (95% CI -11.49 to -5.74). The

second meta-analysis on conduct problems included two trials (combined n = 36), which used the Conners' Parent Rating Scale - Conduct Problem subscale (CPRS-CP). Results yielded a mean score with treatment of 12.67 lower than with placebo (95% CI -37.45 to 12.11), which was a statistically non-significant result. With respect to the side effect of weight gain, a meta-analysis of two studies (combined n = 138) showed that participants on risperidone gained on average 2.37 kilograms more than those in the placebo group over the treatment period (MD 2.37; 95% CI 0.26 to 4.49). For individual trials, there was a range of effect sizes (ranging from small to large) for risperidone reducing aggression and conduct problems. The precision of the estimate of the effect size varied between trials.

AUTHORS' CONCLUSIONS: There is some limited evidence of efficacy of risperidone reducing aggression and conduct problems in children aged 5 to 18 with disruptive behaviour disorders in the short term. For aggression, the difference in scores of 6.49 points on the ABC Irritability subscale (range 0 to 45) may be clinically significant. For conduct problems, the difference in scores of 8.61 points on the NCBRF-CP (range 0 to 48) is likely to be clinically significant. Caution is required due to the limitations of the evidence and the small number of relevant high-quality studies. The findings from the one study assessing impact in the longer term suggest that the effects are maintained to some extent (small effect size) for up to six months. Inadequately powered studies produced non-significant results. The evidence is restricted by heterogeneity of the population (including below average and borderline IQ), and methodological issues in some studies, such as use of enriched designs and risk of selection bias. No study addressed the issue of pre-existing/concurrent psychosocial interventions, and comorbid stimulant medication and its dosage was only partially addressed. There is currently no evidence to support the use of quetiapine for disruptive behaviour disorders in children and adolescents. It is uncertain to what degree the efficacy found in clinical trials will translate into real life clinical practice. Participants in the studies were recruited from clinical services but those who agree to take part in the clinical trials are a subset of the overall population presenting for care. There are no research data for children under five years of age. Further high-quality research is required with large samples of clinically representative youths and long-term follow-up to replicate current findings.

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Compr Psychiatry. 2012 Sep.

FATHER'S PARENTING AND FATHER-CHILD RELATIONSHIP AMONG CHILDREN AND ADOLESCENTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Chang LR, Chiu YN, Wu YY, et al.

OBJECTIVE: Western literature documents impaired father-child interactions in addition to strong evidence of impaired mother-child interactions in children with attention-deficit/hyperactivity disorder (ADHD). However, the parenting process of fathers and their engagement in the Asian family with children with ADHD remain unexplored. The authors compared fathering and father-child relationships between children with ADHD and those without ADHD and identified the correlates of these paternal measures.

METHODS: Fathering and father-child relationships were compared between 296 children with attention-deficit/hyperactivity disorder (ADHD) and 229 children without ADHD in Taiwan. All child participants and their parents received psychiatric interviews for the diagnosis of ADHD and other psychiatric disorders of the children, and their fathers were assessed for ADHD, anxiety and depressive symptoms. Both the fathers and children reported on the father's parenting style, father-child interactions, behavioral problems at home, and perceived family support.

RESULTS: The results showed that children with ADHD received less affection/care and more overprotection and authoritarian control from their fathers. They had less active interactions with their fathers, more severe behavioral problems at home; and perceived less family support than children without ADHD. Correlates for impaired father-child interactions included childhood ADHD symptoms, any comorbidity, age at assessment, and the father's neurotic personality and depressive symptoms. In addition, the children reported more negatively on fathering and father-child interactions than the fathers.

CONCLUSIONS: Our findings suggest the negative impacts of ADHD on the father's parenting style and father-child interactions. Clinical interventions aimed at improving father-child interactions warrant more attention.

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Curr Treat Options Neurol. 2012;1-14.

UPDATES ON TREATMENT OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: FACTS, COMMENTS, AND ETHICAL CONSIDERATIONS.

Rothenberger A, Rothenberger LG.

Within the last 2 years the bulk of information on evidence based treatments in ADHD was reviewed quite intensively and new empirical studies could be added. This update reports comprehensively about actual and essential facts in the field related to brain development and sensitive periods, predictors of treatment, safety of medication, value of naturalistic studies, new drugs and complementary medicine, behavioral interventions including neurofeedback and psychosocial treatment, treatment of comorbidity, and ethical considerations including preventive aspects. The updated combination of well selected evidence based treatments (ie, pharma plus non-pharma) seems to be clinically and ethically recommended as also suggested by the European and American guidelines on ADHD.

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Dev Neuropsychol. 2012 Jul;37:453-72.

REACTION TIME VARIABILITY IN CHILDREN WITH ADHD SYMPTOMS AND/OR DYSLEXIA.

Gooch D, Snowling MJ, Hulme C.

Reaction time (RT) variability on a Stop Signal task was examined among children with attention deficit hyperactivity disorder (ADHD) symptoms and/or dyslexia in comparison to typically developing (TD) controls. Children's go-trial RTs were analyzed using a novel ex-Gaussian method. Children with ADHD symptoms had increased variability in the fast but not the slow portions of their RT distributions compared to those without ADHD symptoms. The RT distributions of children with dyslexia were similar to those of TD-controls. It is argued that variability in responding may be underpinned by impairments in response preparation or timing during Stop Signal tasks.

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Education & Treatment of Children. 2012 Aug;35:419-30.

A FUNCTION-BASED CLASSROOM BEHAVIOR INTERVENTION USING NON-CONTINGENT REINFORCEMENT PLUS RESPONSE COST.

Nolan JD, Filter KJ.

This study investigated the use of noncontingent reinforcement with response cost to reduce problem verbal and physical behavior maintained by automatic reinforcement in an internationally adopted, post-institutionalized student diagnosed with ADHD. Systematic direct observation was employed to measure behavior in a single-subject withdrawal design. Results indicate this function-based intervention was effective when used in a school and implemented with fidelity by a paraprofessional.

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Environ Health Perspect. 2012 Oct;120:1456-61.

PRENATAL METHYLMERCURY, POSTNATAL LEAD EXPOSURE, AND EVIDENCE OF ATTENTION DEFICIT/HYPERACTIVITY DISORDER AMONG INUIT CHILDREN IN ARCTIC QUEBEC.

Boucher O, Jacobson SW, Plusquellec P, et al.

Background: Prenatal exposure to methylmercury (MeHg) and polychlorinated biphenyls (PCBs) has been associated with impaired performance on attention tasks in previous studies, but the extent to which these cognitive deficits translate into behavioral problems in the classroom and attention deficit/hyperactivity disorder (ADHD) remains unknown. By contrast, lead (Pb) exposure in childhood has been associated with ADHD and disruptive behaviors in several studies.

Objectives: In this study we examined the relation of developmental exposure to MeHg, PCBs, and Pb to behavioral problems at school age in Inuit children exposed through their traditional diet.

Methods: In a prospective longitudinal study conducted in the Canadian Arctic, exposure to contaminants was measured at birth and at school age. An assessment of child behavior (n=279; mean age=11.3 years)

was obtained from the child's classroom teacher on the Teacher Report Form (TRF) from the Child Behavior Checklist, and the Disruptive Behavior Disorders Rating Scale (DBD).

Results: Cord blood mercury concentrations were associated with higher TRF symptom scores for attention problems and DBD scores consistent with ADHD. Current blood Pb concentrations were associated with higher TRF symptom scores for externalizing problems and with symptoms of ADHD (hyperactive-impulsive type) based on the DBD.

Conclusions: To our knowledge, this study is the first to identify an association between prenatal MeHg and ADHD symptomatology in childhood and the first to replicate previously reported associations between low-level childhood Pb exposure and ADHD in a population exposed to Pb primarily from dietary sources.

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Epilepsy Behav. 2012;25:81-91.

DISENGAGEMENT AND INHIBITION OF VISUAL-SPATIAL ATTENTION ARE DIFFERENTLY IMPAIRED IN CHILDREN WITH ROLANDIC EPILEPSY AND PANAYIOTOPOULOS SYNDROME.

Bedoin N, Ciumas C, Lopez C, et al.

We assessed voluntary orientation and reorientation of visuospatial attention in 313 healthy 6- to 22-year-old participants, 30 children suffering from benign epilepsy with centrotemporal spikes (BECTS) and 13 children with Panayiotopoulos syndrome (PS). The developmental section highlights the late development of reorienting skills. Only children with BECTS-R showed a strong tendency toward a rightward bias in attentional orientation. Additionally, a unilateral deficit of disengagement characterizes the patients with BECTS-R and comorbid ADHD. Right rolandic spikes seem to aggravate subclinical reorienting difficulties. Finally, children with PS failed to diffuse inhibition, except in the nearest area outside the attentional focus. This deficit could be attributed to the typical occipital-to-frontal spreading of the spikes in PS. By showing distinct attentional deficiencies according to the epileptic syndrome and the epileptic focus lateralization in BECTS, the results provide new evidence for alterations of attentional mechanisms by interictal epileptic activity, which probably contribute to learning difficulties.

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Eur Addict Res. 2012;18:253-64.

RISK OF MENTAL DISORDERS IN CHILDREN OF PARENTS WITH ALCOHOL OR HEROIN DEPENDENCE: A CONTROLLED HIGH-RISK STUDY.

Vidal SI, Vandeleur C, Rothen S, et al.

Aim: To assess the specific effect of alcohol dependence (AD) or heroin dependence (HD) in patients and their spouses on the risk of psychopathology in their 276 6.0- to 17.9- year-old children (mean 11.3 years).

Methods: The sample included 101 offspring of patients with AD, 23 of patients with HD, and 152 of medical controls, as well as their 2 parents. Participants were assessed using semistructured diagnostic interviews and family history reports by psychologists blind to patient diagnoses.

Results: Children of HD and AD patients had largely elevated rates of recurrent major depressive disorder. Children of HD patients were also at an increased risk for attention deficit hyperactivity disorder and substance use disorders (SUD). There were interactions between SUD in the 2 parents to increase the risk of SUD in offspring.

Conclusions: These results emphasize the need for prompt identification and treatment of these children and highlight the need to pay clinical attention not only to the patient, but also to the co-parent in order to optimize prevention in offspring.

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European Child & Adolescent Psychiatry. 2012 Jul;21:357-59.

Adolescence as a turning point: For better and worse.

Buitelaar JK.

This editorial discusses about adolescence turning point. Adolescence is a transition period between childhood and adulthood that is characterized by major biological, psychological and social challenges and opportunities. The one-year prevalence of any psychiatric disorder in adolescents is considerable and ranges from 15 to 30 %. Psychiatric disorders with onset in childhood or even earlier, such as autism spectrum disorders (ASD) and attention-deficit hyperactivity disorder (ADHD), show a strong persistence through adolescence until adulthood. A longitudinal MRI study revealed that grey matter in the prefrontal cortex peaks in volume during early adolescence and then declines. In contrast, white matter increases in volume through the adolescent years. These and other findings indicate that the prefrontal cortex follows a protracted developmental time course. The differing developmental trajectories of frontal cortex and striatum map onto the developmental differences seen in the onset of impulsive and reward seeking behaviors. The teenage brain is work in progress. We should continue in improving our understanding of what is going on the adolescent's brains, minds, bodies and social world. We need to take the opportunity of the turning point of adolescence: change the worse into the better!

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Eur Child Adolesc Psychiatry. 2012;21:451-57.

TOURETTE SYNDROME IN YOUTH WITH AND WITHOUT OBSESSIVE COMPULSIVE DISORDER AND ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Lebowitz ER, Motlagh MG, Katsovich L, et al.

Chronic tic disorders (TD) are consistently found to have high rates of comorbidity with obsessive-compulsive disorder (OCD) and attention deficit hyperactivity disorder (ADHD). The purpose of this study is to compare the severity of TD only to TD with comorbid OCD or ADHD based on severity of tics, measures of psychopathology and additional comorbid diagnoses. Baseline data from 158 youth with a chronic TD who participated in two longitudinal studies were examined. Fifty-three percent (N = 85) of the youth also met criteria for a diagnosis of OCD, 38.6 % (n = 61) met criteria for ADHD and 24.1 % (N = 38) met criteria for both. Measures of interest addressed severity of tics, symptoms of anxiety, depression, ADHD, psychosocial stress, global functioning and the presence of comorbid diagnoses. Youth with comorbid TD and OCD were characterized by more severe tics, increased levels of depressive and anxious symptoms, heightened psychosocial stress and poorer global functioning. Youth with comorbid TD and ADHD did not differ from those with TD alone on measures of tic severity, but experienced greater psychosocial stress and poorer global functioning. Subjects with comorbid TD and OCD had more internalizing disorders than those without OCD, while those with comorbid ADHD were more likely to meet criteria for oppositional defiant disorder. TD with OCD is a more severe subtype of TD than TD without OCD. TD with ADHD is associated with higher psychosocial stress and more externalizing behaviors. Further research is needed into the underlying relationships between these closely associated conditions.

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Eur J Integr Med. 2010;2:186.

COMPLEMENTARY/ALTERNATIVE TREATMENTS FOR ATTENTION-DEFICIT HYPERACTIVITY DISORDER (ADHD): A REVIEW OF CURRENT LITERATURE.

Roberti Di Sarsina P, Vannacci A, Costa E, et al.

Attention-deficit hyperactivity disorder (ADHD) is the most common neurologic condition in children and comprises a range of behavioral problems, including inattention, hyperactivity, and impulsivity. In most children with ADHD, the cause is unknown, but is thought to be multifactorial. According to the Centers for Disease Control and Prevention (CDC), 7.4% of children ages 3-17 in the United States have been diagnosed with ADHD, totaling 4.7 million children. Conventional therapy is often multimodal including both behavioral therapies and medication. Many of the approved drugs for ADHD are stimulants, which work by increasing brain monoamine levels. In addition, the FDA has recently approved atomoxetine, which is not a stimulant and which acts as a selective norepinephrine reuptake inhibitor. The majority of parents of

children affected by ADHD (from 50% to 70%, according to different studies) resort to Complementary/Alternative Medicine (CAM). Current literature reports some evidence of efficacy on ADHD symptoms for different CAM treatments, such as dietary modifications, physical therapies (massage, acupuncture, medical gymnastics) and lifestyle modifications. This communication will present a review of current literature on CAM treatments for ADHD patients.

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Eur Neuropsychopharmacol. 2012.

KCNIP4 AS A CANDIDATE GENE FOR PERSONALITY DISORDERS AND ADULT ADHD.

Weissflog L, Scholz CJ, Jacob CP, et al.

Attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder in children with striking persistence into adulthood and a high co-morbidity with other psychiatric disorders, including personality disorders (PD). The 4p15.31 region was shown to be associated with ADHD in several genome wide association studies (GWAS). In the present study we also report association of the 4p15.31 locus with Cluster B and Cluster C PD as identified by a pooled genome-wide association study in 400 individuals suffering from PD. The gene coding for the Kv channel-interacting protein 4 (KCNIP4) is located in this region. KCNIP4 is an interaction partner of presenilin and plays a role in a negative feedback loop in the Wnt/(beta)-catenin pathway. Thus, we reasoned it to be a promising candidate gene for ADHD as well as for PD. To clarify the role of KCNIP4 in those disorders, we conducted candidate gene based association studies in 594 patients suffering from adult ADHD and 630 PD patients as compared to 974 healthy control individuals. In the adult ADHD sample, six single markers and one haplotype block revealed to be associated with disease (p values from 0.0079 to 0.049). Seven markers within the KCNIP4 gene showed an association with PD (p values from 0.0043 to 0.0437). The results of these studies suggest a role of KCNIP4 in the etiology of ADHD, PD and other co-morbid disorders.

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Eur Psychiatry. 2012.

THE EFFECT OF SEROTONIN TRANSPORTER GENE PROMOTER POLYMORPHISM ON ADOLESCENT AND ADULT ADHD SYMPTOMS AND EDUCATIONAL ATTAINMENT: A LONGITUDINAL STUDY.

Kiive E, Harro J.

Introduction: The purpose of this longitudinal study was to investigate the relationship between the 5-HTTLPR genotype, symptoms of ADHD in adolescence and adulthood, and educational attainment in a population representative sample. Neuroticism, depressive symptoms and general mental abilities were controlled for as possible confounding factors.

Methods: ADHD symptoms were reported at age 15 and 18 by teachers using the Hyperactivity Scale of af Klinteberg and SNAP-IV, and self-reported at age 25 using the ASRS. Data about education were reported at age 25.

Results: At age 15, subjects with the l/l genotype had more concentration difficulties compared to s-allele carriers, and they also had more inattention symptoms according to SNAP-IV at age 18. These results were not altered by taking neuroticism or depressive symptoms into account. No 5-HTTLPR genotype effect on self-reported ADHD symptoms at age 25 was found. Inattention symptoms in adolescence were associated with lower education in young adulthood. The proportion of subjects with higher education at age 25 was significantly larger among s/s genotype compared to the l/l or s/l genotype.

Conclusions: The l/l genotype of the 5-HTTLPR is associated with inattentive symptoms during adolescence in the general population, and increases the likelihood of inferior educational level in young adulthood.

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Eur Psychiatry. 2012.

PSYCHIATRIC DISORDERS IN LOW BIRTHWEIGHT YOUNG ADULTS. PREVALENCE AND ASSOCIATION WITH ASSESSMENTS AT 11 YEARS.

Elgen IB, Holsten F, Odberg MD.

Objective: To compare mental health of 136 young adults without neurosensory handicaps born with low birthweight (LBW, birthweight less than 2000 g) with 132 adults with normal birthweight (NBW).

Method: A cohort of moderate LBW and NBW young adults were assessed with the Mini-International Neuropsychiatric Interview (MINI) at 19 years and the Children Assessment Schedule (CAS) at 11 years of age.

Results: At 19 years of age, 44 out of 136 (32%) LBW young adults were diagnosed with a psychiatric disorder compared to 10% NBW (OR: 2.8; 95% CI: 1.1, 4.5, P = 0.02). Among the LBW young adults, affective-, anxiety-, ADHD- and antisocial personality disorders were most common, and nine subjects (20%) had more than one diagnosis. Of 97 LBW subjects examined both at 11 and 19 years of age, 54 (56%) were mentally healthy though out adolescence. This was half as many as for controls (OR: 0.6; 95% CI: 0.3 to 0.9).

Conclusion: Moderate LBW was associated with an increased risk of psychiatric disorders in young adulthood. Only half of LBW young adults stayed healthy throughout adolescence.

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Evid Based Ment Health. 2012 Sep.

ATOMOXETINE REDUCES ADHD SYMPTOMS IN CHILDREN WITH AUTISM SPECTRUM DISORDER.

Arnoldthe LE.

FASEB J. 2012;26.

SODIUM BENZOATE INTAKE IN BEVERAGES MAY CONTRIBUTE TO ADHD SYMPTOMS IN COLLEGE STUDENTS.

Beezhold B, Johnston CS.

Adolescents and young adults are the heaviest consumers of soft drinks in the U.S. population, consuming approximately 8% of their total daily energy intake from soft drinks. Recent research has demonstrated a link between sodium benzoate, a major preservative found in many soft drinks, juices, and coffee syrups, and attention deficit symptoms in children. Up to 8% of the American college population report clinically significant levels of ADHD symptoms. We surveyed 473 college students (125 males/326 females) about their intake of major sources of sodium benzoate over the last month, and assessed the presence of attention deficit symptoms using a brief validated ADHD screener. Prior to analysis, 22 participants with a psychiatric diagnosis or use of psychotropic therapy were removed. Sodium benzoate intake (SBI) was positively correlated with the ADHD screener score (n=451, r=.217, p=.000); controlling for age and BMI which were correlated with ADHD scores did not impact this relationship. Moreover, ADHD scores of students in the fourth quartile of SBI were significantly greater than for students in the first quartile (p=.002) and third quartile (p=.035) of intake. College students who consume a high quantity of soft drinks, coffee drinks and other major sources of sodium benzoate may be a vulnerable population for ADHD symptoms.

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Front Syst Neurosci. 2012;6:63.

CLASSIFICATION OF ADHD CHILDREN THROUGH MULTIMODAL MAGNETIC RESONANCE IMAGING.

Dai D, Wang J, Hua J, et al.

Attention deficit/hyperactivity disorder (ADHD) is one of the most common diseases in school-age children. To date, the diagnosis of ADHD is mainly subjective and studies of objective diagnostic method are of great importance. Although many efforts have been made recently to investigate the use of structural and functional brain images for the diagnosis purpose, few of them are related to ADHD. In this paper, we introduce an automatic classification framework based on brain imaging features of ADHD patients and present in detail the feature extraction, feature selection, and classifier training methods. The effects of using different features are compared against each other. In addition, we integrate multimodal image features using multi-kernel learning (MKL). The performance of our framework has been validated in the

ADHD-200 Global Competition, which is a world-wide classification contest on the ADHD-200 datasets. In this competition, our classification framework using features of resting-state functional connectivity (FC) was ranked the 6th out of 21 participants under the competition scoring policy and performed the best in terms of sensitivity and J-statistic.

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Front Syst Neurosci. 2012;1-25.

EVALUATION OF PATTERN RECOGNITION AND FEATURE EXTRACTION METHODS IN ADHD PREDICTION.

Sato JR, Hoexter MQ, Fujita A, et al.

Attention-Deficit/Hyperactivity Disorder is a neurodevelopmental disorder, being one of the most prevalent psychiatric disorders in childhood. The neural substrates associated with this condition, both from structural and functional perspectives, are not yet well established. Recent studies have highlighted the relevance of neuroimaging not only to provide a more solid understanding about the disorder but also for possible clinical support. The ADHD-200 Consortium organized the ADHD-200 global competition making publicly available, hundreds of structural magnetic resonance imaging (MRI) and functional MRI (fMRI) datasets of both ADHD patients and typically developing controls for research use. In the current study, we evaluate the predictive power of a set of three different feature extraction methods and 10 different pattern recognition methods. The features tested were regional homogeneity (ReHo), amplitude of low frequency fluctuations (ALFF) and independent components analysis maps (RSN). Our findings suggest that the combination ALFF+ReHo maps contain relevant information to discriminate ADHD patients from typically developing controls, but with limited accuracy. All classifiers provided almost the same performance in this case. In addition, the combination ALFF+ReHo+RSN was relevant in combined vs inattentive ADHD classification, achieving a score accuracy of 67%. In this latter case, the performances of the classifiers were not equivalent and L2-regularized logistic regression (both in primal and dual space) provided the most accurate predictions. The analysis of brain regions containing most discriminative information suggested that in both classifications (ADHD vs typically developing controls and combined vs inattentive), the relevant information is not confined only to a small set of regions but it is spatially distributed across the whole brain.

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Genes Brain Behav. 2012.

FAMILY HISTORY INTERVIEW OF A BROAD PHENOTYPE IN SPECIFIC LANGUAGE IMPAIRMENT AND MATCHED CONTROLS.

Kalnak N, Peyrard-Janvid M, Sahlen B, et al.

Significantly higher prevalence rates of language, literacy, learning and social-communication problems in relatives of SLI probands. The aim was to study a broader phenotype of language-related diagnoses and problems in three generations of relatives of children with specific language impairment (SLI). Our study is based on a family history interview of the parents of 59 children with SLI and of 100 matched control children, exploring the prevalence of problems related to language, reading, attention, school achievement and social communication as well as diagnoses such as attention-deficit hyperactivity disorder (ADHD), autism, Asperger syndrome, dyslexia, mental retardation, cleft palate and stuttering. The results show a spectrum of language-related problems in families of SLI children. In all three generations of SLI relatives, we found significantly higher prevalence rates of language, literacy and social communication problems. The risk of one or both parents having language-related diagnoses or problems was approximately six times higher for the children with SLI (85%) than for the control children (13%) (odds ratio=37.2). We did not find a significantly higher prevalence of the diagnoses ADHD, autism or Asperger syndrome in the relatives of the children with SLI. However, significantly more parents of the children with SLI had problems with attention/hyperactivity when compared with the parents of controls. Our findings suggest common underlying mechanisms for problems with language, literacy and social communication, and possibly also for attention/hyperactivity symptoms.

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Harefuah. 2012 Jul;151:421-6, 435, 434.

PHARMACOTHERAPY FOR CONDUCT DISORDER IN CHILDREN AND ADOLESCENTS.

Levy T, Bloch Y.

RATIONALE: Conduct disorder (CD) is a common disorder which is typified by a variety of behavioral problems and aggression. Treating CD is a challenge in the field of child and adolescent psychiatry. The use of drugs for this indication is broad despite the lack of systematic knowledge on this subject.

OBJECTIVES: This paper aims to review research data available on the efficacy of the different medication classes and agents for CD and to specify the considerations that should be taken accordingly.

MATERIALS AND METHODS: Trials on the pharmacotherapy of CD in children and adolescents are reviewed from the PubMed database (dated from 1980 until today).

RESULTS: Trials of antipsychotics, lithium, anti-epileptics, stimulants, alfa-2 agonists and beta-blockers were found. The use of typical antipsychotics is accompanied by major side-effects. Research on risperidone, the most investigated agent, shows it to be effective. Limited research with positive results is also available on quetiapine, olanzapine and aripiprazole. Trials of lithium yield contradictory results. Few trials with valproate suggest it to be effective for this indication. There is evidence showing the efficacy of stimulants but substance abuse is a potential risk in this population. The results for other agents are very few.

CONCLUSIONS: There are few well controlled studies of the pharmacotherapy of conduct disorder in children and adolescents. The most proven efficacy is for the atypical antipsychotics. Valproate or lithium may be possible second or third alternatives, based on some supporting evidence. When Attention-Deficit/Hyperactivity Disorder is diagnosed, stimulant use should be considered. Given the adverse effects profile of these agents on the one hand, and the developmental risks of avoiding medication on the other hand, a risk-benefit analysis should be conducted for each patient and adverse effects should be monitored carefully. More research is needed to broaden and deepen the knowledge on this subject.

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Health Serv Res. 2012 Oct;47:1836-60.

THE RELATIONSHIP BETWEEN MENTAL HEALTH DIAGNOSIS AND TREATMENT WITH SECOND-GENERATION ANTIPSYCHOTICS OVER TIME: A NATIONAL STUDY OF U.S. MEDICAID-ENROLLED CHILDREN.

Matone M, Localio R, Huang YS, et al.

OBJECTIVE: To describe the relationship between mental health diagnosis and treatment with antipsychotics among U.S. Medicaid-enrolled children over time.

DATA SOURCES/STUDY SETTING: Medicaid Analytic Extract (MAX) files for 50 states and the District of Columbia from 2002 to 2007.

STUDY DESIGN: Repeated cross-sectional design. Using logistic regression, outcomes of mental health diagnosis and filled prescriptions for antipsychotics were standardized across demographic and service use characteristics and reported as probabilities across age groups over time.

DATA COLLECTION: Center for Medicaid Services data extracted by means of age, ICD-9 codes, service use intensity, and National Drug Classification codes.

PRINCIPAL FINDINGS: Antipsychotic use increased by 62 percent, reaching 354,000 youth by 2007 (2.4 percent). Although youth with bipolar disorder, schizophrenia, and autism proportionally were more likely to receive antipsychotics, youth with attention deficit hyperactivity disorder (ADHD) and those with three or more mental health diagnoses were the largest consumers of antipsychotics over time; by 2007, youth with ADHD accounted for 50 percent of total antipsychotic use; 1 in 7 antipsychotic users were youth with ADHD as their only diagnosis.

CONCLUSIONS: In the context of safety concerns, disproportionate antipsychotic use among youth with nonapproved indications illustrates the need for more generalized efficacy data in pediatric populations.

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Hum Brain Mapp. 2012.

WHITE MATTER TRACT INTEGRITY OF FRONTOSTRIATAL CIRCUIT IN ATTENTION DEFICIT HYPERACTIVITY DISORDER: ASSOCIATION WITH ATTENTION PERFORMANCE AND SYMPTOMS.

Wu YH, Gau SSF, Lo YC, et al.

The frontostriatal circuit has been postulated to account for the core symptoms such as inattention in attention deficit/hyperactivity disorder (ADHD). This study investigated the white matter integrity of frontostriatal fiber tracts using diffusion spectrum imaging (DSI) tractography and its correlations with measures of multi-dimensional aspects of inattention based on psychiatric interview and attention tasks in 25 children with ADHD and 25 matched typically developing (TD) children. All the subjects were assessed with comprehensive psychiatric interviews and the Conner's Continuous Performance Test (CCPT). DSI data were acquired on a 3-Tesla MRI system. The frontostriatal fiber pathways were reconstructed by deterministic tractography, and generalized fractional anisotropy values were measured along individual targeted tracts to investigate alterations in microstructure integrity. Children with ADHD performed worse than TD children in the dimensions of focused attention, sustained attention, impulsivity, and vigilance of the CCPT, and showed impaired integrity in four bilateral frontostriatal tracts, namely the dorsolateral-caudate, medial prefrontal-caudate, orbitofrontal-caudate, and ventrolateral-caudate tracts, and in global white matter as well. The integrity of the left orbitofronto-caudate tract was associated with the symptom of inattention in children with ADHD, compatible with the attention deficit and motivational dysfunction theories in ADHD. The integrity of the frontostriatal tracts was associated with the attention performance only in TD children, suggestive of possible recruitment of tracts other than the frontostriatal tracts implicated in attention deficits in children with ADHD. In conclusion, our results demonstrate the functional involvement of the frontostriatal circuit with respect to clinical symptoms and attention performance.

Indian J Psychiatry. 2012 Apr;54:159-65.

NEUROLOGICAL SOFT SIGNS IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Patankar VC, Sangle JP, Shah HR, et al.

CONTEXT: Attention deficit hyperactivity disorder (ADHD) is a common neurodevelopmental disorder with wide repercussions. Since it is etiologically related to delayed maturation, neurological soft signs (NSS) could be a tool to assess this. Further the correlation of NSS with severity and type of ADHD and presence of Specific Learning Disability (SLD) would give further insight into it.

AIMS: To study neurological soft signs and risk factors (type, mode of delivery, and milestones) in children with ADHD and to correlate NSS with type and severity of ADHD and with co-morbid Specific Learning Disability.

SETTINGS AND DESIGN: The study was carried out in Child care services of a tertiary teaching urban hospital. It was a cross-sectional single interview study.

MATERIALS AND METHODS: 52 consecutive children diagnosed as having ADHD were assessed for the presence of neurological soft signs using Revised Physical and Neurological Examination soft Signs scale (PANESS). The ADHD was rated by parents using ADHD parent rating scale.

STATISTICAL ANALYSIS: The data was analyzed using the chi-squared test and Pearson's co-relational analysis.

RESULTS AND CONCLUSIONS: Neurological soft signs are present in 84% of children. They are equally present in both the inattentive-hyperactive and impulsive-hyperactive types of ADHD. The presence of neurological soft signs in ADHD are independent of the presence of co-morbid SLD. Dysrhythmias and overflow with gait were typically seen for impulsive-hyperactive type and higher severity of ADHD is related to more errors.

Infant and Child Development. 2012 Jul;21:394-410.

TASK PALATABILITY, BUT NOT STRUCTURE, DIFFERENTIALLY INFLUENCES MOTHER–CHILD INTERACTIONS IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER CHILDREN WITH AND WITHOUT OPPOSITIONAL DEFIANT DISORDER.

Gopin CB, Healey DM, Grossman BR, et al.

Objective: To assess whether preschoolers with attention-deficit/hyperactivity disorder (ADHD) behave differently during mother–child interaction tasks as a function of task palatability and whether differences are associated with the presence of comorbid oppositional defiant disorder (ODD).

Methods: Typically developing, ADHD, and ADHD+ODD children and their mothers participated in digitally recorded interactions, which included three 5-min tasks, differing in level of palatability/engagement and parental structure (Free Play Task = highly engaging, not structured; Paper and Pencil Task = not engaging, highly structured; Duplo Task = highly engaging, structured).

Results: Mixed ANOVAs revealed that positive engagement, but not structure, differentially improved the behaviour of children with ADHD+ODD.

Discussion: Although ADHD and ODD are associated with more negative behaviours during the mother–child interaction, those with comorbid ADHD+ODD exhibit differentially greater impairment during relatively boring tasks. Implications for treatment are discussed.

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Int J Speech Lang Pathol. 2012 Sep.

THE PRAGMATIC LANGUAGE ABILITIES OF CHILDREN WITH ADHD FOLLOWING A PLAY-BASED INTERVENTION INVOLVING PEER-TO-PEER INTERACTIONS.

Cordier R, Munro N, Wilkes-Gillan S, et al.

Children with Attention Deficit Hyperactivity Disorder (ADHD) commonly experience significant pragmatic language deficits which put them at risk of developing emotional and social difficulties. This study aimed to examine the pragmatic language exhibited in a peer-to-peer interaction between the children with ADHD and their playmates following a pilot play-based intervention. Participants were children (aged 5-11 years) diagnosed as having ADHD (n = 14) and their self-selected typically-developing playmate. Pragmatic language was measured using the Pragmatic Protocol (PP) and the Structured Multidimensional Assessment Profiles (S-MAPs). Children's structural language was also screened and compared against their pragmatic language skills pre-post play-based intervention. The pragmatic language of children with ADHD improved significantly from pre-post intervention as measured by both the PP and S-MAPs. Both children with and without structural language difficulties improved significantly from pre- to post-intervention using S-MAPs; only children with structural language difficulties improved significantly using PP. The findings support the notion that pragmatic skills may improve following a play-based intervention that is characterized by didactic social interaction. As pragmatic language is a complex construct, it is proposed that clinicians and researchers reconsider the working definition of pragmatic language and the operationalization thereof in assessments.

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Int J Psychophysiol. 2012.

ELECTROPHYSIOLOGICAL INDICES OF ERROR MONITORING IN JUVENILE AND ADULT ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)-A META-ANALYTIC APPRAISAL.

Geburek AJ, Rist F, Gediga G, et al.

Attempts to identify the central disturbed processes explaining the overt symptoms of juvenile and adult ADHD rely heavily on the concept of deficient error monitoring processes. A number of studies have investigated event-related potentials (ERPs) and behavioral performance in tasks traditionally used to probe the interference control and inhibition of motor responses. The inspection of the error negativity (Ne/ERN) and error positivity (Pe) components evoked in these tasks has produced conflicting results with respect to the nature and extent of an error monitoring deficit in ADHD. A meta-analytic aggregation of these single studies should help develop a reliable appraisal of the evidence for the compromised performance monitoring processes in ADHD. Our meta-analysis was confined to studies of adult and juvenile ADHD participants examined in GoNogo and Flanker task studies that also reported the Ne/ERN

and Pe ERP components. Only seven studies were suited for the meta-analysis, but their aggregation nevertheless led to clear results: Ne was attenuated in adult and adolescent ADHD participants for both tasks, and Pe was attenuated only in the GoNogo tasks. The ADHD participants made more errors than the controls in both tasks but responded slower only in the Flanker task. To our knowledge, this meta-analysis is the first to compare electrophysiological and behavioral indices of error monitoring in adult and juvenile ADHD patients and healthy controls. Admittedly, the data available for this comparison were sparse and heterogeneous; nevertheless, this meta-analysis produced salient results that indicate a monitoring deficit as a central feature of the ADHD syndrome.

Iran J Psychiatry. 2012;7:87-92.

MELATONIN EFFECTS IN METHYLPHENIDATE TREATED CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER: A RANDOMIZED DOUBLE BLIND CLINICAL TRIAL.

Mohammadi MR, Mostafavi SA, Keshavarz SA, et al.

OBJECTIVE: The aim of this study was to determine melatonin effects on sleep patterns, symptoms of hyperactivity and attention deficiency in children with attention-deficit hyperactivity disorder (ADHD).

METHODS: Children with age range of 7-12 years who had a combined form of ADHD were randomly divided in to 2 groups according to gender blocks. One group took melatonin (3 or 6mg) combined with methylphenidate (Ritalin) (1mg/kg), and the other group took placebo combined with methylphenidate (1mg/kg). ADHD rating scale and sleep patterns questionnaires were completed. Research hypotheses were assessed at the baseline, the second, fourth and eighth weeks after the treatment.

RESULTS: The mean sleep latency and total sleep disturbance scores were reduced in melatonin group, while the scores increased in the placebo group ($p \geq 0.05$). Data analysis, using ANOVA with repeated measures, did not show any statistically significant differences between the two groups in ADHD scores.

CONCLUSION: Administration of melatonin along with methylphenidate can partially improve symptoms of sleep disturbance. However, it does not seem to reduce attention deficiency and hyperactivity behavior of children with ADHD.

Iran J Psychiatry. 2012;7:57-60.

PARENTING SELF EFFICACY IN MOTHERS OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER VS. NORMAL CHILDREN.

Gohari Z, Dehghani F, Rajabi G, et al.

OBJECTIVES: The main purpose of this study was to compare parenting self efficacy between mothers of children with attention deficit-hyperactivity disorder (ADHD) and mothers of normal children.

METHOD: One hundred twenty mothers including 60 mothers of children with ADHD and 62 mothers of normal children were selected. In each group the participants were allocated between three subgroups of preschool, first and second grade of primary school. The participants were evaluated for ADHD symptom severity and parenting self efficacy, using Conner's Parents Rating Scales-Revised Short (CPRS-R:S) and Berkeley Parenting Self-efficacy scale. Data were analyzed using independent sample T test, Chi square, Pearson and Spearman correlation and stepwise linear regression statistical analysis when appropriate.

RESULTS: The results of this study did not show any significant difference between self efficiency in mothers of children with ADHD and mothers of normal children in preschool and first grade of primary school. However, between group differences were significant in mothers of children in second grade of primary school. The most associated factors with parenting self efficacy were Children's age, and education level.

CONCLUSION: No difference was observed in self efficacy of parents of ADHD children and parents of normal children in pre-school and first grade of primary school. However, parenting self efficacy was significantly lower in parents of the second grade ADHD children compared to the normal group. Increment in age and education level of children with ADHD may be associated with lower level of parenting self efficacy.

J Atten Disord. 2012 Sep.

COMORBIDITY OF BIPOLAR DISORDER (BPD) AND ADHD IN CHILDREN AND ADOLESCENTS: STUDIES OUTSIDE THE UNITED STATES, METHODOLOGICAL ISSUES INFLATING COMORBIDITY, ROLE OF BEHAVIOURAL SENSITIZATION, AND CONCEPT OF TEMPER DYSREGULATION DISORDER WITH DYSPHORIA PROPOSED BY DSM-5 WORK GROUP.

Sivakumar T.

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J Atten Disord. 2012 Sep.

FRIENDSHIP CHARACTERISTICS OF CHILDREN WITH ADHD.

Marton I, Wiener J, Rogers M, et al.

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J Atten Disord. 2012 Aug.

ATTENTION DEFICITS IN CHILDREN WITH COMBINED AUTISM AND ADHD: A CPT STUDY.

Lundervold AJ, Stickert M, Hysing M, et al.

Objective: To investigate characteristics of attention in children with the combination of autism spectrum disorder (ASD) and ADHD.

Method: Four groups of 8- to 10-year-old children were compared on the Conners' Continuous Performance Test-Second Edition (CCPT-II): (a) ASD + ADHD (n = 11), (b) ASD only (n = 9), (c) ADHD only (n = 38), and (d) no diagnosis (n = 134).

Results: There was an overall effect of group on the Continuous Performance Test (CPT) index and measures of hit reaction time, accuracy, response style, variability, and consistency. The ASD + ADHD group, much like the ADHD only group, had a more risky response style, a higher variability, and a lower consistency than the ASD only group. The impact of intellectual function on CCPT-II performance was considerable in children within the ASD subgroups.

Conclusion: The findings underscore the importance of including measures of attention and intellectual function when assessing children with the combination of ASD and ADHD.

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J Autism Dev Disord. 2012 Sep.

A COMPARISON OF SOCIAL COGNITIVE PROFILES IN CHILDREN WITH AUTISM SPECTRUM DISORDERS AND ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: A MATTER OF QUANTITATIVE BUT NOT QUALITATIVE DIFFERENCE?

Demopoulos C, Hopkins J, Davis A.

The aim of this study was to compare social cognitive profiles of children and adolescents with Autism Spectrum Disorders (ASD) and ADHD. Participants diagnosed with an ASD (n = 137) were compared to participants with ADHD (n = 436) on tests of facial and vocal affect recognition, social judgment and problem-solving, and parent- and teacher-report of social functioning. Both groups performed significantly worse than the normative sample on all measures. Although the ASD group had more severe deficits, the pattern of deficits was surprisingly similar between groups, suggesting that social cognitive deficit patterns may be more similar in ASD and ADHD than previously thought. Thus, like those with ASDs, individuals with ADHD may also need to be routinely considered for treatments targeting social skills.

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J Child Neurol. 2012 Sep.

LONG-TERM NEURODEVELOPMENTAL FOLLOW-UP OF CHILDREN WITH CONGENITAL MUSCULAR TORTICOLLIS.

Schertz M, Zuk L, Green D.

Congenital muscular torticollis is a common condition, but long-term neurodevelopmental follow-up is lacking. This study reports on neurodevelopmental outcome of 68 children, aged 7 to 9 years, with a history of congenital muscular torticollis, excluding children with torticollis due to other conditions. Thirty-eight children were examined for presence of neurodevelopmental disorders. Telephone interview data were available for an additional 30 children. Of those examined, 22/38 (57.9%) had or were at risk for a developmental disorder (attention-deficit hyperactivity disorder (ADHD), developmental coordination disorder, language impairment, autistic spectrum disorder) on at least 1 of the assessments administered, 23/38 (60.5%) had received developmental treatment during childhood. One child, based on a telephone interview, had a history of developmental treatment. Therefore, 30/68 (44.1%) children of the total sample demonstrated a developmental delay/disorder, currently (22/68) or previously (8/68). Our findings suggest congenital muscular torticollis to be a significant risk factor for later neurodevelopmental conditions with disorders presenting at different stages of development.

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J Child Psychol Psychiatry. 2012 Sep.

COMMON GENETIC AND NONSHARED ENVIRONMENTAL FACTORS CONTRIBUTE TO THE ASSOCIATION BETWEEN SOCIOEMOTIONAL DISPOSITIONS AND THE EXTERNALIZING FACTOR IN CHILDREN.

Taylor J, Allan N, Mikolajewski AJ, et al.

Background: Childhood behavioral disorders including conduct disorder (CD), oppositional defiant disorder (ODD), and attention-deficit/hyperactivity disorder (ADHD) often co-occur. Prior twin research shows that common sets of genetic and environmental factors are associated with these various disorders and they form a latent factor called Externalizing. The developmental propensity model posits that CD develops in part from socioemotional dispositions of Prosociality, Negative Emotionality, and Daring; and recent research has supported the expected genetic and environmental associations between these dispositions and CD. This study examined the developmental propensity model in relation to the broader Externalizing factor that represents the covariance among behavior disorders in children.

Methods: Parents of 686 six- to twelve-year-old twin pairs rated them on symptoms of CD, ADHD, and ODD using the disruptive behavior disorder scale and on Prosociality, Negative Emotionality, and Daring using the Child and Adolescent Dispositions Scale. A latent factor multivariate Cholesky model was used with each disposition latent factor comprised of respective questionnaire items and the Externalizing factor comprised of symptom dimensions of CD, ADHD inattention, ADHD hyperactivity/impulsivity, and ODD.

Results: Results supported the hypothesis that the socioemotional dispositions and the Externalizing factor have genetic factors in common, but there was not a single genetic factor associated with all of the constructs. As expected, nonshared environment factors were shared by the dispositions and Externalizing factor but, again, no single nonshared environmental factor was common to all constructs. A shared environmental factor was associated with both Negative Emotionality and Externalizing.

Conclusions: The developmental propensity model was supported and appears to extend to the broader externalizing spectrum of childhood disorders. Socioemotional dispositions of prosociality, negative emotionality, and (to a lesser extent) daring may contribute to the covariation among behavioral disorders and perhaps to their comorbid expression through common sets of primarily genetic but also environmental factors.

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J Med Ethics. 2012 Sep.

MIGHT STIMULANT DRUGS SUPPORT MORAL AGENCY IN ADHD CHILDREN?

Hyman SE.

Stimulants have been shown to be safe and effective for reduction of the symptoms of attention deficit hyperactivity disorder. Despite much debate, however, there has been little empirical evidence as to whether stimulants affect authenticity and moral agency in children. Singh presents evidence that

stimulants do not undercut children's sense of self and increase their experience of agency. These findings are consistent with laboratory evidence that stimulant drugs in therapeutic doses improve cognitive control over thought and behavior.

J Neurodev Disord. 2012;4:6.

IMPAIRED MULTIPLE OBJECT TRACKING IN CHILDREN WITH CHROMOSOME 22Q11.2 DELETION SYNDROME

Cabral MH, Beaton EA, Stoddard J, et al.

ABSTRACT:

BACKGROUND: Chromosome 22q11.2 Deletion Syndrome (22q11.2DS) occurs in approximately 1:4,000 live births with a complex and variable presentation that includes medical, socioemotional and psychological symptoms with intellectual impairment. Cognitive impairments in spatiotemporal and visuospatial attention have also been reported. However, maintenance of selective attention to dynamic and interacting objects has not been systematically investigated in children with 22q11.2DS.

METHODS: We used a multiple object tracking task to assay capacity and resolution performance of children with 22q11.2DS aged 7 to 14 years versus age-matched typically developing (TD) peers.

RESULTS: Children with 22q11.2DS but not TD children demonstrated impaired performance when task demands increased due to an increase in the number of targets presented, but not from an increase in object speed. Task performance in children with 22q11.2DS was also unrelated to intelligence or measures of attention deficit hyperactivity disorder.

CONCLUSIONS: These findings suggest that children with 22q11.2DS may be particularly susceptible to dynamic crowding of objects with increasing cognitive demands related to monitoring multiple targets reflecting a reduced acuity in spatiotemporal cognitive representation.

J Neurodev Disord. 2012;4:12.

COMPARISON OF SPATIAL WORKING MEMORY IN CHILDREN WITH PRENATAL ALCOHOL EXPOSURE AND THOSE DIAGNOSED WITH ADHD; A FUNCTIONAL MAGNETIC RESONANCE IMAGING STUDY.

Malisz KL, Buss JL, Bolster RB, et al.

ABSTRACT:

BACKGROUND: Alcohol related neurodevelopmental disorder (ARND) falls under the umbrella of fetal alcohol spectrum disorder (FASD), but individuals do not demonstrate the facial characteristics associated with fetal alcohol syndrome (FAS), making diagnosis difficult. While attentional problems in ARND are similar to those found in attention-deficit/hyperactivity disorder (ADHD), the underlying impairment in attention pathways may be different.

METHODS: Functional magnetic resonance imaging (fMRI) of a working memory (1-back) task of 63 children, 10 to 14 years old, diagnosed with ARND and ADHD, as well as typically developing (TD) controls, was conducted at 3 T. Diffusion tensor imaging (DTI) data were also acquired.

RESULTS: Activations were observed in posterior parietal and occipital regions in the TD group and in dorsolateral prefrontal and posterior parietal regions in the ARND group, whereas the ADHD group activated only dorsolateral prefrontal regions, during the working memory component of the task (1-back minus 0-back contrast). The increases in frontal and parietal activity were significantly greater in the ARND group compared to the other groups. This increased activity was associated with reduced accuracy and increased response time variability, suggesting that ARND subjects exert greater effort to manage short-term memory load. Significantly greater intra-subject variability, demonstrated by fMRI region-of-interest analysis, in the ADHD and ARND groups compared to the TD group suggests that moment-to-moment lapses in attention contributed to their poorer task performance. Differences in functional activity in ARND subjects with and without a diagnosis of ADHD resulted primarily from reduced activation by the ARND/ADHD + group during the 0-back task. In contrast, children with ADHD alone clearly showed reduced activations during the 1-back task. DTI analysis revealed that the TD group had significantly higher total tract volume and number of fibers than the ARND group. These measures were negatively correlated with errors on the 1-back task, suggesting a link between white matter integrity and task performance.

CONCLUSIONS: fMRI activations suggest that the similar behavior of children with ARND and ADHD on a spatial working memory task is the result of different cognitive events. The nature of ADHD in children with ARND appears to differ from that of children with ADHD alone.

J Psychiatr Res. 2012 Nov;46:1398-405.

CORTISOL LEVELS IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Isaksson J, Nilsson KW, Nyberg F, et al.

Regulation of the Hypothalamus-Pituitary-Adrenal axis (HPA-axis) and its end product cortisol differs among persons with certain psychiatric disorders when compared with controls. Some reports concern Attention-Deficit/Hyperactivity Disorder (ADHD) but findings are inconclusive. In this study we collected four saliva samples during a regular weekday in children, 6-17 years old, with ADHD (n = 201) and non-affected comparisons (n = 221). Saliva cortisol was measured with radioimmunoassay technique. Clinical data were collected for diagnostic information. Subtypes and severity of symptoms were determined using parental rating scales. Children with ADHD had lower saliva cortisol levels than comparisons at waking up Median = 9.1 versus 12.7 nmol/L (p < .001), 30 min later Median = 15.8 versus 20.1 nmol/L (p < .001) and before going to bed Median = 0.8 versus 1.0 nmol/L (p = .015). No difference was found for the afternoon sample. When the study group was split into three different age groups similar results were found only for children above 10 years of age. Subtype of ADHD or co-occurring symptoms did not affect the cortisol levels. Degree of severity of ADHD symptoms was not associated with cortisol levels in the study group, other than a weak negative correlation between the afternoon sample and hyperactivity symptoms. The low cortisol levels in children with ADHD may indicate a dysregulation of the HPA-axis, for instance a down-regulation or a phase delay of the diurnal curve. The low levels may be related to the under-arousal possibly underlying several of the core symptoms of ADHD.

J Speech Lang Hear Res. 2012 Sep.

REFERENTIAL COMMUNICATION IN CHILDREN WITH ADHD: CHALLENGES IN THE ROLE OF A LISTENER.

Nilsen ES, Mangal L, Macdonald K.

PURPOSE: Successful communication requires that listeners accurately interpret the meaning of speakers' statements. The present work examined whether children with and without ADHD differ in their ability to interpret referential statements (i.e., phrases that denote objects or events) from speakers.

METHOD: Children (6- to 9-years-old), diagnosed with ADHD (n = 27) and typically-developing (n = 26), took part in an interactive task where they were asked to retrieve objects from a display case by an adult speaker. Children interpreted the referential statements in contexts that either did or did not require perspective-taking. Children's eye movements and object choices were recorded. Parents completed questionnaires assessing their child's frequency of ADHD symptoms and pragmatic communicative abilities.

RESULTS: Behavioral and eye movement measures revealed that children with ADHD made more interpretive errors and were less likely to consider target referents across the two communicative conditions. Furthermore, ADHD symptoms related to children's performance on the communicative task and to parental report of the child's pragmatic skills.

CONCLUSION: Children with ADHD are less accurate in their interpretations of referential statements. Such difficulties would lead to greater occurrences of miscommunication.

Journal of Attention Disorders. 2012 Jul;16:406-17.

SYMPTOMS OF ADHD AND CLOSE FRIENDSHIPS IN ADOLESCENCE.

Glass K, Flory K, Hankin BL.

Objective: This study examined the relationship of ADHD symptoms to different aspects of close friendship quality as rated by both adolescents (target adolescent and a close friend) within a friendship dyad.

Method: Participants were 41 same-sex friendship dyads who completed questionnaires about their friendship. Separate symptom dimensions of ADHD (inattention and hyperactivity-impulsivity) were examined. Teacher and parent ratings of social functioning were also used.

Results: Symptoms of inattention, hyperactivity-impulsivity, and overall ADHD were positively related to target-reported friendship quality, and symptoms of inattention and total ADHD were positively associated with friend-reported friendship quality. Potential explanations for these surprising findings were explored.

Conclusion: Results suggest that the close friendships of adolescents with symptoms of ADHD may be distinct from the peer rejection commonly faced by this population and that adolescents with symptoms of ADHD may have at least one close, positive friendship. Treatment implications and future research directions are discussed.

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Journal of Attention Disorders. 2012 Jul;16:427-37.

EXAMINING THE DIMENSIONALITY OF ADHD SYMPTOMATOLOGY IN YOUNG ADULTS USING FACTOR ANALYSIS AND OUTCOME PREDICTION.

McKee TE.

Objective: Current diagnostic criteria specify that ADHD involves difficulties with inattention and/or hyperactivity/impulsivity. Researchers using factor analysis have consistently found support for an inattention factor in both children and adults. Findings have been mixed regarding whether hyperactivity and impulsivity reflect one or two dimensions. To date, no study has examined the merits of separating hyperactivity and impulsivity factors to predict socioemotional and academic outcomes in young adults.

Method: The current study examined self-reported ADHD symptomatology data from 1,096 college students. Subsets of the sample completed a variety of outcome measures.

Results: The prediction of outcomes provided support that complemented confirmatory factor analysis for the separation of the hyperactivity and impulsivity constructs. Impulsivity uniquely predicted more outcomes than hyperactivity alone.

Conclusion: Results were consistent with the conceptualization of ADHD as primarily a disorder of behavioral inhibition. Future research using alternative outcomes and clinical populations should be conducted.

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Journal of Attention Disorders. 2012 Jul;16:351-72.

A REVIEW OF NEUROFEEDBACK TREATMENT FOR PEDIATRIC ADHD.

Lofthouse N, Arnold LE, Hersch S, et al.

Objective: The aim of this paper was to review all randomized published trials and unpublished conference presentations on the neurofeedback (NF) treatment of pediatric ADHD, and their relevance, strengths, and limitations.

Method: Via PsycInfo and Medline searches and contacts with NF researchers 14 studies were identified and reviewed.

Results: The majority were conducted from 1994 to 2010, with 5- to 15-year-olds, usually male and White with the combined type of ADHD. Most studies used theta/beta NF with a unipolar-electrode placement at Cz and demonstrated, where reported, an overall ADHD mean effect size of $d = 0.69$, a medium effect. Main study strengths, within some studies, include use of randomization, treatment control conditions, Diagnostic and Statistical Manual of Mental Disorders criteria, evidence-based assessment of ADHD, standard treatment outcome measures, multidomain assessment, and, for some studies, moderate sample size, some type of blind and the identification of medication as a concomitant treatment. Main study limitations (and directions for future research) include the lack of adequate blinding of participants, raters

and NF trainers, a sham-NF/blinded control treatment condition, posttreatment follow-up, generalizability, specific details about delivery of NF, identification and control of comorbidity, and the identification, measurement, and control of concomitant treatments and potential side effects.

Conclusion: Based on the results and methodologies of published studies, this review concludes that NF for pediatric ADHD can be currently considered as "probably efficacious."

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Journal of Attention Disorders. 2012 Jul;16:384-97.

CLINICALLY RELEVANT CHANGES IN EMOTIONAL EXPRESSION IN CHILDREN WITH ADHD TREATED WITH LISDEXAMFETAMINE DIMESYLATE.

Katic A, Ginsberg L, Jain R, et al.

Objective: To describe clinically relevant effects of lisdexamfetamine dimesylate (LDX) on emotional expression (EE) in children with ADHD.

Method: Children with ADHD participated in a 7-week, open-label, LDX dose-optimization study. Expression and Emotion Scale for Children (EESC) change scores were analyzed post hoc using two methods to determine proportion of participants with different categories of clinical response based on (a) clinically significant (movement >2 SD from baseline mean)/reliable change (not due to measurement error) and (b) standard error of measurement (SEM) as a measure of clinically meaningful change.

Results: With LDX, no participants showed clinically significant/reliable improvement; 0.7% showed clinically significant/reliable deterioration of EE by reliable change index and movement from baseline mean. One third of participants had improved EE by SEM criteria; 9.2% had categorical worsening.

Conclusion: Using clinically meaningful change and clinically significant/reliable change categories derived from the EESC, most participants had no worsening of EE with LDX.

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Journal of Attention Disorders. 2012 Jul;16:373-83.

RISK OF INTIMATE PARTNER VIOLENCE AMONG YOUNG ADULT MALES WITH CHILDHOOD ADHD.

Wymbs B, Molina B, Pelham W, et al.

Objective: Research has clearly documented the social dysfunction of youth with ADHD. However, little is known about the interpersonal relationships of adults diagnosed with ADHD in childhood, including rates of intimate partner violence (IPV).

Method: Using data from the Pittsburgh ADHD Longitudinal Study, analyses compared the level of IPV (verbal aggression, violence) reported by young adult (18- to 25-year-old) males with childhood ADHD (n = 125) with reports by demographically similar males without ADHD histories (n=88).

Results: Males with childhood ADHD, especially those with conduct problems persisting from childhood, were more likely to be verbally aggressive and violent with romantic partners than males without histories of ADHD or conduct problems.

Conclusions: Research is needed to replicate these findings, to explore potential mechanisms, and to develop effective interventions for romantic relationship discord among young adults with ADHD histories, especially those with persistent conduct problems.

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J Autism Dev Disord. 2012 Aug;42:1662-70.

NORMAL RATES OF NEURORADIOLOGICAL FINDINGS IN CHILDREN WITH HIGH FUNCTIONING AUTISM.

Vasa RA, Ranta M, Huisman TAGM, et al.

Magnetic resonance imaging (MRI) has been used to analyze highly specific volumetric and morphological features of the brains of individuals with autism spectrum disorder (ASD). To date, there are few comprehensive studies examining the prevalence of neuroradiologic findings seen on routine MRI scans in children with ASD. This study examined the prevalence of neuroradiologic findings in children with high functioning ASD, and compared these rates to those in children with Attention-Deficit/Hyperactivity Disorder

(ADHD) and children who are typically developing (TD). Results showed that approximately 90% of children had normal MRI scans. There was no significant effect of diagnosis on the total number of neuroradiological findings or the number of specific brain findings. Implications and future research directions are discussed.

J Child Adolesc Psychopharmacol. 2012;22:307-14.

AGE-SPECIFIC PREVALENCE, INCIDENCE OF NEW DIAGNOSES, AND DRUG TREATMENT OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN GERMANY.

Lindemann C, Langner I, Kraut AA, et al.

Objective: The purpose of this study was to estimate the prevalence and incidence of new diagnoses of attention-deficit/hyperactivity disorder (ADHD) and assess drug treatment of ADHD in the 3-17 year age group in Germany.

Method: We analysed data from the German Pharmacoepidemiological Research Database (GePaRD) for the years 2004-2006. The GePaRD includes claim records of 14,000,000 members of four statutory health insurances, representing 17% of the German population. The assessment of ADHD diagnoses was based on International Classification of Diseases version 10 (ICD-10) codes in outpatient and hospital data.

Results: In 2005, the age-standardized prevalence and incidence of new diagnoses were 2.5% and 9/1000 person-years, respectively. Both measures were 3-4 times higher for males than for females. Incidence of new ADHD diagnoses increased linearly up to the age of 8 years for boys and 9 years for girls and decreased abruptly thereafter. In the calendar quarter of the initial ADHD diagnosis, 9.4% (95% confidence interval [CI] 8.9-9.8%) received methylphenidate or atomoxetine and 36.8% (95% CI 36.1-37.6%) received at least one prescription of either drug within the first year. Initiation of drug treatment and choice of drug were similar for both sexes.

Conclusions: ADHD is a common condition among children and youth in Germany. There are substantial differences by sex in the prevalence and incidence of new ADHD diagnoses, but only a small difference in drug treatment among those diagnosed with ADHD. A relatively low percentage of children receives drug treatment in the first year after the initial diagnosis of ADHD.

J Child Adolesc Psychopharmacol. 2012;22:300-06.

ASSESSMENT OF GROWTH IN PHARMACOLOGICAL TREATMENT-NAIVE POLISH BOYS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Hanc T, Cieslik J, Wolanczyk T, et al.

Objective: The objective of this study was to estimate the growth of pharmacological treatment-naive Polish boys with attention-deficit/hyperactivity disorder (ADHD).

Method: The sample included 135 boys (mean age: 11.67 years) with ADHD. The level of subjects' height, weight, and body mass index (BMI) was compared to the reference growth charts. Full estimation of measurement accuracy was provided. Regression analysis was used to estimate the biological and social factors contributing to the growth determination in the examined group.

Results: There were no statistically significant differences between mean body height of boys with ADHD and standards of growth of Polish children. Separate analyses for body height of the examined boys aged 6-10, 11-15, and 16-18 years also gave no statistically significant results. Mean body weight ($z=0.28$) and BMI ($z=0.25$) in the total cohort were statistically higher than the norm. After categorization of the boys according to age, statistically significant differences were demonstrated only for weight in the age range of 6-10 years ($z=0.31$) and for BMI in the age range of 11-15y ($z=0.42$). The regression analysis showed the strongest relation between the subjects' growth and the parents' body size, newborn's condition (birth, body weight, and APGAR score), factors connected with lifestyle, and socio-economic status of the family.

Conclusion: The study revealed that the height of drug-naive boys with ADHD was not significantly different from the norm. The investigation also showed a tendency for greater body weight and BMI in boys with ADHD in comparison with the growth charts, which may be manifested also in greater risk of overweight and obesity in this group. The results of research suggest the necessity to control for such

variables as genetic, perinatal, socioeconomic, and psychosocial factors, which may affect children's development, in future research on the growth of children with ADHD.

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J Child Adolesc Psychopharmacol. 2012;22:284-91.

HIGH CONCORDANCE OF PARENT AND TEACHER ATTENTION-DEFICIT/HYPERACTIVITY DISORDER RATINGS IN MEDICATED AND UNMEDICATED CHILDREN WITH AUTISM SPECTRUM DISORDERS.

Pearson DA, Aman MG, Arnold LE, et al.

Objective: Parent and teacher ratings of core attention-deficit/ hyperactivity disorder (ADHD) symptoms, as well as behavioral and emotional problems commonly comorbid with ADHD, were compared in children with autism spectrum disorders (ASD).

Method: Participants were 86 children (66 boys; mean: age=9.3 years, intelligence quotient [IQ]=84) who met American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders, 4th ed. (DSM-IV) criteria for an ASD on the Autism Diagnostic Interview-Revised (ADI-R) and the Autism Diagnostic Observation Schedule (ADOS). Parent and teacher behavioral ratings were compared on the Conners' Parent and Teacher Rating Scales (CPRS-R; CTRS-R). The degree to which age, ASD subtype, severity of autistic symptomatology, and medication status mediated this relationship was also examined.

Results: Significant positive correlations between parent and teacher ratings suggest that a child's core ADHD symptoms-as well as closely related externalizing symptoms-are perceived similarly by parents and teachers. With the exception of oppositional behavior, there was no significant effect of age, gender, ASD subtype, or autism severity on the relationship between parent and teacher ratings. In general, parents rated children as having more severe symptomatology than did teachers. Patterns of parent and teacher ratings were highly correlated, both for children who were receiving medication, and for children who were not.

Conclusions: Parents and teachers perceived core symptoms of ADHD and closely-related externalizing problems in a similar manner, but there is less agreement on ratings of internalizing problems (e.g., anxiety). The clinical implication of these findings is that both parents and teachers provide important behavioral information about children with ASD. However, when a clinician is unable to access teacher ratings (e.g., during school vacations), parent ratings can provide a reasonable estimate of the child's functioning in these domains in school. As such, parent ratings can be reliably used to make initial diagnostic and treatment decisions (e.g., medication treatment) regarding ADHD symptoms in children with ASDs.

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J Child Adolesc Psychopharmacol. 2012;22:269-76.

Pharmacokinetics and pharmacodynamics of edivoxetine (LY2216684), a norepinephrine reuptake inhibitor, in pediatric patients with attention-deficit/ hyperactivity disorder.

Kielbasa W, Quinlan T, Jin L, et al.

Objective: Edivoxetine (LY2216684) is a selective and potent norepinephrine reuptake inhibitor (NERI). The pharmacokinetics (PK) and pharmacodynamics (PD) of edivoxetine were assessed in children and adolescent patients with attention-deficit/hyperactivity disorder (ADHD) following single and once-daily oral doses of edivoxetine.

Methods: During a phase 1 open-label safety, tolerability, and PK study, pediatric patients were administered edivoxetine at target doses of 0.05, 0.1, 0.2 and 0.3mg/kg, and blood samples were collected to determine plasma concentrations of edivoxetine for PK assessments and plasma 3,4-dihydroxyphenylglycol (DHPG) concentrations for PD assessments. Edivoxetine plasma concentrations were measured using liquid chromatography with tandem mass spectrometric detection, and DHPG was measured using liquid chromatography with electrochemical detection.

Results: Edivoxetine PK was comparable between children and adolescents. The time to maximum concentration (tmax) of edivoxetine was ~2 hours, which was followed by a mono-exponential decline in plasma concentrations with a terminal elimination half-life (t1/2) of ~6 hours. Dose-dependent increases in area under the edivoxetine plasma concentration versus time curve from zero to infinity (AUC0-(infinity))

and maximum plasma concentration (C_{max}) were observed, and there was no discernable difference in the apparent clearance (CL/F) or the apparent volume of distribution at steady state (V_{ss}/F) across the dose range. In adolescents, edivoxetine caused a maximum decrease in plasma DHPG concentrations from baseline of ~28%, most notably within 8 hours of edivoxetine administration.

Conclusion: This initial study in pediatric patients with ADHD provides new information on the PK profile of edivoxetine, and exposures that decrease plasma DHPG consistent with the mechanism of action of a NERI. The PK and PD data inform edivoxetine pharmacology and can be used to develop comprehensive population PK and/or PK-PD models to guide dosing strategies.

Journal of Child Psychotherapy. 2012 Aug;38:210-17.

CLINICAL MATERIAL.

Anon

This article focuses on a 10-year old boy Cameron who has been coming for weekly individual psychotherapy for just over one year. Though Cameron's difficulties were understood in relation to his earliest experiences, he was diagnosed with attention deficit hyperactivity disorder (ADHD) and prescribed medication. However, this was discontinued at his mother's request when Cameron reacted to the medication by becoming very tearful and depressed and struggled to function. Cameron's hyperactivity, and sometimes hyper vigilance, was one of his parents' concerns, the feeling that he was always on the move, never settled and very distractible. The article mainly focuses on the psychotherapeutic sessions between Cameron and his psychotherapist.

J Clin Psychopharmacol. 2012;32:653-60.

DOES ATOMOXETINE IMPROVE EXECUTIVE FUNCTION, INHIBITORY CONTROL, AND HYPERACTIVITY?: RESULTS FROM A PLACEBO-CONTROLLED TRIAL USING QUANTITATIVE MEASUREMENT TECHNOLOGY.

Wehmeier PM, Schacht A, Ulberstad F, et al.

The primary objective of this study was to evaluate the efficacy of atomoxetine (ATX) on attention-deficit/hyperactivity disorder (ADHD)-related symptoms assessed as standard variables of a computer-based continuous performance test (cb-CPT) combined with a motion-tracking (MT) device. This was a 2-arm, 8-week, randomized, double-blind, placebo-controlled study in patients with ADHD (6-12 years). Therapy with ATX started with 0.5 mg/kg per day for 1 week, followed by 7 weeks on the target dosage of 1.2 mg/kg per day. Primary outcomes were cb-CPT/MT standard scores after 8 weeks using mixed models for repeated measurements. In addition, investigator-rated ADHD Rating Scale (ADHD-RS), Weekly Ratings of Evening and Morning Behavior (WREMB), and Clinical Global Impression-Severity-ADHD (CGI-S-ADHD) scores were assessed. Of 128 patients randomized, 125 were evaluated (ATX/placebo: 63/62). Baseline characteristics were comparable in both groups (overall, 80.2% boys; mean [SD] age, 9.0 [1.79] years; comorbid Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition diagnosis, 40.0% oppositional defiant disorder/conduct disorder; prior stimulant treatment, 24.8%; ADHD-RS total score, 36.99 [11.56]). At week 8, all cb-CPT/MT q-scores were significantly reduced versus placebo (all $P < 0.001$) with effect sizes (ESs) of reaction time (RT) variation (ES = 0.71), mean RT (ES = 0.41), number of microevents (ES = 1.00), commission error rate (ES = 0.50), distance of movement (ES = 0.90), area of movement (ES = 1.08), omission error rate (ES = 0.70), time active (ES = 0.69), motion simplicity (ES = 0.38), and normalized variance of RT (ES = 0.50). Secondary end points also improved significantly in favor of ATX: ADHD-RS (total score ES = 1.30, $P < 0.001$; hyperactivity/impulsivity subscore ES = 1.37, $P < 0.001$; inattention subscore ES = 1.07, $P < 0.001$), WREMB (total score ES = 1.00, $P < 0.001$; morning subscore ES = 0.59, $P = 0.002$; evening subscore ES = 1.02, $P < 0.001$), CGI-S-ADHD (ES = 1.11, $P < 0.001$). The results of this study show that ATX for 8 weeks significantly reduced ADHD-related symptoms as measured by the cb-CPT/MT.

J Clin Psychopharmacol. 2012;32:637-44.

A RANDOMIZED, DOUBLE-BLIND STUDY OF 30 VERSUS 20 MG DEXMETHYLPHENIDATE EXTENDED-RELEASE IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: LATE-DAY SYMPTOM CONTROL.

Brams M, Turnbow J, Pestreich L, et al.

The objective of this study was to evaluate the safety and efficacy of dexamethylphenidate extended-release (d-MPH-ER) 30 versus 20 mg in children with attention-deficit/hyperactivity disorder (ADHD) in a 12-hour laboratory classroom setting. In a randomized, double-blind, 3-period null 3-treatment, crossover study, children aged 6 to 12 years with Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-diagnosed ADHD previously stabilized on MPH (40-60 mg/d) or D-MPH (20-30 mg/d) were randomized to receive D-MPH-ER 20 mg/d, 30 mg/d, or placebo for 7 days each. Primary efficacy measurements were change in the average SKAMP (Swanson, Kotkin, Agler, M-Flynn, and Pelham)-Combined score from predose to 10, 11, and 12 hours postdose [Avg(10-12)] between 30 and 20 mg D-MPH-ER. Safety was assessed by adverse events, vital sign monitoring, and electrocardiograms. A total of 165 children were randomized, and 162 were included in the intent-to-treat analysis. Mean Avg(10-12) change from predose in SKAMP-Combined score was significantly greater for D-MPH-ER 30 mg (-4.47) compared with D-MPH-ER 20 mg (-2.02; $P = 0.002$). Most common adverse events (3% in any group) were decreased appetite (6.1%, 4.9%, and 0%), headache (4.3%, 4.3%, and 1.9%), abdominal pain (3.7%, 3.1%, and 3.1%), and tachycardia (1.2%, 3.1%, and 0.6%) for D-MPH-ER 30 mg, D-MPH-ER 20 mg, and placebo, respectively). Significantly greater improvement in ADHD symptoms was noted with D-MPH-ER 30 mg compared with D-MPH-ER 20 mg at hours 10 through 12. Tolerability was comparable between doses. Dexamethylphenidate extended-release 30-mg dose may provide further benefit to patients who do not maintain optimal symptom control later in the day with D-MPH-ER 20 mg.

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J Neurother. 2012;16:172-82.

NEUROFEEDBACK IN RESIDENTIAL CHILDREN AND ADOLESCENTS WITH MILD MENTAL RETARDATION AND ADHD BEHAVIOR.

Breteler R, Pesch W, Nadorp M, et al.

Neurofeedback (NFB) research has reported improved concentration and attention in children with attention deficit/hyperactivity disorder (ADHD) and progress maintained over time. Would that also apply to children with an IQ between 50 and 70 (mild mental retardation [MMR]) and an IQ between 70 and 85 (borderline retardation [BR]) with characteristics of ADHD? To our knowledge this is the first NFB treatment study with long-term follow-up in this particular group. Ten adolescents with MMR and BR and ADHD received 30 sessions of quantitative electroencephalogram (QEEG)-based NFB. QEEG differences with a gender- and age-matched group without mental handicap and ADHD (data provided by BRAINnet) were investigated, at pre- and posttreatment and at 6-month follow-up. Neuropsychological functioning was tested administering the Bourdon-Vos, and the Amsterdam Neuropsychological Testing Program subscales SA DOTS and SSV. Pretreatment eyes-closed EEGs were not statistically different in the children with MMR compared to the controls. With eyes open higher amplitudes were found in the lower frequencies in the children with MMR, normalizing over time. The neuropsychological tests improved for reaction times and errors. On the complex tasks in the SSV a number of errors remained. The subjects perceived an improvement in ADHD and increasingly enjoyed the study. After NFB treatment, attention and concentration in children with MMR and BR have improved. Task span and effort also increased, although impulse control remained weak. This may be explained by a limited working memory capacity. The subjective reports may have been affected by situational factors and should be interpreted with caution. This study is limited by its nonrandomized design.

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J Pediatr Gastroenterol Nutr. 2012.

THE FREQUENCY OF CELIAC DISEASE IN ATTENTION-DEFICIT HYPERACTIVITY DISORDER.

Gungor S, Celiloglu OS, Ozcan O, et al.

OBJECTIVE: Although it is well known that celiac disease (CD) is associated with neurologic disorders, association with psychiatric problems is not well-defined. In this report, we aimed to detect CD prevalence in patients with attention-deficit and hyperactivity disorder (ADHD).

METHODS: Three hundred and sixty two patients between the ages of 5-15 years with the diagnosis of ADHD according to Diagnostic and Statistical Manual of Mental Disorders Text Revision (DSM-IV-TR) diagnostic criteria and 390 sex and age matched healthy children were included in this study. Serum levels of tissue transglutaminase (tTg) IgA and IgG were studied in both groups. Serum IgA levels were also studied in patients with positive tTG-IgG for the exclusion of selective IgA deficiency. Endoscopic duodenal biopsy was provided in seropositive patients, whose parents approved the procedure. Biopsy samples were evaluated according to Marsh-Oberhuber classification.

RESULTS: tTg IgA was positive in four of ADHD patients (1.1%). Endoscopic duodenal biopsy was suggestive of CD in one of them (0.27%). tTg IgA was positive in three of control group patients (0.8%). Duodenal biopsy of the only patient from control group, who underwent upper gastrointestinal endoscopy, revealed normal intestinal mucosa.

CONCLUSION: The seropositivity rates for CD were found similar in ADHD and control groups. Thus, neither routine screening for CD nor empirical recommendation of gluten-free diet seems necessary in children with ADHD.

J Psychiatr Res. 2012.

FURTHER EVIDENCE THAT PEDIATRIC-ONSET BIPOLAR DISORDER COMORBID WITH ADHD REPRESENTS A DISTINCT SUBTYPE: RESULTS FROM A LARGE CONTROLLED FAMILY STUDY.

Biederman J, Faraone SV, Petty C, et al.

We used familial risk analysis to clarify the diagnostic comorbidity between pediatric BP-I disorder and ADHD, testing the hypothesis that pediatric-BP-I disorder comorbid with ADHD represents a distinct subtype. Structured diagnostic interviews were used to obtain DSM-IV psychiatric diagnoses on first-degree relatives (n = 726) of referred children and adolescents satisfying diagnostic criteria for BP-I disorder (n = 239). For comparison, diagnostic information on the first-degree relatives (N = 511) of non-bipolar ADHD children (N = 162) and the first degree relatives (N = 411) of control children (N = 136) with neither ADHD nor BP-I disorder were examined. BP-I disorder and ADHD in probands bred true irrespective of the comorbidity with the other disorder. We also found that the comorbid condition of BP-I disorder plus ADHD also bred true in families, and the two disorders co-segregated among relatives. This large familial risk analysis provides compelling evidence that pediatric BP-I disorder comorbid with ADHD represents a distinct familial subtype.

J Psychiatr Res. 2012;46:1307-11.

DOES AGE OF ONSET OF IMPAIRMENT IMPACT ON NEUROPSYCHOLOGICAL AND PERSONALITY FEATURES OF ADULT ADHD?

Guimaraes-da-Silva PO, Silva KL, Grevet EH, et al.

The consideration of age of onset of impairment as part of the ADHD diagnosis is controversial and has been a revisited issue with the emergence of the new classifications in Psychiatry. The aim of this study is to compare patients with early and late onset of ADHD impairment in terms of neuropsychological and personality characteristics. Adult patients with ADHD (n = 415) were evaluated in the ADHD outpatient program at Hospital de Clinicas de Porto Alegre, Brazil. The diagnostic process for ADHD and comorbidities was based on DSM-IV criteria. The comparison between the two ages of onset groups (before 7; n = 209 or from 7 to 12 years; n = 206) was performed with ANOVA, followed by Stepwise forward regression analyses to restrict the number of comparisons and assess the possible effect of multiple confounders. Patients with early onset ADHD present higher scores in novelty seeking in both analyses (respectively P = 0.016 and P = 0.002), but similar cognitive and attention features as compared with the late onset group. These data add to previous evidence that despite a more externalizing profile of

early onset ADHD, the overall performance is similar reinforcing the need for awareness and inclusion of the late onset group in DSM-V diagnostic criteria.

Journal of the American Academy of Child & Adolescent Psychiatry. 2012 Sep;51:879-88.

CAREGIVER BURDEN AS PEOPLE WITH AUTISM SPECTRUM DISORDER AND ATTENTION-DEFICIT/HYPERACTIVITY DISORDER TRANSITION INTO ADOLESCENCE AND ADULTHOOD IN THE UNITED KINGDOM.

Cadman T, Eklund H, Howley D, et al.

Objective: There is increasing recognition that autism spectrum disorder (ASD) and attention-deficit/hyperactivity disorder (ADHD) are associated with significant costs and burdens. However, research on their impact has focused mostly on the caregivers of young children; few studies have examined caregiver burden as children transition into adolescence and young adulthood, and no one has compared the impact of ASD to other neurodevelopmental disorders (e.g., ADHD).

Method: We conducted an observational study of 192 families caring for a young person (aged 14 to 24 years) with a childhood diagnosis of ASD or ADHD (n =101 and n =91, respectively) in the United Kingdom. A modified stress-appraisal model was used to investigate the correlates of caregiver burden as a function of family background (parental education), primary stressors (symptoms), primary appraisal (need), and resources (use of services).

Results: Both disorders were associated with a high level of caregiver burden, but it was significantly greater in ASD. In both groups, caregiver burden was mainly explained by the affected young person's unmet need. Domains of unmet need most associated with caregiver burden in both groups included depression/anxiety and inappropriate behavior. Specific to ASD were significant associations between burden and unmet needs in domains such as social relationships and major mental health problems.

Conclusions: Adolescence and young adulthood are associated with high levels of caregiver burden in both disorders; in ASD, the level is comparable to that reported by persons caring for individuals with a brain injury. Interventions are required to reduce caregiver burden in this population.

J Am Acad Child Adolesc Psychiatry. 2012;51:867-78.

TREATMENT MODERATORS AND PREDICTORS OF OUTCOME IN THE TREATMENT OF EARLY AGE MANIA (TEAM) STUDY.

Vitiello B, Riddle MA, Yenokyan G, et al.

Both the diagnosis and treatment of bipolar disorder in youth remain the subject of debate. In the Treatment of Early Age Mania (TEAM) study, risperidone was more effective than lithium or divalproex in children diagnosed with bipolar mania and highly comorbid with attention-deficit/hyperactivity disorder (ADHD). We searched for treatment moderators and predictors of outcome. TEAM was a multi-site, 8-week, randomized clinical trial of risperidone, lithium, or divalproex in 279 medication-naïve patients, aged 6 through 15 years, with a DSM-IV diagnosis of bipolar disorder currently in manic or mixed phase. Outcome measures included binary end-of-treatment responder status and change in the Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS) Mania Rating Scale (KMRS). Baseline demographics and clinical characteristics were tested as modifiers of treatment effect and as overall predictors of outcome. Moderator effects were detected for site, ADHD, and obesity. Across sites, the response ratio (RR) for risperidone versus lithium ranged from 1.2 (95% confidence interval [CI] = 0.8-1.7) to 8.3 (95% CI = 1.1-60.8), and for risperidone versus divalproex from 1.3 (95% CI = 0.8-2.2) to 10.5 (95% CI = 1.4-77.7). The RR for risperidone versus lithium was 2.1 for patients with ADHD, but 1.0 for those without ADHD, and 2.3 (95% CI = 1.6-3.3) for nonobese patients, but 1.1 (95% CI = 0.6-2.0) for obese ones. Older age and less severe ADHD symptoms were associated with greater improvement on the KMRS. Risperidone was more effective than lithium or divalproex across the demographics and clinical characteristics of the sample, but the magnitude of its effect was influenced by site-related characteristics and presence of ADHD. Clinical trial registration information Treatment of Early Age Mania; <http://clinicaltrials.gov/>; NCT00057681.

Klin Padiatr. 2012;224:303-08.

EXPLANATION OF SOCIAL INEQUALITIES IN HYPERACTIVITY/INATTENTION IN CHILDREN WITH PRENATAL ALCOHOL EXPOSURE.

Pfinder M, Liebig S, Feldmann R.

Background: Hyperactivity and inattention are major effects of prenatal alcohol exposure (PAE). Although predominantly women from the high social class consume alcohol during pregnancy, children from the low social class are particularly affected by the adverse effects of PAE. This study aimed to test the hypothesis of a social gradient in hyperactivity/inattention in children with PAE.

Methods: Children with PAE (N=996) enrolled in the German Health Interview and Examination Survey for Children and Adolescents (KiGGS) were studied. KiGGS was designed and conducted by Robert Koch Institute (RKI) as a nationwide representative survey on the health of German children and adolescents aged 0-17 years. The data include information given by parents and adolescents on the physical and mental health, sociodemographic features, life circumstances and conditions.

Results: PAE children with a middle and low parental socioeconomic status (SES) are on a higher risk of developing hyperactivity/inattention compared to those with high parental SES. Cultural-behavioral factors had the strongest effect in the explanation of social inequalities in hyperactivity/inattention among children with PAE.

Conclusions: Cultural-behavioral factors, particularly health-related behaviors, need a significant improvement in children from the low and middle social class. To reduce social inequalities in hyperactivity in children with PAE, interventions have to focus on the dietary and television habits of the child by reaching parents from the low and middle social class.

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Neurosci Biobehav Rev. 2012;36:1897-919.

ALTERED CIRCADIAN PROFILES IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: AN INTEGRATIVE REVIEW AND THEORETICAL FRAMEWORK FOR FUTURE STUDIES.

Imeraj L, Sonuga-Barke E, Antrop I, et al.

Disruptions in the sleep-wake cycle and the circadian system have been found in a wide range of psychiatric disorders and are generally correlated with clinical severity and diminished quality of life. Emerging evidence suggests similar disturbances may be found in attention-deficit/hyperactivity disorder (ADHD). Here we review the available literature on across the day fluctuations in ADHD-related processes in terms of; (i) time of day effects on behavior and activity; (ii) morningness-eveningness chronotypology; (iii) sleep/wake rhythms; and (iv) rhythmicity in neuroendocrine and neurophysiological responsiveness. On this basis, we propose a neurobiological framework to guide future study, which sees circadian effects in ADHD, along with other aspects of ADHD arousal-related deficits (e.g., cognitive energetic deficits), as being the result of dysregulated locus coeruleus function. Based on this perspective specific recommendations for future research are presented.

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Pediatr Neurol. 2012 Oct;47:279-83.

DOES A NORMALIZING ELECTROENCEPHALOGRAM IN BENIGN CHILDHOOD EPILEPSY WITH CENTROTEMPORAL SPIKES ABORT ATTENTION DEFICIT HYPERACTIVITY DISORDER?

Schneebaum-Sender N, Goldberg-Stern H, Fattal-Valevski A, et al.

This retrospective study delineated the efficacy of antiepileptic drugs in preventing the need for methylphenidate in patients with benign childhood epilepsy with centrotemporal spikes and attention deficit hyperactivity disorder. Seventeen patients were identified. A reduction of electroencephalogram pathologic activity by more than 50% was achieved in some patients with the antiepileptic drugs levetiracetam, sulthiame, lamotrigine, clobazam, and valproic acid. Complete normalization was achieved in two patients with sulthiame. Improvement in attention along with the reduction of pathologic electroencephalogram activity was observed in four patients, two with sulthiame, and one each with lamotrigine and levetiracetam (which was ceased because of suicidal tendencies). However, this improvement in attention was either

temporary or not significant enough to discontinue methylphenidate. Methylphenidate was eventually prescribed to all patients.

PLoS ONE. 2012;7:e43909.

DOCOSAHEXAENOIC ACID FOR READING, COGNITION AND BEHAVIOR IN CHILDREN AGED 7-9 YEARS: A RANDOMIZED, CONTROLLED TRIAL (THE DOLAB STUDY).

Richardson AJ, Burton JR, Sewell RP, et al.

BACKGROUND: Omega-3 fatty acids are dietary essentials, and the current low intakes in most modern developed countries are believed to contribute to a wide variety of physical and mental health problems. Evidence from clinical trials indicates that dietary supplementation with long-chain omega-3 may improve child behavior and learning, although most previous trials have involved children with neurodevelopmental disorders such as attention-deficit/hyperactivity disorder (ADHD) or developmental coordination disorder (DCD). Here we investigated whether such benefits might extend to the general child population.

OBJECTIVES: To determine the effects of dietary supplementation with the long-chain omega-3 docosahexaenoic acid (DHA) on the reading, working memory, and behavior of healthy schoolchildren.

DESIGN: Parallel group, fixed-dose, randomized, double-blind, placebo-controlled trial (RCT).

SETTING: Mainstream primary schools in Oxfordshire, UK (n = 74).

PARTICIPANTS: Healthy children aged 7-9 years initially underperforming in reading (</=33(rd) centile). 1376 invited, 362 met study criteria.

INTERVENTION: 600 mg/day DHA (from algal oil), or taste/color matched corn/soybean oil placebo. **MAIN OUTCOME MEASURES:** Age-standardized measures of reading, working memory, and parent- and teacher-rated behavior.

RESULTS: ITT analyses showed no effect of DHA on reading in the full sample, but significant effects in the pre-planned subgroup of 224 children whose initial reading performance was </=20(th) centile (the target population in our original study design). Parent-rated behavior problems (ADHD-type symptoms) were significantly reduced by active treatment, but little or no effects were seen for either teacher-rated behaviour or working memory.

CONCLUSIONS: DHA supplementation appears to offer a safe and effective way to improve reading and behavior in healthy but underperforming children from mainstream schools. Replication studies are clearly warranted, as such children are known to be at risk of low educational and occupational outcomes in later life.

TRIAL REGISTRATION: ClinicalTrials.gov NCT01066182 and Controlled-Trials.com ISRCTN99771026.

Psychiatry Investig. 2012 Sep;9:269-77.

SEROTONIN 2A RECEPTOR GENE POLYMORPHISM IN KOREAN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Cho SC, Son JW, Kim BN, et al.

OBJECTIVE: The purpose of this study was to investigate the association between the T102C polymorphism in the serotonin 2A receptor gene and attention-deficit/hyperactivity disorder (ADHD) in Korean patients.

METHODS: A total of 189 Korean children with ADHD as well as both parents of the ADHD children and 150 normal children participated in this study. DNA was extracted from blood samples from all of the subjects, and genotyping was conducted. Based on the allele and genotype information obtained, case-control analyses were performed to compare the ADHD and normal children, and Transmission disequilibrium tests (TDTs) were used for family-based association testing (number of trios=113). Finally, according to the significant finding which was showed in the case-control analyses, the results of behavioral characteristics and neuropsychological test were compared between ADHD children with and without the C allele.

RESULTS: In the case-control analyses, statistically significant differences were detected in the frequencies of genotypes containing the C allele ($\chi^2=4.73$, $p=0.030$). In the family-based association

study, TDTs failed to detect linkage disequilibrium of the T102C polymorphism associated with ADHD children. In the ADHD children, both the mean reaction time and the standard deviation of the reaction time in the auditory continuous performance test were longer in the group with the C allele compared to the group without the C allele.

CONCLUSION: The results of this study suggest that there is a significant genetic association between the T102C polymorphism in the serotonin 2A receptor gene and ADHD in Korean children.

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Psychiatry Investig. 2012 Sep;9:257-62.

TITRATING OPTIMAL DOSE OF OSMOTIC-CONTROLLED RELEASE ORAL DELIVERY (OROS)-METHYLPHENIDATE AND ITS EFFICACY AND SAFETY IN KOREAN CHILDREN WITH ADHD: A MULTISITE OPEN LABELED STUDY.

Song DH, Choi S, Joung YS, et al.

OBJECTIVE: This study was aimed to determine effectiveness and tolerability of Osmotic-controlled Release Oral delivery (OROS) methylphenidate (MPH) and its optimal dose administered openly over a period of up to 12 weeks in drug naive Korean children with ADHD.

METHODS: Subjects (n=143), ages 6 to 18-years, with a clinical diagnosis of any subtype of ADHD were recruited from 7 medical centers in Korea. An individualized dose of OROS-MPH was determined for each subject depending on the response criteria. The subjects were assessed with several symptom rating scales in week 1, 3, 6, 9 and 12.

RESULTS: 77 of 116 subjects (66.4%) achieved the criteria for response and the average of optimal daily dose for response was to 30.05+/-12.52 mg per day (0.90+/-0.31 mg/kg/d) at the end of the study. Optimal dose was not significantly different between ADHD subtypes, whereas, significant higher dose was needed in older aged groups than younger groups. The average of optimal daily dose for response for the subjects aged above 12 years old was 46.38+/-15.52 per day (0.81+/-0.28 mg/kg/d) compared to younger groups (p<0.01). No serious adverse effects were reported and the dose did not have a significant effect on adverse effects.

CONCLUSION: Optimal mean dose of OROS-MPH was significantly different by age groups. Higher dose was needed in older aged groups than younger groups. Effectiveness and tolerability of OROS-MPH in symptoms of ADHD is sustained for up to 12 weeks.

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Psychiatry Investig. 2012 Sep;9:263-68.

ADHERENCE WITH ELECTRONIC MONITORING AND SYMPTOMS IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Yang J, Yoon BM, Lee MS, et al.

OBJECTIVE: The primary aim of this study was to compare electronic monitoring with other measures of adherence to Osmotic-controlled Release Oral delivery System methylphenidate in children with attention-deficit hyperactivity disorder (ADHD). The secondary aim was to analyze the relationships between adherence and clinical factors, including ADHD symptoms.

METHODS: Thirty-nine children diagnosed with ADHD were monitored for adherence to medication over the course of eight weeks. Medication adherence was assessed using the Medication Event Monitoring System (MEMS), which is a bottle cap with a microprocessor that records all instances and times that the bottle is opened; patient self-report; clinician rating; and pill count. Information, including demographic and clinical characteristics, symptom rating scale, and psychological test results, were also collected. The relationships between adherence and clinical factors, including ADHD rating scores of baseline and of the changes, were assessed.

RESULTS: The rate of non-adherence measured by the MEMS was found to be 46.2%, which was considerably higher than those of the patient self-report (17.9%), clinician rating (31.7%), and pill count (12.8%) of non-adherence. The rate of adherence measured by the MEMS was not significantly associated with baseline symptom severity or symptom changes over the eight weeks, although non-adherent group showed more severe baseline symptoms and inferior improvement.

CONCLUSION: Adherence as measured by the MEMS showed a discrepancy with other measures of adherence in patients with ADHD. The symptom severity and level of improvement were not related to adherence with MEMS. Further studies are needed to evaluate the variables that may impact medication adherence in children with ADHD.

Psychiatry Res. 2012 Sep.

ASSOCIATION BETWEEN DIETARY BEHAVIORS AND ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND LEARNING DISABILITIES IN SCHOOL-AGED CHILDREN.

Park S, Cho SC, Hong YC, et al.

We aimed to comprehensively investigate the associations between a wide range of measures of dietary behaviors and learning disabilities and attention-deficit/hyperactivity disorder (ADHD) in community-dwelling Korean children in order to generate hypotheses for future work. The present study included 986 children [507 boys, 479 girls; mean (S.D.) age=9.1 (0.7) years] recruited from five South Korean cities. Children's dietary behaviors were assessed by the mini-dietary assessment (MDA) for Koreans. It consists of ten items to assess the level of intake of dairy products, high-protein foods, vegetables, fried foods, fatty meats, salt, and sweetened desserts and whether the subject is eating three regular meals and has a balanced diet. Learning disability was assessed via the Learning Disability Evaluation Scale (LDES). ADHD was assessed via the Diagnostic Interview Schedule for Children version-IV and the ADHD rating scale, and ADHD-related behavioral problems were assessed via the Child Behavior Checklist. After adjusting for potential confounders, a high intake of sweetened desserts, fried food, and salt is associated with more learning, attention, and behavioral problems, whereas a balanced diet, regular meals, and a high intake of dairy products and vegetables is associated with less learning, attention, and behavioral problems. Our data suggest that existing encouraged dietary habits mostly have beneficial effects on learning, attention, and behavioral problems in Korean children. These findings are in general the same results in other studies on ADHD children in other countries. However, the cross-sectional study design prevents our ability to assess causal relationships.

Psychol Addict Behav. 2012 Sep;26:585-98.

SUBSTANCE USE AND DELINQUENCY AMONG ADOLESCENTS WITH CHILDHOOD ADHD: THE PROTECTIVE ROLE OF PARENTING.

Walther CAP, Cheong J, Molina BSG, et al.

Several domains of parenting have been identified as important for adolescent well-being. Whether these same domains are equally beneficial for adolescents with ADHD histories remains an empirical and clinically important question. This study examined whether parental knowledge of their teen's activities and whereabouts, consistency, support, and parent-adolescent conflict are associated with substance use and delinquency similarly for adolescents with and without a diagnosis of ADHD in childhood. A sample of 242 adolescents, 142 diagnosed with ADHD in childhood and prospectively followed into adolescence, and 100 without ADHD in childhood, were the focus of study. The relations between adolescent-reported outcomes (i.e., substance use and delinquency) and parenting behaviors were tested using latent variable modeling to determine both the effects of general (common) and specific (unique) parenting behaviors for participants with and without a history of ADHD. Adolescents' report of parental knowledge was a significant correlate of delinquency and substance use above and beyond other parenting variables and the variance in common across the parenting variables. More knowledge was associated with less delinquency and substance use for all participants, but parental knowledge was more strongly associated with alcohol use for adolescents with versus without childhood ADHD. These correlational findings suggest that, despite the increased difficulty of parenting youths with ADHD histories, actions taken by parents and youth to increase parental awareness may provide some protection against behavioral transgressions known to be elevated in this population.

Reading and Writing. 2012 Jul;25:1403-26.

WRITTEN EXPRESSION PERFORMANCE IN ADOLESCENTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD).

DeBono T, Hosseini A, Cairo C, et al.

We examined written expression performance in a sample of adolescents with ADHD and subthreshold ADHD using two different strategies: examining performance on standardized measures of written expression and using other indicators of written expression developed in this study. We examined associations between standardized measures of written expression, cognitive processing measures (working memory, processing speed, language, fine motor ability, and reading efficiency) and behavioral ratings of ADHD by parents and teachers. We also developed a coding scheme for a writing sample to measure productivity and the ratio of self-corrections to errors. The results indicated that written expression performance was most consistently associated with cognitive processing measures and not behavioral ratings of ADHD, based on correlational and simultaneous regression analyses. These results were consistent in the analyses with both the standardized measures and the coding scheme measures of written expression. Findings generally remained robust, regardless of whether participants who met criteria for a learning disability were included or excluded in the analyses. The current results suggest that written expression difficulties in adolescents with ADHD are attributable to processing difficulties that may be associated with ADHD, not to ADHD reported symptoms. Implications for assessment and intervention are discussed.

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Rehabil Psychol. 2012 Aug;57:256-65.

AGE AT INJURY AND LONG-TERM BEHAVIOR PROBLEMS AFTER TRAUMATIC BRAIN INJURY IN YOUNG CHILDREN.

Karver CL, Wade SL, Cassedy A, et al .

Objective: This study examined the effects of age at injury on the persistence of behavior problems and social skill deficits in young children with complicated mild to severe traumatic brain injury (TBI).

Method: A concurrent cohort/prospective research design was used with repeated assessments of children with TBI (n = 82) or Orthopedic Injury (OI) (n = 114). Parents completed the Child Behavior Checklist, the Behavior Rating Inventory of Executive Functions, and the Preschool and Kindergarten Behavior Scales or the Home and Community Social and Behavior Scales shortly after injury to assess preinjury functioning, and at an extended follow-up an average of 38 months postinjury. Generalized linear modeling was used to examine the relationship of age at injury to the maintenance of behavior problems, and logistic regression was used to examine the persistence of clinically significant behavior problems.

Results: At the extended follow-up, severe TBI was associated with significantly greater anxiety problems relative to the Group OI. With increasing time since injury, children who sustained a severe TBI at an earlier age had significantly higher levels of parent-reported symptoms of ADHD and anxiety than children who were older at injury.

Conclusions: Findings suggest that longer-term treatment for behavior problems may be needed after severe TBI, particularly for those injured at an earlier age.

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Res Dev Disabil. 2012 Aug;34:40-45.

MOTOR PROFILE OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER, COMBINED TYPE.

Goulardins JB, Marques JC, Casella EB, et al.

OBJECTIVES: The aim of this study was to assess the motor profile of children with attention deficit hyperactivity disorder (ADHD), combined type.

METHOD: The case group consisted of 34 treatment-naive, male patients, aged 7-11 years, who had been diagnosed with ADHD, combined type, without comorbidities (except oppositional defiant disorder). The control group was composed of 32 age- and gender-matched, typically developing children. The evaluation was made using the Motor Development Scale, which assessed global and fine motricity, balance, body scheme, and spatial and temporal organization.

RESULTS: The results showed that the motor quotients in all areas studied were lower in the ADHD group than in the control group, although in most cases they represent normal values relative to the scale (53% were classified as having "normal medium" motor development, 29% "normal low", 9% "very low", 6% "normal high" and 3% as "lower"). Statistically significant differences between groups were observed in general motor age, general motor quotient, balance, spatial organization, and fine and global motricity.

CONCLUSION: Difficulties in motor performance were observed in the children with ADHD, combined type. The identification of such deficits may assist in the design of therapeutic protocols for the treatment of children with this type of ADHD.

Res Dev Disabil. 2012;33:2028-39.

EFFECTS OF HYPERMEDIA INSTRUCTION ON DECLARATIVE, CONDITIONAL AND PROCEDURAL KNOWLEDGE IN ADHD STUDENTS.

Fabio RA, Antonietti A.

Two groups of students aged between 12 and 14 years-27 with attention deficit/hyperactivity disorder (ADHD) and 28 with both ADHD and learning problems-were compared to a sample of 29 typically developing students in terms of the acquisition and retention of declarative, conditional and procedural knowledge either in a hypermedia learning or in a traditional instructional setting. Hypermedia instruction produced better learning outcomes than traditional instruction did; the benefits concerned prevalently procedural knowledge and emerged mainly in the retention phase. Hypermedia instruction led ADHD students to reach achievement levels similar to those of typically developing students. Furthermore, hypermedia instruction contrasted the decay of knowledge from the acquisition to the retention phase in both clinical groups. On the basis of these findings, hypermedia instruction is proposed as an approach that may help ADHD learners to overcome attention deficits.

Res Dev Disabil. 2012;34:431-39.

THE ROLE OF SUSTAINED ATTENTION AND DISPLAY MEDIUM IN READING COMPREHENSION AMONG ADOLESCENTS WITH ADHD AND WITHOUT IT.

Stern P, Shalev L.

Difficulties in reading comprehension are common in children and adolescents with Attention Deficit/Hyperactivity Disorder (ADHD). The current study aimed at investigating the relation between sustained attention and reading comprehension among adolescents with and without ADHD. Another goal was to examine the impact of two manipulations of the text on the efficiency of reading comprehension: Spacing (standard- vs. double-spacing) and Type of presentation (computer screen vs. hard copy). Reading comprehension of two groups of adolescents (participants with ADHD and normal controls) was assessed and compared in four different conditions (standard printed, spaced printed, standard on computer screen, spaced on computer screen). In addition, participants completed a visual sustained attention task. Significant differences in reading comprehension and in sustained attention were obtained between the two groups. Also, a significant correlation was obtained between sustained attention and reading comprehension. Moreover, a significant interaction was revealed between presentation-type, spacing and level of sustained attention on reading comprehension. Implications for reading intervention and the importance of early assessment of attention functioning are discussed.

Spec Care Dentist. 2012 Sep;32:184-89.

DENTAL INJURIES AND ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN CHILDREN.

Altun C, Guven G, Akgun OM, et al.

The purpose of this study was to determine the relationship between attention-deficit/hyperactivity disorder (ADHD) and traumatic dental injuries in children. A total of 194 children aged 7-15 years participated in this

study. Fifty-seven traumatic injuries to permanent teeth were observed in 33 children. Although a statistically significant difference was not found ($p = .848$), the rate of incidence was higher in the group with ADHD (17.5%) than in the control group (16.5%). The maxillary right central incisors accounted for nearly half of all injured teeth, while the maxillary central incisors represented the most frequently injured teeth. Enamel fracture was the most common type of dental injury observed. The incidence of enamel fracture was higher in the control group (66.7%) than in the subjects with ADHD (43.3%). There was a significant association between the occurrence of traumatic dental injury and the presence of an overjet greater than 3 mm ($p = .020$).

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The British Journal of Psychiatry. 2012 Jul;201:20-25.

CHILDHOOD ATTENTION PROBLEMS AND SOCIOECONOMIC STATUS IN ADULTHOOD: 18-YEAR FOLLOW-UP.

Galéra C, Bouvard MP, Lagarde E, et al.

Background: Attention-deficit hyperactivity disorder (ADHD) has been associated with socioeconomic difficulties later in life. Little research in this area has been based on longitudinal and community studies.

Aims: To examine the relationship between childhood attention problems and socioeconomic status 18 years later.

Method: Using a French community sample of 1103 youths followed from 1991 to 2009, we tested associations between childhood attention problems and socioeconomic status between ages 22 and 35 years, adjusting for potential childhood and family confounders.

Results: Individuals with high levels of childhood attention problems were three times more likely to experience subsequent socioeconomic disadvantage than those with low levels of attention problems (odds ratio 3.44, 95% CI 1.72–6.92). This association remained statistically significant even after adjusting for childhood externalising problems, low family income, parental divorce and parental alcohol problems.

Conclusions: This longitudinal community-based study shows an association between childhood attention problems and socioeconomic disadvantage in adulthood. Taking into account ADHD and associated difficulties could help reduce the long-term socioeconomic burden of the disorder.

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The World Journal of Biological Psychiatry. 2012 Jul;13:379-400.

BIOMARKERS FOR ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD). A CONSENSUS REPORT OF THE WFSBP TASK FORCE ON BIOLOGICAL MARKERS AND THE WORLD FEDERATION OF ADHD.

Thome J, Ehlis AC, Fallgatter AJ, et al.

Objective: Psychiatric “nosology” is largely based on clinical phenomenology using convention-based diagnostic systems not necessarily reflecting neurobiological pathomechanisms. While progress has been made regarding its molecular biology and neuropathology, the phenotypic characterization of ADHD has not improved. Thus, validated biomarkers, more directly linked to the underlying pathology, could constitute an objective measure for the condition.

Method: The task force on biological markers of the World Federation of Societies of Biological Psychiatry (WFSBP) and the World Federation of ADHD commissioned this paper to develop a consensus report on potential biomarkers of ADHD. The criteria for biomarker-candidate evaluation were: (1) sensitivity 80%, (2) specificity 80%, (3) the candidate is reliable, reproducible, inexpensive, non-invasive, easy to use, and (4) confirmed by at least two independent studies in peer-reviewed journals conducted by qualified investigators.

Results: No reliable ADHD biomarker has been described to date, but some promising candidates (e.g., olfactory sensitivity, substantial echogenicity) exist. A problem in the development of ADHD markers is sample heterogeneity due to aetiological and phenotypic complexity and age-dependent co-morbidities.

Conclusions: Most likely, no single ADHD biomarker can be identified. However, the use of a combination of markers may help to reduce heterogeneity and to identify homogeneous subtypes of ADHD.

Ther Umsch. 2012;69:467-73.

THE SCHOOL CHILD WITH ADHD.

Walitza S, Drechsler R, Ball J.

Attention Deficit/Hyperactivity Disorder (ADHD) is one of the most frequent psychiatric disorders at school age. The core symptoms of hyperactivity, impulsivity and inattention emerge before the age of seven and are associated with severe impairment of the child's everyday functioning (family, school, leisure time). Seventy percent of the affected children show at least one comorbid psychiatric condition or learning disorder/academic impairment. ADHD is one of the most widely investigated disorders in child and adolescent psychiatry. A multitude of imaging (fMRI) and genetic studies comparing children with ADHD and typically developing children have provided clear evidence for the neurobiological foundation of ADHD. Nevertheless, environmental, familial and academic factors play an important role with regard to the persistence and severity of the disorder. Treatment should be preferentially multimodal, with interventions targeting the child, the parents, and, if possible, the teacher. Society with its specific requirements and constraints, and also school, are not well adjusted for children that are different, hyperactive and easily distracted. However, many of these children also have resources. When fascinated by a task, they may show persistence and commitment.

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Yeni Symp. 2012;50:67-75.

PSYCHIATRIC AND ORGANIC COMORBIDITIES IN CHILDREN DIAGNOSED WITH MENTAL RETARDATION IN A UNIVERSITY HOSPITAL.

Aktepe E, Sonmez Y.

Objective: The present study aims to examine psychiatric and organic comorbidities, the pregnancy and birth complications in children diagnosed with mental retardation in the Department of Child-Adolescent Mental Health and Disorders within the scope of a two-year period.

Method: Children and adolescents diagnosed with mental retardation by Suleyman Demirel University Child-Adolescent Psychiatry Polyclinic between 1/1/2008 and 1/1/2010 comprise the research group. A semi-configured interview form prepared by the present author is utilized as an evaluation instrument.

Findings: The average age of the 209 children who comprise the research group is 7.4 (plus or minus) 4.1. Males and females comprise the 60.3%, and 39.7% of the research group respectively. Presence of organic comorbidity in the 50.2% and of psychiatric comorbidity in the 34% of the children and adolescents diagnosed with mental retardation has been detected. The most common organic comorbidities are epilepsy (28.2%), cerebral palsy (14.4%). The most common psychiatric comorbidities are attention deficit hyperactivity disorder (17.2%) and frequently observed pervasive developmental disorders (9.6%). Most of the subjects have been observed to have mild level retardation (53.1%). The group diagnosed with moderate and serious mental retardation is observed to have low psychiatric comorbidity in a statistically significant level in comparison to the group with mild mental retardation. The 12.9% of the subjects are found to have illiterate mothers and 66% of the cases are found to be primary school graduates. As for the birth stories of the subjects, low birth weight rate is 34%, hypoxia/anoxia story rate is 31.6% and prematurity rate is 18.2%. In addition, 20.6% of the subjects are found to be children of parents who have kinship stories.

Discussion and Conclusion: It is found out that 1/5 of the subjects who are 7 or older have received no education. For positive prognosis in mental retardation, the subjects should be detected in early ages and be directed to education. In the study presented hereby, high rates of psychiatric and organic comorbidities have been identified. The presence of psychiatric and organic comorbidity makes it hard to treat the subject and affects the course of the disorder in a negative way. Therefore, it is of profound importance in early diagnosis and treatment. The fact that the group diagnosed with moderate and serious mental retardation is observed to have low psychiatric comorbidity in a statistically significant level in comparison to the group with mild mental retardation may be due to the fact that the diagnosis process becomes harder as the level of mental retardation increases. Thus, instruments and methods with sufficient sensitivity should be developed for our utilization in moderate/serious mental retardation cases.

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Z Epileptologie. 2012;1-5.

ATTENTION IMPAIRMENT IN EPILEPSY.

Lutz MT, Kieliba U.

Patients with epilepsy frequently suffer from attention problems. This holds true for children and adults alike. Possible causes of attention deficits include seizure-related factors, such as frequency of seizures or structural cerebral damage, together with antiepileptic drugs, electroencephalogram (EEG) abnormalities, depression, attention deficit and hyperactivity disorder (ADHD) and sleep disorders. With regard to the diagnosis, a theory-based assessment of the component processes of attention is important. Longitudinal studies are desirable. Improvements in attention processes can be achieved by optimizing the treatment of epilepsy and comorbid disorders as well as by cognitive attention training programs.

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Zhongguo Dang Dai Er Ke Za Zhi. 2012 Sep;14:689-92.

AN EPIDEMIOLOGICAL SURVEY OF ATTENTION DEFICIT HYPERACTIVITY DISORDER IN SCHOOL-AGE CHILDREN IN SHENZHEN.

Zhou KY, Gao MH, Yang CH, et al.

OBJECTIVE: To investigate the prevalence of attention deficit hyperactivity disorder (ADHD) and behavior problems among school-age children in Shenzhen City of Guangdong.

METHODS: A total of 10553 students in Grades 1-6 from different primary schools in Shenzhen City were assessed by Conners Parent Symptom Questionnaire (PSQ) and Conners Teacher Rating Scale (TRS). Children showing abnormalities according to PSQ or TRS were further assessed according to the diagnostic standard for ADHD as laid out in the diagnostic and statistical manual for mental disorders- 4th edition (DSM-).

RESULTS: A total of 8193 PSQ and TRS assessments were completed. The children were aged from 7 to 13 years. The total prevalence rate was 7.60% by PSQ and 5.59 % by TRS. Four hundred and forty-two children were diagnosed having ADHD by DSM-, with a prevalence rate of 5.39%. There were significant differences in the prevalence rate of ADHD among children aged 7 to 13 years ($\chi^2=21.613$, $P<0.05$). In children aged 7 to 9 years, the prevalence rate was higher (above 6%). The prevalence rate of ADHD in boys was significantly higher than in girls (6.65% vs 3.12%; $P<0.05$). Impulsion and hyperactivity (79.6%), learning (60.6%) and conduct disorders (52.0%) were the main behavioral problems in children with ADHD. The prevalence of learning disorders was higher in girls than in boys.

Conclusions The prevalence rate of ADHD in children from primary schools in Shenzhen City is 5.39%, and it is higher in children aged 7 to 9 years. Boys have a higher prevalence rates of ADHD than girls. Impulsion and hyperactivity, learning and conduct disorders are common problems in children with ADHD.

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Research in Developmental Disabilities



Effects of hypermedia instruction on declarative, conditional and procedural knowledge in ADHD students

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ABSTRACT

Two groups of students aged between 12 and 14 years—27 with attention deficit/hyperactivity disorder (ADHD) and 28 with both ADHD and learning problems—were compared to a sample of 29 typically developing students in terms of the acquisition and retention of declarative, conditional and procedural knowledge either in a hypermedia learning or in a traditional instructional setting. Hypermedia instruction produced better learning outcomes than traditional instruction did; the benefits concerned prevalently procedural knowledge and emerged mainly in the retention phase. Hypermedia instruction led ADHD students to reach achievement levels similar to those of typically developing students. Furthermore, hypermedia instruction contrasted the decay of knowledge from the acquisition to the retention phase in both clinical groups. On the basis of these findings, hypermedia instruction is proposed as an approach that may help ADHD learners to overcome attention deficits.

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1. Introduction

Hypermedia tools are computer-based devices designed to promote learning in educational settings. In comparison to traditional educational instruments, hypermedia tools have the advantage of providing learners with concepts presented through a variety of symbols (written texts, oral narratives, pictures, animations, and sounds) (Mayer, 2005) and of offering learners control over the instructional process by allowing them to choose the preferred sequence along with access contents (Shin, Schallert, & Savenye, 1994). In fact hypermedia tools are characterised by two features: (1) images, photos, diagrams, motion pictures, sounds, and texts are simultaneously available to activate learner's verbal/auditory and visual channels at the same time (Mayer, 2003); (2) thanks to the networked structure, organization of information is similar to human associative memory (Granic & Lamey, 2000).

With reference to the first issue, i.e., the simultaneous activation of different perceptual-cognitive channels, it has been argued that information is processed mainly through two channels: one processes verbal information such as texts or discourses; the other processes non-verbal information such as visuals. Learning is more effective when information is processed through two channels rather than when it is processed through only one channel independent on the other (Paivio, 1986, 1991; Schnotz & Lowe, 2003). Recently Mayer (2001) tried to understand how learners integrate information

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from verbal and visual channels. According to Mayer, the learner first considers the relevant aspects of information presented through the two channels and then selects relevant words from verbal information and relevant images from visual information. The chosen words and pictures are then organised in the working memory. Finally, connections are formed between verbal and visual representations.

Considering the second issue, according to Jonassen and Grabinger (1990) learning involves the reorganization of knowledge structures. These structures are arranged in networks of interrelated concepts. Such structured networks, which are mirrored in the content structure of a hypermedia tool, are composed of nodes and ordered relationships connecting them, so that several contents linked to each other can be activated rapidly. This allows learners to be flexible in accessing concepts (Andris, 1996; Chou, 2001; Douglas & Riding, 1993; Ford & Chen, 2000; Ford & Ford, 1992; Graff, 2003; Riding & Grimley, 1999). The non-linear way of presenting contents can produce advantages in comparison to traditional linear ways (Chou & Wang, 1999; Lin, Liu, & Yuan, 2001), favouring the acquisition of the overall picture of the contents (Calcaterra, Antonietti, & Underwood, 2005; Fiorina, Antonietti, Colombo, & Bartolomeo, 2007) and memory retention (Granic & Lamey, 2000), making the learning process easier, raising individual motivation and level of activity and decreasing anxiety (Ayersman & Minden, 1995; Hede, 2002; Lohr, Ross, & Morrison, 1995). However, Baylor (2001) found learning costs if students apply a linear navigation mode (proceeding as though one is reading a textbook) on hypermedia content as they become moderately disorientated (Muller-Kalthoff & Moller, 2003). Such disorientation did not occur when navigation took a non-linear format and students had access to all nodes of the hypermedia tool. As a result on an incidental learning task, the users performed better in the non-linear navigation mode than those in the linear mode.

The alleged benefits of hypermedia devices have been supported by several studies (e.g., Mayer, 2003, 2005; Najjar, 1998; Sweller, 1999; Van Merriënboer, 1997). Such benefits have been proven also for students showing learning problems (Hall, Hughes, & Filibert, 2000). As far as this issue is concerned, Maccini, Gagnon, and Hughes (2002) conducted a comprehensive review of the literature on technology-based practices addressed to secondary school students identified as learning disabled. Hypermedia tools appeared to be relevant instruments for educating these kinds of students. However, few studies investigated the relationships between the effectiveness of hypermedia instructional tools and attention deficit/hyperactivity disorder (ADHD) although there are several reasons to hypothesize that hypermedia instruments can play a role to overwhelm the difficulties that ADHD students encounter in learning.

ADHD is one of the most prevalent developmental disorders diagnosed in childhood and it is characterised by excessive activity, short attention span, and impulsivity (American Psychiatric Association, 2000). A substantial amount of literature exists documenting the cognitive and behavioural deficits of persons with ADHD (Pennington & Ozonoff, 1996; Rucklidge & Tannock, 2002). Much emphasis has been placed on the role of motivational factors in understanding the performance deficits of children with ADHD. The influential work of Douglas (1983) highlighted the association between ADHD and difficulty in sustaining effort and motivation, particularly in the face of tedious tasks and minimal reinforcement. Barkley (1997) also stressed motivational factors in his model of executive functioning in ADHD, with poor motivation conceptualised as stemming primarily from a behavioural inhibition deficit leading to disruptions in the executive function of self-regulation of affect, motivation, and arousal. An indirect support to the role of motivational factors was provided by Slusarek, Velling, Bunk, and Eggers (2001), who showed that ADHD children performed an attention task requiring inhibitory control as well as normally developing children when high incentives were provided. We can argue that hypermedia tools should increase motivation thanks to the attraction, the curiosity and the sense of control over the learning process that they produce in the users. This leads to predict that ADHD students may perform better in learning tasks when they are allowed to employ such instruments.

In a pioneering study Kleinman, Humphrey, and Lindsay (1981) reported that ADHD children using the computer increased, as compared to a pen-and-pencil condition, the time they spent in working on mathematical tasks and the number of solved problems. Further investigations supported the hypothesis that technological devices are beneficial for people with ADHD (Bender & Bender, 1996; Dailey & Rosemberg, 1994; Ford, Poe, & Cox, 1993; Xu, Reid, & Steckelberg, 2002). For instance, it was repeatedly showed that ADHD children are equally successful than no-ADHD individuals in playing videogames (Farrace-Di Zinno et al., 2001; Houghton et al., 2004; Shaw, Grayson, & Lewis, 2005), even if it emerged that ADHD children exhibited a higher amount of response preparation (Lawrence et al., 2002). In school settings, computer-assisted instruction—which, however, is not necessarily hypermedia in its own nature—was proved to help ADHD persons to improve academic achievement (Mautone, DuPaul, & Jitendra, 2005; Ota & DuPaul, 2002), perhaps because of the fact that students are faced to clearly designed contents, well-structured learning units which are provided them according to planned sequences of increasing complexity, and thanks to the immediate feedback which is given (Burt & Ryan, 1997). Solomonidou, Garagouni-Areou, and Zafropoulou (2004) analysed the effects of different types of information and communication technologies use on students with ADHD symptoms. The dependent variables in their study were the different categories of behaviour shown by children during the activities carried out with the computer, such as reading the text carefully, fidgeting while reading the text, not following instructions, avoiding tasks, being distracted by extraneous stimuli, and so forth. Results showed that children with ADHD symptoms paid more attention when they watched videos and pictures or listened to short narration items, but they showed great difficulty in reading long texts or watching long videos with no narrative structure. These findings suggest that technological devices, if appropriate, can have a positive effect on ADHD learners.

In the studies mentioned above the use of computer-supported instructional tools introduced a variety of disparate variables (different structure of the matter contents, higher level of interaction with the materials, longer time spent in using

the computer, general modification of the overall educational setting, and so on), which prevent us to understand the specific role played by the hypermedia features of such tools in facilitating learning in ADHD students. A more strict control of the instructional material, of the environmental conditions and of the task demand was exerted by Fabio, Antonietti, and Tiezzi (2003) on the experimental procedure; it was found that the performance of ADHD students was similar to that of normally achieving students when concepts were presented through text, sounds, and pictures simultaneously, whereas, when the same concepts were provided only in an auditory form, ADHD students' performance was lower than that of the control students. This finding is consistent with the results described by Lomas (2002), who involved elementary school children diagnosed with ADHD and with mild/moderate learning disabilities into a computer-assisted cognitive training and realised that ADHD children learned better when information was presented through multiple channels.

Since the review of the literature showed that ADHD can benefit from hypermedia tools in learning, an interesting question arises in asking at which level of knowledge they are helped by such tools. Anderson (1995) classified knowledge into three levels: declarative, conditional, and procedural. In Anderson's (1995) taxonomy, procedural knowledge depends upon conditional knowledge and conditional knowledge depends in turn on declarative knowledge. Anderson (1995) defined *declarative knowledge* as explicit knowledge that we can report and of which we are consciously aware. Three subtypes of declarative knowledge have been proposed: labels and names, facts and lists, and organised discourses (Smith & Ragan, 1993). Learning facts and names requires making a mental connection between elements. When the connection between elements is meaningful, it can more easily be learnt: facts and lists can be learned better when they are integrated into prior knowledge. Organised discourse learning occurs when reading a text; it should also be integrated into the existing knowledge structure. Declarative knowledge learning involves three activities: linking the new knowledge to existing knowledge, organizing acquired knowledge in a new way, and elaborating knowledge in order to make the new knowledge meaningful for learners. *Conditional knowledge* consists of if-then or condition-action statements. These statements describe the relationship between two or more concepts. "If" statements indicate conditions and "then" statements indicate actions. Conditional knowledge includes propositions, principles, laws, axioms, theories, and postulates. Smith and Ragan (1993) stated that conditional knowledge enables learners to predict what happens if one condition or action is changed. To acquire conditional knowledge, learners should first determine the variables or concepts involved in the situation and then decide the rules to be applied to the situation. Once known and unknown variables are identified, the effect of known variables on unknown variables should be determined. At the end of the condition-action sequence, learners should reach a conclusion about the situation. *Procedural knowledge* involves both declarative and conditional knowledge. According to Schunk (1996), procedural knowledge consists of concepts, rules, and algorithms. It concerns how to perform cognitive activities and it is often implicit. Procedural knowledge originates in problem solving activities in which a goal is broken down into sub-goals for which the problem solver possesses operators (Anderson, 1995). Smith and Ragan (1993) claimed that procedural rules consist of a series of steps initiated in response to a particular class of circumstances to reach a specific goal; such rules suggest learners which actions should be taken.

According to Mayer's (2001) theory of multimedia learning, we can expect that hypermedia tools produce benefits in all the three kinds of knowledge. Since identifying or creating relations seems to be the core process of declarative, conditional, and procedural knowledge, we are led to hypothesize that the simultaneous presentation of texts or narrations and pictures or animations may facilitate the understanding and the retention of the three kinds of knowledge because multimedia exposure has been proved to be especially beneficial when the goal is to learn the structure underlying concepts. In most studies carried out in the perspective proposed by Mayer (1999), the materials to be learned did not concern single, separate concepts, but interconnected sets of data and causal relations. In order to promote the acquisition of such type of materials, the concomitant presentation of textual and figural stimuli should help students in selecting the relevant elements, organizing them and integrating them into a whole representation. Even if Mayer never tested this implication of his theory, we can assume that such an effect should occur also in students with ADHD: in this case multimedia devices should be beneficial since the pictures or the movies help the learner to address his/her attention toward the critical elements (selective attention) and to inhibit the tendency to move the focus of attention toward other elements prematurely, namely, before the former ones have been adequately processed (sustained attention). Pictures also suggest how the selected elements are to be related one another to reach the overall understanding of the topic, so preventing ADHD students to "jump" mentally from an element to another in an unproductive way, that is, without finding the proper way to link them. In Mayer's perspective, a further theoretical support to the alleged advantages that multimedia tools might provide to ADHD learners consists in the fact that if, because of the susceptibility to distraction of ADHD individuals, information has not been caught or has not been adequately processed by a sensory channel, the other channel can supply to this.

Also the arguments supporting the strengthens of hypertexts which were mentioned above induce to expect positive effects of hypermedia instruments in the acquisition and retention of declarative as well as conditional and procedural knowledge. If linking new information to pre-existing concepts is important for the construction of each kind of knowledge, hypertexts should facilitate the elaboration of declarative, conditional, and procedural knowledge since they allow the learner to access new data just starting from his/her previous knowledge (which prompts him/her to look for concepts that can extend what is already known), reduce the gap between what is familiar and what is unfamiliar, overcome contradictions, inconsistencies and misunderstandings in the prior knowledge, to answer questions risen on the basis of the possessed information. Also in this case the benefits produced by hypertexts should be shared by ADHD learners. Firstly, once a section of the hypertext has been examined, student's attention is attracted toward the contents to be learned because

of the need of choosing what section is better to access to. The action of selecting the next section prevents him/her to let his/her mind to “wander” away from the task. Secondly, if motivation is important in supporting the attentional investment and it is lacking in ADHD students, the possibility to move toward a section which meets personal interest should enhance curiosity and the willing to pay attention to the new concepts which are provided.

The experiment reported here was designed to examine students with ADHD, students with ADHD and learning problems (LP), and typically developing students in terms of the acquisition and retention of declarative, conditional, and procedural knowledge in a hypermedia learning environment vs. a traditional instructional environment. More specifically, the first question addressed in the study was whether declarative, conditional, and procedural knowledge are better acquired and retained when provided by a hypermedia tool as opposed to traditional instruction. The second question was whether the hypermedia tools yield the same better learning outcomes—if any—both in the acquisition and in the retention phase. The third question was whether clinical groups differ from each other and from a typically developing group in knowledge assimilation according to the instructional setting to which they are assigned. Moreover whether possible differences among clinical groups and differences between each of them and the control group depend on the phase (acquisition vs. retention phase) in which learning outcomes are assessed. The answers to the first and second questions should allow us to understand better the beneficial effects produced by hypermedia tools on learning thanks to the identification of the precise level of knowledge and phase of the learning process where such effects might occur. The answers to the third question should make clearer the role played by hypermedia devices in facilitating learning in ADHD students, allowing us to go beyond the general suggestions provided by the investigations carried out previously.

2. Methods

2.1. Participants

The participants in this study were selected from a sample of 1223 students attending to public schools in Lombardy, a region of the Northern Italy. Students ranged in age from 12 to 14 years and were attending to either the 1st or 2nd grade of the secondary school (corresponding to the 6th and 7th grades of the primary school). A wide sample of schools which were in touch with the Catholic University of Milano, since they had been involved in previous on-the-job training courses addressed to teachers, were contacted and asked to collaborate to the investigation. The procedure described below was followed in all schools which decided to participate.

To select students with ADHD symptoms, two phases were followed.

2.1.1. First phase

The Italian adaptation of the American ADHD Rating Scale-IV: School Version (DuPaul, Power, Anastopoulos, & Reid, 1998) and the Italian adaptation of the Disruptive Behaviour Disorder Rating Scale (Pelham, 1993) were used. The development of both the original psychometric instruments was based on the DSM-IV criteria for ADHD (American Psychiatric Association, 2000). The Italian adaptation of the American ADHD Rating Scale-IV, called SDAI, was devised by Marzocchi and Cornoldi (2000). The Italian adaptation of the Disruptive Behaviour Disorder Rating Scale, called SCOD, was devised by Marzocchi et al. (2001). The use of these scales as a first screening is a well-known method to identify learners with ADHD symptoms (Ford et al., 1993).

SDAI includes two subscales, each constituted by 9 items: distractibility or inattentivity (I) and hyperactivity (H). Items are endorsed on a four-point scale: Never or rarely (0), Sometimes (1), Often (2) and Very often (3). The possible total score that an individual can reach on each of the subscales ranges from 0 to 27. The cut-off criterion for both subscales is 14. If an individual obtains a score exceeding the cut-off in the first subscale only, he/she is classified as belonging to the ADHD-I (inattentive) subgroup; if he/she exceeds the cut-off in the second subscale only, he/she belongs to the ADHD-H (hyperactive) subgroup; if he/she exceeds the cut-off in both the subscales, he/she is classified as ADHD-C (combined, namely, both inattentive and hyperactive).

SCOD is composed of 13 items. Eight items provide a disruptive behaviour disorder index and 5 items provide a LP (learning problems) index in both mathematical and linguistic areas. Items are scored on a four-point scale: Never or rarely (0), Sometimes (1), Often (2) and Very often (3). The possible total score that an individual can reach on the disruptive behaviour disorder subscale ranges from 0 to 24 and the cut-off criterion is 12. The possible total score that an individual can obtain on the LP subscale ranges from 0 to 15 and the cut-off score is 8.

The psychometric evidence supporting SDAI can be summarised as follows. Marzocchi and Cornoldi (2000) reported on month test–retest reliability of .89 for the inattentive and .95 for the hyperactivity subscales; SDAI internal reliability was .97 and .94, respectively, for the inattentive and hyperactivity subscales. Regards to SCOD, Marzocchi et al. (2001) reported a one-month test–retest reliability of .92 for the disruptive behaviour disorder and of .89 for the LP subscales. Internal reliability for the two subscales was, respectively, .88 and .86.

SDAI and SCOD scales were applied to all students enrolled in the schools which agreed to participate in the investigation. For each student, the teacher who played the role of tutor was asked to fill in SDAI and SCOD. Teacher were told that, if they were uncertain about how to endorse some items of the scales and/or were lacking of relevant information, they could involve one or more colleagues in filling in the scales so to reach a shared response.

2.1.2. Second phase

Students who exceeded the cut-off scores in one or both SDAI subscales (I and H) passed to the second phase for a clinical diagnosis carried out by a specialised psychologist during individual interviews. The psychologist conducted interviews to exclude ADHD-like symptoms as bipolar disorders (early onset bipolar disorder), Tourette's syndrome, childhood depression, oppositional defiant disorder, and so on. She also examined if the symptoms causing impairment were reported in two or more settings and the onset age of the disorder. She collected data from both parents and teachers. During the interviews the psychologist also administered WISC-R (Wechsler, 1991). The interviews were also aimed at getting information about school achievement from parents, teachers, and students themselves. After the individual clinical assessment 6 participants (2 who reached the cut-off criteria on SDAI and 4 who reached the cut-off criteria on both SDAI and SCOD) were excluded from the study because of the diagnosis of other disorders (oppositional defiant disorders).

The final sample included 27 students with ADHD, 28 students with both ADHD and LP and 29 normally achieving students as a control group (see below).

2.1.3. Students with ADHD

The ADHD group was composed by 18 students who, on the basis of SDAI scores, met ADHD-C criteria, 7 who met ADHD-I criteria and 2 who met ADHD-H criteria. The presence of other disorders was excluded because these students obtained normal SCOD and IQ scores and thanks to what emerged in the clinical interviews. No child had a history of brain damage, epilepsy, psychosis, or anxiety disorders.

2.1.4. Students with ADHD + LP

Students belonging to this group met criteria for ADHD and obtained normal SCOD scores, except for the LP subscale (where they exceeded the cut-off criteria), as well as normal IQ scores. Learning problems were confirmed by what emerged in the interviews through the responses given by parents, teachers, and students themselves. These three sources of information converged in supporting the notion that the students was an underachiever in almost all disciplines and in excluding that low learning outcomes were caused by reduced motivation, socio-cultural deprivation, linguistic difficulties due to immigration, emotional or relational disorders or problems.

2.1.5. Normally achieving students

The sample of the initial 1123 students—with the exclusion of (i) the students included in the clinical groups previously described, (ii) the students who obtained SDAI and SCOD scores out of the normal range but were not included in any clinical group, and (iii) the students diagnosed as affected by behavioural, emotional and/or relational problems by the psychologists of the schools—was the basis for the control group. A set of students was randomly extracted from such a sample. Their gender and age were considered in order to extract students that could constitute a group whose boys/girls ratio and whose mean age matched approximately the boys/girls ratios and the mean ages of the clinical groups.

The characteristics of ADHD, ADHD + LP and control students are summarised in Table 1.

As expected, the ADHD, ADHD + LP, and the control group differed significantly on the SDAI distractibility, $F(2, 81) = 21.60$, $p < .001$ and on SDAI hyperactivity subscales, $F(2, 81) = 18.11$, $p < .001$. Even though IQ mean scores—as measured by the WISC-R—of each experimental group were within the normal range, a one-way analysis of variance showed that IQ scores of ADHD and ADHD + LP students were significantly lower than the IQ scores of the control group, $F(2, 81) = 20.53$, $p < .01$. Therefore, in all analyses including a group factor IQ was added as a covariant factor.

Participants in each group (ADHD, ADHD + LP, control) were assigned either to the hypermedia ($N = 37$) or to the traditional instruction ($N = 37$) condition through a matched-pair technique.

Signed parental consent forms were requested and obtained for all participants.

Table 1
Characteristics of the three groups participating in the experiment.

Groups	Measures	Values
ADHD	No. of boys/girls	20/7
	Age (mean; SD in parentheses)	13.60 (1.80)
	IQ (mean; SD in parentheses)	96.00 (6.70)
	SDAI-distractibility (mean; SD in parentheses)	19.80 (2.45)
	SDAI-hyperactivity (mean; SD in parentheses)	15.40 (6.01)
ADHD + LD	No. of boys/girls	20/8
	Age (mean; SD in parentheses)	13.50 (1.80)
	IQ (mean; SD in parentheses)	91.20 (5.80)
	SDAI-distractibility (mean; SD in parentheses)	18.75 (2.55)
	SDAI-hyperactivity (mean; SD in parentheses)	9.90 (2.10)
Control	No. of boys/girls	20/9
	Age (mean; SD in parentheses)	13.70 (2.01)
	IQ (mean; SD in parentheses)	107.50 (6.95)
	SDAI-distractibility (mean; SD in parentheses)	1.00 (0.20)
	SDAI-hyperactivity (mean; SD in parentheses)	0.80 (0.32)

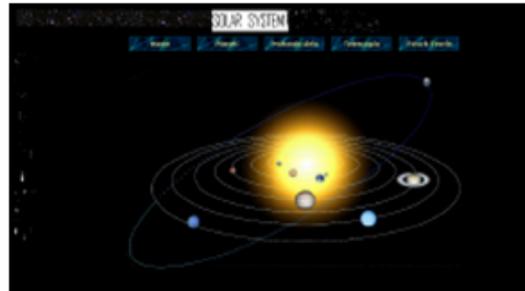


Fig. 1. An example of informational screen.

2.2. Instruments

2.2.1. Hypermedia learning tool (HLT)

The hypermedia instrument devised for this study concerned the origin of the solar system, the sun and a description of three planets. Concepts were arranged in order to be relevant to 1th to 2th secondary school grade students. The hypermedia tool could be navigated by using a Web browser. The material was developed through the hypertext markup language (HTML). An instructional system development process and a conceptual linking approach guided the development of the hypermedia tool, which included texts, sounds, pictures and graphics. When text was presented a narrative voice read always the text. The HLT It consisted of 60 screens: 5 screens were introductory, 1 was the main menu, 49 provided information and 5 were for practice. An example of informational screen is presented in Fig. 1. Designing the hypermedia learning material involved three phases: preparation, development and evaluation. The phases are described in the following sub-sections.

2.2.1.1. Phase 1: Preparation. *a. Determining the users' characteristics.* Learners' characteristics are one of the most important factors affecting the design of hypermedia learning material. If the learner has prior knowledge, information should be integrated into the existing mental structure and the learner should be induced to follow meaningful learning steps in the instructional tool. The users who participated in this study had no previous specific knowledge of the units selected for the study (their teachers were interviewed to assess this). Then, two subject matter experts (a university and a secondary school science teacher) were consulted about the participants' intellectual level. They agreed that the learning units selected for the study would be appropriate for 6th to 7th grade students.

b. Conducting content analysis. Content analysis was carried out and concepts, interrelated concepts and procedures were determined on the basis of the objectives of the selected units. Systematic relationships between the concepts were organised and a subject-matter experts evaluated the semantic relationships of the concepts thus determined. In light of this evaluation, the semantic relationships between the concepts were reorganised.

c. Determining the learning strategies. According to Schunk (1996), meaningful learning involves gaining ideas, concepts and principles and then integrating new knowledge into existing knowledge. Thus, general knowledge was provided first, followed by detailed and specific knowledge.

d. Identifying the knowledge organisation approaches that best suit the learning strategies. At this stage, the issues of knowledge organisation and linking nodes were managed. Hierarchical links were used: first, basic concepts were presented and then subordinate concepts related to the basic concepts were provided. In addition to hierarchical links, an elaboration approach was used to explain concepts from simple to complex levels (i.e., general to specific knowledge). Both approaches were consistent with the learning strategies used in this hypermedia tool.

2.2.1.2. Phase 2: Development. *a. Concept mapping.* To ascertain interrelations between concepts determined in content analysis, concept maps of the units were constructed. This was helpful to show each node and links between nodes.

b. Story boarding. Story boarding was the last step before the programming stage. It involved showing each navigation window on a page. Each window to be designed in this study was shown on a separate page. Active keys, the names of linked windows, links, texts, sounds, pictures and graphics were also shown on that page.

c. Programming. An HTML editor for programming was used to implement the designed hypermedia.

2.2.1.3. Phase 3: Evaluation. After the material was developed, it was given to an instructional design specialist, to a subject-area expert and to three subject-area teachers for evaluation. The material was revised and improved according to the feedbacks received from those experts.

2.2.2. Achievement test

A test was used to determine students' achievement on different types of knowledge (declarative, conditional and procedural) before the experiment, at the end of the acquisition phase, and one month after the experiment (retention). To

Table 2
Examples of the three types of knowledge.

Examples of declarative knowledge questions
<ul style="list-style-type: none"> • What is a supernova? • When the solar system began to exist, which was the shape of the nebula? • Why Mars is red?
Examples of conditional knowledge questions
<ul style="list-style-type: none"> • If gas and cosmic dust continuously go around the sun, what will happen to solar nebula? • If an astronaut reached Mars and opened a water container, what should happen to water? • If Jupiter was bigger, what should happen?
Examples of procedural knowledge questions
<ul style="list-style-type: none"> • A man on Mars weights 25 kg; how much does he weight on the Earth? • I know that in a Jupiter's band winds blow on west. In which direction do winds blow two bands later? In which direction do winds round five bands later? • Two galaxies are 195,000,000,000 km far each other; how many light years are they far?

check the content validity of the test, a table of specifications was used to represent the learning objectives in the questions. Declarative knowledge questions focused on facts, names and lists involved “what” and “which” types of questions. Conditional knowledge questions focused on understanding a network of condition-action sequences and predicting what happens if one of the variables in the sequence changes within the context of if-then, condition-action or relationship statements. Procedural knowledge questions emphasised higher-level cognitive activity such as employing algorithms and rules or solving problems. Table 2 reports some examples of the questions.

The test was given to three subject-area teachers who assessed the questions in terms of the three knowledge levels as well as of the validity and relevance to the subject matter. Such an assessment helped us to revise some questions. The revised version of the test was given to 10 students (5 girls and 5 boys aged 12–14). Their first task was to assess item difficulty and clarity. Students were asked to score difficulty and clarity on a scale ranging from 1 (minimum) to 10 (maximum). The analysis of each item showed that one item was too easy and four items were too difficult; these items were therefore eliminated. Some of the items were revised to improve clarity. As a result, 39 questions (13 declarative, 13 conditional and 13 procedural) were included in the test. The test was presented in the form of a booklet, with the space to write the response under each question. A maximum time of 20 min was allowed to answer the questions. Protocols were scored by two independent judges. A set of criteria were devised to attribute either score 0 or 1 to each response. The reliability of such a scoring system was tested by asking both judges to score the same 5 randomly chosen protocols. The inter-rater agreement resulted to be very high (the same score was attributed by both judges to 194 out of 195 responses). Three total scores-corresponding to declarative, conditional and procedural knowledge-could be computed by summing up scores in the respective questions.

2.3. Procedure

At the beginning of the experiment, participants assigned to the hypermedia and traditional instruction conditions were asked to respond to some questions to check their prior knowledge about the topic to be studied. Three questions concerned declarative knowledge, 3 conditional knowledge, and 3 procedural knowledge. The questions were extracted from the achievement test previously described. No significant difference among the three sub-samples emerged by comparing scores in the declarative, conditional and procedural questions (a one-way ANOVA was carried out for each question: *F* values ranged from 0.54 to 1.63).

Then participants in the hypermedia condition were given an introductory session about the use of the hypermedia tool, whereas in the traditional instruction condition they were given a brief introduction concerning classroom activities to be carried out. In the hypermedia condition participants studied the content of the hypermedia tool in a computer laboratory for 30 min. Each student was equipped with a personal computer which allowed him/her to browse freely the hypermedia tool. Students received help from the teacher about how to browse the hypermedia tool only if they requested it. In the traditional instruction condition students received the same information provided to the other group (that is, the same statements) for the same amount of time by being exposed to oral explanation. To eliminate possible biases, the same teacher conducted the instructional activities in both conditions.

After having been presented with the concept to be learned, the achievement test was administered to all students in both conditions. One month after the learning experience, the same achievement test was given to participants of both conditions to measure the level of retention of the three types of knowledge. During the test, the participants in the hypermedia and traditional instruction conditions had no access to the learning materials. Testing was always carried out by the same person in both conditions. Table 3 summarises the design and the procedure of the study.

2.4. Statistical analyses

Data were analysed using SPSS 14.0 for Windows. The descriptive statistics of the dependent variables were examined. The dependent variables (the numbers of correct answers in the achievement test) were submitted to weighted multivariate

Table 3
Design of the experiment.

Condition	Base-line	Introduction	Treatment	Acquisition test (just after the teaching session)	Retention test (one month after the teaching session)
Hypermedia	Prior knowledge questions	How to use the hypermedia	Hypermedia	Achievement test	Achievement test
Traditional	Prior knowledge questions	How classroom activities will be carried out	Traditional classroom instruction	Achievement test	Achievement test

and univariate analyses of variance with two between-subject factors – Condition (hypermedia learning environment vs. traditional instruction) and Group (ADHD vs. ADHD + LP vs. Control) – and two repeated measures – Phase (acquisition vs. retention) and type of knowledge (declarative vs. conditional vs. procedural). The alpha-level was set to .05 for all statistical tests. In case of significant effects, the effect size and the power of the test were reported. The effect sizes were computed and categorised according to Cohen (1988). The Greenhouse–Geisser adjustment for nonsphericity was applied to probability values for repeated measures. IQ was treated as a covariate. Omnibus tests were evaluated with two-tailed $\alpha = .05$. Planned pairwise comparisons were performed among all the three groups.

In a complex design like that of the present study, there is an opportunity to test many hypotheses of interest for numerous variables and the need to consider possible confounding factors. We employed the following strategy in order to minimise Type I error. For families of 3 pairwise tests, we used unadjusted levels of .05, an approach that successfully maintains a levels for this number of comparisons (Myers & Well, 2003, p. 252). For families comprising more than 3 tests, we adjusted levels by the Bonferroni's correction. We reported nominal p levels and identified results as significant, marginal, or not significant.

3. Results

The first question addressed in this study was whether declarative, conditional, and procedural knowledge are better acquired and retained when provided by a hypermedia tool as opposed to traditional instruction. Table 4 reports means and standard deviations of declarative, conditional, and procedural knowledge scores in the groups under the two instructional conditions in each phase of the experiment.

With reference to the first question, the main effect of Condition and Type of knowledge were significant, respectively $F(1, 78) = 5.99, p < .05, \eta_p^2 = .07$ and $F(2, 156) = 26.51, p < .01, \eta_p^2 = .26$. Globally considered, knowledge assimilation was better in the hypermedia than in the traditional instruction setting. Furthermore, as expected, performances in the declarative knowledge questions were better than in the conditional and procedural questions: the first type of knowledge, in fact, is less demanding than the other two types in terms of cognitive processing. Worthily, we found a significant Condition \times Type of knowledge interaction, $F(2, 156) = 6.49, p < .01, \eta_p^2 = .08$, indicating that, even though students performed better in all types of knowledge when assigned to the hypermedia condition, the differences between the two conditions were higher in procedural knowledge. Univariate comparisons of each type of knowledge were significant ($p < .01$) except for declarative knowledge.

The second question was whether the hypermedia tools yield the same better learning outcomes both in the acquisition and in the retention phase. The main effect of Phase was significant, $F(1, 78) = 17.77, p < .01, \eta_p^2 = .18$: as

Table 4
Means and standard deviations of declarative, conditional and procedural knowledge scores in the groups under the two instructional conditions in each phase of the experiment.

Groups	Hypermedia instruction				Traditional instruction			
	Acquisition		Retention		Acquisition		Retention	
	M	SD	M	SD	M	SD	M	SD
<i>Declarative</i>								
ADHD	11.35	4.98	10.80	4.76	8.56	3.05	5.10	3.22
ADHD + LD	7.90	5.56	7.66	3.99	10.90	4.11	6.32	3.56
Control	11.10	3.77	11.25	3.94	12.80	4.15	10.90	3.58
<i>Conditional</i>								
ADHD	8.10	5.29	8.00	3.18	7.00	2.70	4.90	5.12
ADHD + LD	6.60	3.01	6.44	2.21	6.01	2.90	3.30	2.68
Control	10.70	2.87	9.95	3.01	12.00	5.09	10.01	3.34
<i>Procedural</i>								
ADHD	8.98	4.33	9.80	3.48	7.22	3.12	3.70	2.27
ADHD + LD	5.43	3.96	6.12	3.84	6.45	3.57	3.10	2.18
Control	9.08	4.28	11.30	5.22	9.00	4.32	6.12	4.13

obvious, performances decreased in the retention phase. A significant Condition \times Type of knowledge \times Phase interaction emerged, $F(2, 156) = 5.97, p < .01, \eta_p^2 = .08$, supporting the notion that, even if students in the hypermedia condition outperformed students in the traditional instruction condition in both phases and in each type of knowledge, the superiority of the former condition emerged more clearly in the retention phase and concerned prevalently the conditional and procedural knowledge. More precisely, the highest advantage concerned procedural knowledge in the retention phase: in this case hypermedia instruction allowed learners even to improve the performance as compared to the acquisition phase.

The third question was whether clinical groups differed from each other and from the control group in knowledge assimilation according to the instructional setting to which they were assigned. There was a significant Condition \times Group interaction, $F(2, 156) = 6.39, p < .01, \eta_p^2 = .08$, and a significant Condition \times Group \times Type of knowledge interaction, $F(4, 156) = 7.63, p < .01, \eta_p^2 = .17$. Even if, in general, all groups of students learned better in the hypermedia than in the traditional instruction condition, the differences between the two conditions were higher in the clinical groups. Furthermore, as far as declarative knowledge is concerned, only ADHD students benefited from hypermedia instruction. Hypermedia instruction improved conditional knowledge (approximately to a similar extent) only in the clinical groups. Procedural knowledge was highly increased by the hypermedia tool in the control and ADHD students (who obtained similar scores), but not in the ADHD + LP students who obtained a limited benefit.

The fourth question was whether differences between groups depended on the phase (acquisition vs. retention phase) in which learning outcomes were recorded. Differences between scores in the acquisition and retention phase by the clinical groups were lower in the hypermedia than in the traditional instruction condition.

If we take into account scores across all the three type of knowledge, we realise that hypermedia instruction (as compared to traditional instruction) greatly pulled up the performances of ADHD students to levels that were similar to those of the normally achieving students. This was not true for ADHD + LP students. Splitting the results with reference to groups, it was found that the main effect of Condition was significant in the ADHD group, $F(1, 26) = 4.26, p < .05$, but not in the ADHD + LP group, $F(1, 27) = 1.03, p = .22$.

4. Conclusions

The aim of the present study was twofold. First we were interested in assessing whether the benefits produced by hypermedia tools concern different kinds of knowledge to the same extent and occur in different stages of the learning process (first and second questions mentioned in Section 1). To answer these questions, the same instructional materials were implemented in a traditional instructional setting and in a hypermedia environment providing three types of knowledge (namely declarative, conditional, and procedural) and distinctive tests designed to evaluate each type of knowledge were administered to participants both immediately after the learning session (acquisition) and one month later (retention).

Second, we were interested in assessing whether benefits from hypermedia tools concern not only normally achieving students, but also those with ADHD and/or with ADHD and LP (third and fourth questions mentioned in Section 1). To achieve such a goal, the traditional and hypermedia instructional materials were presented both to typical developing students and to two clinical groups in which declarative, conditional, and procedural knowledge was tested for acquisition and retention.

As far as the first issue was concerned, results confirmed an expected result, namely, that performances in the retention test were worse than in the acquisition test. All the three types of knowledge showed a decay due to time. However, the hypermedia instrument significantly contrasted such a decay in comparison with the traditional instruction setting. Such a finding is consistent with Yildirim, Ozden, Yasar, and Aksu (2001) results. These authors made a comparison between a hypermedia learning environment and traditional instruction and reported that there were no significant short-term differences between the two conditions at the end of the treatment, whereas a month later students in the hypermedia learning environment showed they retained information better than did students in the traditional condition. The present study not only provided further evidence to support such a conclusion, but also has allowed us to maintain that long-term learning benefits yielded by hypermedia concern different types of knowledge, a fact not recognised in Yildirim et al.'s (2001) study.

The findings of the present experiment are consistent with the literature concerning hypermedia learning. As Jonassen (1991) stated, learning involves building new structures by assimilating environmental information, constructing new nodes and interrelating new nodes one another and with the existing ones. Learning thus requires forming links between existing knowledge and new knowledge to comprehend information. The hypermedia tool used in this study was designed on the basis of these principles so to enable students to build their knowledge structures effectively by forming links between their existing knowledge and new knowledge and by establishing a meaningful understanding of the concepts. These characteristics of the hypermedia learning environment helped students to retain knowledge in the long-term period. This is consistent also with the literature concerning the importance of using multiple sensory channels in learning (Clark & Paivio, 1991; Mayer, 2003). Moreover dual processing produces an additive effect because the learner creates more cognitive paths that can be followed to retrieve information (Bagui, 1998). Mayer (2001) suggested that information should be coded through different channels to help persons to retain knowledge more effectively. Dual coding reduces the cognitive load in one's memory (Mayer & Moreno, 1998), so that one can interpret the information by creating meaningful schema (Kalyuga,

Chandler, & Sweller, 2004; Tabbers, Martens, & Van Marrienoer, 2004). We developed hypermedia learning material for this study on the basis of the dual coding principle. Representation of information through multiple channels in the hypermedia learning environment appeared to be effective in contributing to the retention of all three types of knowledge tested in this study.

The second issue concerned the hypothesis that ADHD students performed better with hypermedia as opposed to traditional instruction. This hypothesis was confirmed. ADHD students exposed to the hypermedia learning environment outperformed the other clinical group both in the acquisition and retention phase with respect to all the three types of knowledge and they reached approximately the same levels of normally achieving participants both in the acquisition and retention phase. ADHD + LP students in the hypermedia condition failed to benefit to the same extent as ADHD participants did. It may be that deeper and wider structural deficits associated to LP impeded the beneficial effects of hypermedia instruction to emerge. Such effects might require a sufficient level of learning resources, which are lacking in students with LP, as a pre-condition. LP students might need more support in terms of training to facilitate their learning processes. It may be also that hypermedia instruction can produce a cognitive empowerment only in the input phase and do not in the elaboration phase. ADHD students need an empowerment of input processing thanks to visual presentation and increased motivation and this may be sufficient to improve learning outcome, but it seems to be necessary but not sufficient for LP students. Anyway, since the nature of the learning problems of students in this group is not clear, it is necessary to go over the boundaries of the present study to analyse better LP and also LD students; in future researches it may be useful to measure their level of cognitive resources, such as working memory.

In general, the hypermedia tool reduced learning differences in retention between the control group and the clinical groups as compared to what occurred with traditional instruction. The results of the present experiment suggest that ADHD students can benefit when information is presented through multiple channels and in a hypertext format. Hypermedia tools may have a positive effect on the retention of different types of knowledge. It may be due in part to the role of motivational factors and in part to the specific type of knowledge organisation and presentation. As Barkley (1997) argued, motivational factors are very important in executive functioning in ADHD. Hypermedia devices can rise motivational levels of ADHD students both because they introduce a change in the routine of school activities by varying the way in which concepts can be learned (novelty effect) and because they allow learners to access concepts according to personal preferences or interests (curiosity effect). Another possible explanation is based on the attention catching properties of the hypermedia tools. ADHD students, who usually encounter difficulties in keeping attention focused on the relevant information, benefit from a hypermedia presentation since it captures the learners attention or provides them with hints useful to allocate attention in the proper way.

Alternative interpretations are grounded on the intrinsic nature of the hypermedia instruments. When exposed to hypermedia tools, ADHD students receive information from multiple channels, so that if their attention is not adequately allocated to a channel, the other channel can "capture" and retain information which otherwise would be missed. In other words, multimedia stimulation increases the likelihood that relevant information is acquired. Students with ADHD might be helped by a hypermedia instrument also because it allows them to learn at their own pace (Solomonidou, Garagouni-Areou, & Zafropoulou, 2004), so that they can allocate attention by following their personal rhythms. In this way each element to be learned receives an adequate amount of attention.

Further investigations are needed to clarify the precise reasons why hypermedia tools are beneficial for ADHD students. Nevertheless, it has been worthwhile assessing, in a systematic way and through the experiment here described, the kinds of knowledge and the phases of the learning process that can take advantage from hypermedia tools.

Acknowledgements

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Bryan Meltz for The New York Times

Amanda Rocafort and her son Quintn in Woodstock, Ga. Quintn takes the medication Risperdal. [More Photos »](#)

By [ALAN SCHWARZ](#)

Published: October 9, 2012 [728 Comments](#)

CANTON, Ga. — When Dr. Michael Anderson hears about his low-income patients struggling in elementary school, he usually gives them a taste of some powerful medicine: Adderall.



The pills boost focus and impulse control in children with [attention deficit hyperactivity disorder](#). Although A.D.H.D is the diagnosis Dr. Anderson makes, he calls the disorder “made up” and “an excuse” to prescribe the pills to treat what he considers the children’s true ill — poor academic performance in inadequate schools.

“I don’t have a whole lot of choice,” said Dr. Anderson, a pediatrician for many poor families in Cherokee County, north of Atlanta. “We’ve decided as a society that it’s too expensive to modify the kid’s environment. So we have to modify the kid.”

Dr. Anderson is one of the more outspoken proponents of an idea that is gaining interest among some physicians. They are prescribing stimulants to struggling students in schools starved of extra money — not to treat A.D.H.D., necessarily, but to boost their academic performance.

It is not yet clear whether Dr. Anderson is representative of a widening trend. But some experts note that as wealthy students abuse stimulants to raise already-good grades in colleges and high schools, the medications are being used on low-income elementary school children with faltering grades and parents eager to see them succeed.

“We as a society have been unwilling to invest in very effective nonpharmaceutical interventions for these children and their families,” said Dr. Ramesh Raghavan, a child mental-health services researcher at Washington University in St. Louis and an expert in prescription drug use among low-income children. “We are effectively forcing local community psychiatrists to use the only tool at their disposal, which is psychotropic medications.”

Dr. Nancy Rappaport, a child psychiatrist in Cambridge, Mass., who works primarily with lower-income children and their schools, added: “We are seeing this more and more. We are using a chemical straitjacket instead of doing things that are just as important to also do, sometimes more.”

Dr. Anderson’s instinct, he said, is that of a “social justice thinker” who is “evening the scales a little bit.” He said that the children he sees with academic problems are essentially “mismatched with their environment” — square pegs chafing the round holes of public education. Because their families can rarely afford behavior-based therapies like tutoring and family counseling, he said, medication becomes the most reliable and pragmatic way to redirect the student toward success.

“People who are getting A’s and B’s, I won’t give it to them,” he said. For some parents the pills provide great relief. Jacqueline Williams said she can’t thank Dr. Anderson enough for diagnosing A.D.H.D. in her children — Eric, 15; Chekiara, 14; and Shamyra, 11 — and prescribing Concerta, a long-acting stimulant, for them all. She said each was having trouble listening to instructions and concentrating on schoolwork.

“My kids don’t want to take it, but I told them, ‘These are your grades when you’re taking it, this is when you don’t,’ and they understood,” Ms. Williams said, noting that [Medicaid](#) covers almost every penny of her doctor and prescription costs.

Some experts see little harm in a responsible physician using A.D.H.D. medications to help a struggling student. Others — even among the many like Dr. Rappaport who praise the use of stimulants as treatment for classic A.D.H.D. — fear that doctors are exposing children to unwarranted physical and psychological risks. Reported side effects of the drugs have included growth suppression, increased blood pressure and, in rare cases, psychotic episodes.

The disorder, which is characterized by severe inattention and impulsivity, is an increasingly common psychiatric diagnosis among American youth: about 9.5 percent of Americans ages 4 to 17 were judged to have it in 2007, or about 5.4 million children, according to the Centers for Disease Control and Prevention.

HUFFPOST HEALTHY LIVING



**Lawrence Diller,
M.D.**

*Behavioral and Developmental
Pediatrician, Author, UCSF Clinical
Faculty*

Give Me My Adderall!

Posted: 10/10/2012 12:35 pm

"Give me my Adderall!" Matthew, a 15-year-old patient of mine, recently demanded of his parents. When they refused, Matthew slashed his left wrist with a box cutter. His parents called the police and he was taken to the county hospital emergency room for evaluation and possible admission to the psychiatric ward. His parents had withheld the medication for Matt's purported attention deficit disorder (ADD) because they hadn't liked the side effects of irritability and anger they had associated with their son's use of the medication.

Matthew was enraged. His parents had taken away his cell phone and all access to the Internet because they felt he was making no effort at all early in his sophomore year in high school, either in class or in doing homework. Matthew felt he "couldn't" do his work without the medication and didn't think his mood on the medicine was a major problem. He and his parents had been arguing about his restrictions when, in essence, Matthew had a temper tantrum, threatening to cut himself. When his parents held firm, he injured himself with a dramatic act but fortunately made only superficial lacerations to his wrist.

I've witnessed many other dramas in my 34 years as a behavioral pediatrician and family therapist, but Matthew's recent episode epitomized for me a tectonic shift in the way adolescents view psychiatric drugs, especially the performance-enhancing stimulants (Adderall, Ritalin, Concerta, etc.). As recently as 15 years ago, I had a difficult time convincing young to mid-adolescents to try any psychiatric drug: Prozac, Adderall, whatever. I used to share my frustration with parents that their child was refusing my medications but was quite ready to self-medicate with marijuana, alcohol or other illegally-obtained substances. But with teenagers now insisting on pharmaceuticals as solutions to their problems, I wonder if that's really making progress.

While there could be multiple reasons for their problems, these days I've noticed teenagers regularly telling their parents they "can't" concentrate on school or homework and asking for medication. Ironically, it's their parents who have become more uneasy or reluctant to immediately give their children stimulants (amphetamines or some variation of them) to improve their school performance or behavior at home.

Some parents are understandably worried about side effects or the risks of addiction and abuse. Actually, most children (and people) can tolerate the side effects (if any) to the stimulants. Used properly (in my practice parents are entirely in charge of these drugs), the risk of physical addiction is close to if not zero. But many parents are also concerned about Adderall's "quick fix" nature of the teens' solution to their problems.

Adderall improves anyone's performance on boring and repetitive tasks. It will not make someone smarter. Indeed, despite decades of use, evidence that long-term learning or grades improve is absent to scant. Most consistently, it does give someone the sense that they are doing better and therefore often improves motivation. The work gets done. However, inconsistently or unmotivated naturally-distracted teenagers learn nothing about how to make themselves do the uninteresting or challenging tasks necessary to grow to be mature adults.

Undoubtedly some will say "Well that's exactly what teenage ADD is -- difficulty making yourself do something you're not interested in!" Indeed, it's impossible to distinguish the behavioral symptoms of ADD from those of an inconsistently or unmotivated adolescent. There is no blood test or brain scan for ADD or for any psychiatric disorder for that matter. Nevertheless, doctors do seem more ready to offer these drugs to all people. What have changed are the teens' attitudes toward these meds. They want them and ask for them.

While not worrying about physical addiction, I've seen psychological addiction and dependency in teenagers for Adderall. Also, teens in high school and college students are increasingly obtaining the drug illegally (mostly from friends who've gotten prescriptions from their doctors). Some colleges report [35 percent of the students](#) have tried Adderall-type drugs for studying or getting high (remember, it is amphetamine). For subgroups, like fraternity or sorority seniors, rates have been estimated as [high as 80 percent](#). Used improperly or unsupervised, serious abuse and addiction can occur. Additionally, these drugs can be a pathway to the misuse and abuse of other prescription medications like Oxycontin and street drugs like methamphetamine.

There's certainly a place for these medications in the treatment of ADD. But I think we've done too good a job of "selling" ADD and Adderall as the answer to many teenagers who are in a normative struggle toward maturity. Unfortunately, there are few cultural influences strong enough to counter the power of the medical-pharmaceutical industry that successfully brought our country's attention to the problems of attention. "Just say 'No'" didn't work with street drugs. Sadly, it's unlikely to work with ADD drugs like Adderall as well.



SINDROME DA “DEFICIT ATTENTIVO ED IPERATTIVITÀ”

15-20 Novembre 2012
Villa Umbra, Pila - Perugia



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Università degli Studi di Perugia

SCUOLA DI SPECIALIZZAZIONE IN NEUROPSICHIATRIA INFANTILE

ASL 4 Terni

Dipartimento Salute Mentale

U. O. Complessa “Neuropsichiatria Infantile e dell’Età Evolutiva”



PRESENTAZIONE

Il Disturbo da Deficit dell'Attenzione e Iperattività, meglio conosciuto con l'acronimo ADHD (Attention Deficit Hyperactivity Disorder), è una sindrome comportamentale di frequente riscontro in età evolutiva e con un rilevante impatto comportamentale essendo caratterizzata da impulsività, incapacità di fissare l'attenzione in maniera continuativa, livelli di attività motoria molto accentuati.

Nel corso di aggiornamento verranno affrontate dai relatori, di lunga esperienza sulla tematica, le evidenze scientifiche più aggiornate sulla clinica, l'etiopatogenesi, la diagnosi, le comorbidità e gli interventi terapeutici sulla sindrome.

L'ADHD non è quasi mai un disturbo benigno ed autolimitantesi: nell'età evolutiva, nel giovane e poi adulto c'è una significativa compromissione delle competenze accademiche e sociali (minori gli anni di scolarità, più frequenti gli abbandoni scolastici, maggiori gli incidenti d'auto, l'uso di alcool, l'uso di droghe e gli arresti per atti criminosi). I dati della letteratura indicano una tendenza evolutiva trasformativa del disturbo in termini di purezza del quadro descritto in età scolare con una progressiva sovrapposizione diagnostica di altri quadri in comorbidità con l'aumentare dell'età. In età adulta gli insuccessi sul lavoro, talvolta con la relativa perdita dello stesso, le difficoltà in famiglia con alto tasso di separazioni e/o divorzi, la problematicità nelle relazioni sociali con agiti contro il patrimonio pubblico, talvolta le organizzazioni a delinquere e le facili detenzioni, portano alla cronicizzazione dei soggetti con ADHD in un quadro ben più pesante ed organizzato con un carico sociale pubblico e familiare dal costo molto elevato.

Il presente Corso di aggiornamento si pone nell'ottica dell'aggiornamento continuo degli operatori dei servizi di Neuropsichiatria Infantile, di Riabilitazione dell'età evolutiva, e dei Dipartimenti di Salute Mentale alla luce delle linee Guida Regionali dell'Umbria sull'ADHD, al fine di offrire ai soggetti umbri con tale quadro psicopatologico il migliore intervento socio-sanitario.

PROGRAMMA

15 NOVEMBRE 2012

ORARIO 9.00 - 18.00

8.30 Registrazione dei partecipanti

9.00 Saluti ed apertura dei lavori

Alberto Naticchioni

Amministratore Unico Scuola Umbra di Amministrazione Pubblica

Franco Tomassoni

Assessore regionale Salute, coesione sociale e società della conoscenza

Emilio Duca

Direttore regionale Direzione Salute, coesione sociale e società della conoscenza

Moderatori: dr Marcello Catanelli, prof. Giovanni Mazzotta

9.15 La diagnosi Clinica in Neuropsichiatria Infantile. Un modello di Psicopatologia costruita sulle evidenze: metodi e strumenti

Dr. Massimo Molteni, Istituto Scientifico Eugenio Medea – Ass la Nostra famiglia – Bosisio Parini - Lecco

10.00 Aspetti storici ed Epidemiologia dell'ADHD

Dr.ssa Maria Cristina Porfirio, UOCNPI Policlinico Tor Vergata - Roma

10.45 La diagnosi dell'ADHD: strumenti clinici

Dr.ssa Beatrice Gallai (Università Studi Perugia)

11.30 Pausa Caffè

12.00 Recenti acquisizioni Neurobiologiche nell'ADHD e Comorbidità

Prof. Augusto Pasini, Università Tor Vergata- Roma

12.30 L'ADHD dall'adolescenza all'età adulta: disturbi di personalità e psicopatologia*Prof. Roberto Quartesan (Università Studi Perugia)***13.00 Discussione***13.30 Pausa Pranzo***Moderatori: dr.ssa Mara Zenzeri, Dr.ssa Beatrice Gallai****14,30 Terapia farmacologica dell'ADHD***Prof. Alessandro Zuddas , Università di Cagliari***15,15 Interventi Psicologici ad indirizzo Cognitivo-Comportamentale***Dr. Michele Margheriti, Perugia***16,00 Il Registro Nazionale ADHD: Cosa ci ha insegnato in questi 4 anni***Dr. Pietro Panei, Istituto Superiore Sanità- Roma***16,30 Il Monitoraggio dei pazienti con ADHD: esperienze regionali Italiane***Dr. Maurizio Bonati , Istituto Mario Negri- Milano***17,00 Il Parent Training nell'ADHD***Dr.ssa Mariella Allegretti, UOC "Npi.EE." ASL 4***17.30 DISCUSSIONE E CHIUSURA DELLA SESSIONE****20 NOVEMBRE 2012****ORARIO 9.00 - 13.00****Moderatori: dr Marcello Catanelli, prof. Giovanni Mazzotta****8.45 Le Linee Guida Regionali****Mara Zenzeri***Responsabile Sezione V - Riabilitazione, Disabilità e Cooperazione Sanitaria
Servizio II - Programmazione socio-sanitaria dell'assistenza di base ed ospedaliera
Direzione Regionale Salute, Coesione Sociale e Società della Conoscenza***9.30 Comorbidità psichiatrica in età evolutiva e ADHD***Dr. Gabriele Mas, IRCCS Stella Maris Pisa***10,15 Lecture - Il deficit di attenzione ed iperattività nell'adulto: dalla ricerca al trattamento***Dr. M. Catani, Department of Forensic and Neurodevelopmental Sciences Institute of Psychiatry & Maudsley Hospital King's College, Londra**11.00 Discussione**11.30 Pausa Caffè***11.45 I "desiderata" e le realtà regionali nell'ottica delle Associazioni delle famiglie***Dr.ssa Patrizia Stacconi , Presidente AIFA
Sig. Paolo De Luca, Referente AIFA Onlus dell'Umbria***12.15 Casi Clinici***Dr.ssa E. Trinari, Dr. M. Sposato, Dr.ssa Giovannini***13.00 CHIUSURA DEI LAVORI E TEST ECM**

DESTINATARI: il corso è rivolto a psichiatri, neuropsichiatri infantili, psicologi, pediatri di libera scelta, assistenti sociali, infermieri dei Dipartimenti Salute Mentale, logopedisti ed inoltre a psicologi, psicoterapeuti, logopedisti del privato sociale ed alle Associazioni di famiglie.

CREDITI

Il corso sarà accreditato presso la Commissione Regionale ECM dell'Umbria per le professioni sanitarie cui è destinato, e presso l'ordine degli Assistenti sociali dell'Umbria.

SEDE: Villa Umbra, Pila PG

RESPONSABILE REGIONALE DEL CORSO

Marcello CATANELLI – Servizio II - Programmazione socio-sanitaria dell'assistenza di base ed ospedaliera
Direzione Salute, coesione sociale e società della conoscenza

RESPONSABILE SCIENTIFICO DEL CORSO

Giovanni MAZZOTTA - Direttore U.O.C. Neuropsichiatria Infantile e dell'Età Evolutiva, ASL 4 Terni

PER ISCRIZIONI E MAGGIORI INFORMAZIONI

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La partecipazione al corso è a titolo gratuito essendo l'attività inserita nel piano formativo regionale 2012.



Associazione Italiana
dell'Attenzione e Iperattività

AIDAI Toscana

Disturbi



Ministero della Pubblica Istruzione

Ufficio Scolastico Regionale per la
Toscana

Ufficio Scolastico Provinciale di Firenze

III° CONVEGNO REGIONALE AIDAI TOSCANA

ATTENZIONE ED EMOZIONI: LA COMPONENTE AFFETTIVO-RELAZIONALE NEL DISTURBO DA DEFICIT DELL'ATTENZIONE E IPERATTIVITA'

Sala Convegni Borsa Merci – P.zza Risorgimento Arezzo
SABATO 1 Dicembre 2012

Il Convegno, rivolto a tutti i professionisti del settore educativo e sociosanitario, si propone come evento formativo e di aggiornamento scientifico sull'importante tema del ruolo delle emozioni nelle difficoltà di attenzione dei bambini in età scolare. Nel corso del convegno verranno inoltre affrontate le problematiche relative al ruolo delle componenti affettivo relazionali nei bambini con ADHD, dal punto di vista personale, familiare e scolastico e saranno presentati gli strumenti di intervento operativamente più efficaci.

Destinatari: Psicologi, Pedagogisti, Logopedisti, Psicomotricisti, Insegnanti, Educatori,
Neuropsichiatri Infantili, Pediatri, Genitori

Con la collaborazione di GIUNTI Scuola e Uno Informatica Arezzo

INFO e ISCRIZIONI aidai-toscanascuola@libero.it

Tel. 3661959748

Gli aggiornamenti relativi al programma sono consultabili sul sito www.aidaiassociazione.com

INGRESSO GRATUITO

NECESSARIA LA PREISCRIZIONE scaricabile dal sito www.aidaiassociazione.com.

Il Convegno prevede la partecipazione di un massimo di 250 iscritti. E' pertanto necessario attendere la conferma di avvenuta iscrizione.

Con il Patrocinio di: Istituto Superiore di Sanità, USL 8 Arezzo, Provincia di Arezzo, Associazione Italiana Ricerca e Intervento nella Psicopatologia dell'Apprendimento (AIRIPA), Società Italiana Terapia Comportamentale e Cognitiva (Sitcc) regione Toscana, **in attesa di risposta da Ordine degli Psicologi della Toscana, Società Italiana Neuropsichiatria Infantile (SINPIA) te AIFA**

PROGRAMMA

8.00 Registrazione degli iscritti

9.00 Saluti delle autorità

Angiolina Ponziano Ispettore del Ministero della Pubblica Istruzione, Ufficio Scolastico Regionale-Toscana

Sara Pezzica – Presidente Associazione Italiana Disturbi dell'Attenzione e Iperattività (AIDAI) Toscana

Relatore

Titolo

Mattina 9.30-13.00

Moderatore Prof.ssa Lucia Bigozzi – Università di Firenze

9.30 Giuliana Pinto

L'emozione di conoscere

Professore Ordinario di Psicologia dell'Educazione
Dipartimento di Psicologia-Università degli Studi di
Firenze

10.30 Gabriele Masi

Umore , comportamento e ADHD

Direttore Unità Operativa Complessa di Psichiatria e
Psicofarmacologia dell'Età Evolutiva IRCCS Stella
Maris - Pisa

11.30 Luciano Luccherino

**Autoregolazione ed emozioni: quali
interventi educativi ?**

Direttore Unità Operativa Complessa di
Neuropsichiatria Infantile USL 8 Arezzo

12.00 Sara Pezzica

Genitorialità ed Emozioni

Psicologa-Psicoterapeuta Presidente AIDAI Toscana

Simona Caracciolo

Psicologa-Psicoterapeuta AIDAI-Toscana

12.30

Discussione

Pomeriggio 14,30-17,30

Moderatore. Laura Bertolo Direttivo Nazionale AIRIPA e Coordinatore sezione AIRIPA Toscana

14.30 Michele Margheriti

Psicologo Psicoterapeuta - Presidente AIDAI

**Introduzione. La normativa scolastica
relativa al Disturbo da deficit
dell'Attenzione e Iperattività**

15.00 Daniele Fedeli

Ricercatore di Pedagogia Speciale - Università di
Udine

**L'analisi delle compromissioni emozionali
nella comorbilità tra ADHD e Disturbi della
Condotta**

16.00 Gianluca Perticone

Pedagogista Facoltà di Scienze della Formazione –
Università di Firenze

**Compagni in movimento: relazioni ed
emozioni nella classe dell'alunno ADHD**

16.30 Paolo Omizzolo

Direttore U.O.C. Igiene degli allevamenti e
produzioni zootecniche USL 8 Arezzo

Introduzione al workshop

**16.40 Veronica Andreini, Silvia Merli, Maria Vittoria
Romizi**

Psicologhe – AIDAI Toscana

**Workshop: Training autoregolativo di
gruppo e attività assistite con animali**

Pierangela Piras

Medico dello Sport, Ph.D Scienze Sportive

17.10

discussione

17:30-18.30

ASSEMBLEA DEI SOCI AIDAI TOSCANA

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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