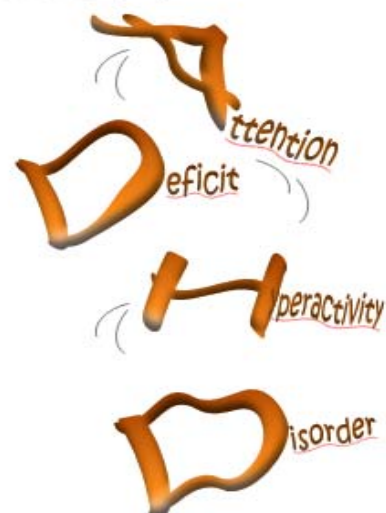


NEWSLETTER



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BIBLIOGRAFIA ADHD LUGLIO 2011

Acta Paediatr Int J Paediatr. 2011;100:1258-61.

RESPONSE TO ATOMOXETINE IN BOYS WITH HIGH-FUNCTIONING AUTISM SPECTRUM DISORDERS AND ATTENTION DEFICIT/HYPERACTIVITY DISORDER.

Zeiner P, Gjevik E, Weidle B.

Aim: To study the efficacy and tolerability of atomoxetine in high-functioning boys with autism spectrum disorders (ASD) and comorbid attention deficit/hyperactivity disorder (AD/HD).

Methods: Fourteen boys (age 7-17) participated in a 10-week open-label study. Atomoxetine doses were 0.5 mg/kg/day in week 1 and 1.2-1.4 mg/kg/day in weeks 2-10. Changes in AD/HD symptoms were measured by the AD/HD Rating Scale, and global improvements by the Clinical Global Improvement Scale. Both measures were used to assess drug response. Assessments were done at baseline and at weeks 2, 4, 6 and 10. Teacher ratings were done at baseline and 10 weeks.

Results: There were significant reductions in AD/HD symptoms rated by parents ($p < 0.005$) and by teachers ($p < 0.05$). One participant was rated as 'Much improved', five as 'Moderately improved', seven as 'Minimally improved', and one as 'Unchanged or worse'. Seven subjects were classified as clinical responders. The most common adverse events were nausea and headache. Two participants discontinued treatment.

Conclusion: Seven out of 14 boys with high-functioning ASD and comorbid AD/HD showed significant reductions in AD/HD symptoms and were classified as responders to atomoxetine. Most children tolerated the drug well.

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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.

Acta Psychiatr Scand. 2011 May;123:360-67.

USE OF ADHD DRUGS IN THE NORDIC COUNTRIES: A POPULATION-BASED COMPARISON STUDY.

Zoëga H, Furu K, Halldórsson M, et al.

Objective: To compare national use of attention-deficit/hyperactivity disorder (ADHD) drugs between five Nordic countries.

Method: A population-based drug utilisation study based on nationwide prescription databases, covering in total 24 919 145 individuals in 2007. ADHD drugs defined according to the World Health Organization Anatomic Therapeutic Chemical classification system as centrally acting sympathomimetics (N06BA).

Results: The 2007 prevalence of ADHD drug use among the total Nordic population was 2.76 per 1000 inhabitants, varying from 1.23 per 1000 in Finland to 12.46 per 1000 in Iceland. Adjusting for age, Icelanders were nearly five times more likely than Swedes to have used ADHD drugs (Prev.Ratio = 4.53, 95% CI: 4.38–4.69). Prevalence among boys (age 7–15) was fourfold the prevalence among girls (Prev.Ratio = 4.28, 95% CI: 3.70–4.96). The gender ratio was diminished among adults (age 21 +) (Prev.Ratio = 1.24, CI: 1.21–1.27).

Conclusion: A considerable national variation in use of ADHD drugs exists between the Nordic countries.

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ADHD Atten Deficit Hyperact Disord. 2010;2:185-93.

ASSOCIATIONS BETWEEN TRAIT ANXIETY AND PSYCHOPATHOLOGICAL CHARACTERISTICS OF CHILDREN AT HIGH RISK FOR SEVERE ANTISOCIAL DEVELOPMENT.

Polier GG, Herpertz-Dahlmann B, Matthias K, et al.

It is thought that among children at a high risk for antisocial personality disorder, the level of individual anxiety might constitute an important marker with respect to symptomatology and prognosis. The aim of the present study was to examine whether associations between anxiety and subtypes of aggression (proactive and reactive) exist in boys with early-onset subtype of conduct disorder (CD) and co-morbid attention-deficit hyperactivity disorder (ADHD). A detailed psychometric characterization of boys with ADHD and the early-onset subtype of CD ($n = 33$) compared to healthy controls ($n = 33$) was performed. The assessment included trait anxiety, internalizing and externalizing problems, symptoms of psychopathy and temperament traits, as well as subtypes of aggressive behavior. Descriptive statistics, correlation analyses, and group comparisons were calculated. The clinical group was characterized by higher levels of externalizing and internalizing symptoms. Individual anxiety was positively associated with harm avoidance, symptoms of oppositional defiant disorder (ODD), and by trend with reactive aggression. In contrast, boys with reduced levels of anxiety exhibited more callous-unemotional traits. Our results indicate that children with the early-onset subtype of CD and ADHD constitute a psychopathological heterogeneous group. The associations between individual levels of trait anxiety, temperament traits, and subtypes of aggressive behavior in children with ADHD and severe antisocial behavior emphasize the impact of anxiety as a potential key factor that might also be crucial for improvement in therapeutic strategies and outcome measures. Anxiety should be considered carefully in children with ADHD and the early-onset subtype of CD in order to optimize current therapeutic interventions.

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ADHD Atten Deficit Hyperact Disord. 2010;2:115-26.

METHYLPHENIDATE AND IF-THEN PLANS ARE COMPARABLE IN MODULATING THE P300 AND INCREASING RESPONSE INHIBITION IN CHILDREN WITH ADHD.

Paul-Jordanov I, Bechtold M, Gawrilow C.

A disturbed functioning of the prefrontal cortex, the anterior cingulate cortex, and an accordingly reduced P300 presumably underlies executive function deficits of children with attention deficit hyperactivity disorder (ADHD). Using a combined classification and Go/ NoGo task paradigm, the present study investigated whether medication with methylphenidate (MPH) modulates the P300 as measured by a high-density electroencephalogram (EEG) and facilitates response inhibition in children with ADHD. Further, effects of

MPH were compared with effects of self-regulation by if-then plans (Gollwitzer in Am Psychol 54: 493-503, 1999). MPH as well as if-then plans modulated the P300 and improved inhibition of an unwanted response on a Go/NoGo task to the same level observed in children without ADHD. Importantly, self-regulation strategies might be a valuable alternative to medication with MPH in children with ADHD.

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ADHD Atten Deficit Hyperact Disord. 2010;2:213-20.

LESS DISCONTINUATION OF ADHD DRUG USE SINCE THE AVAILABILITY OF LONG-ACTING ADHD MEDICATION IN CHILDREN, ADOLESCENTS AND ADULTS UNDER THE AGE OF 45 YEARS IN THE NETHERLANDS.

Van Den Ban E, Souverein PC, Swaab H, et al.

Treatment options for ADHD in the Netherlands have increased with the introduction of the extended-release formulations of methylphenidate (MPH ER, Concerta(registered trademark)) in 2003 and atomoxetine (ATX, Strattera(registered trademark)) in 2005, but data on the effect on drug usage patterns are scarce. The objective of the present study was to describe changes in the patterns of ADHD medication use and determinants thereof among children, adolescents and adults (<45 years) starting ADHD medication since the introduction of MPH ER and ATX. Data were obtained from Dutch community pharmacies as collected by the Foundation for Pharmaceutical Statistics, covering 97% of all dispenses for prescription medicines to outpatients in the Netherlands. Usage patterns (continuation, discontinuation, switching and addition) of ADHD drugs were evaluated at 3, 6 and 12 months after initiation for three separate time cohorts (patients starting ADHD medication in Jan-Dec 2002, Jan 2003-June 2004, respectively July 2004-Dec 2005). It was found that between 2002 and 2006, most ADHD drug users were initiated on methylphenidate IR. Discontinuation of any ADHD drug treatment decreased over time partly in favour of switching and addition. Discontinuation at 3 months decreased from around 33% to around 25%, at 6 months from less than 50% to almost 35%, and at 12 months from just fewer than 60% to less than 45%. Discontinuation was higher among females and in adults[18 years. After the introduction of MPH ER and ATX (time cohort III), 16.5% of the incident ADHD drug users switched their medication and almost 9% added an ADHD drug to the prior ADHD drug. In conclusion, discontinuation of incident ADHD drug use is high after 3, 6 and 12 months. During the study period, the incidence of discontinuation decreased because of the availability of extended-release methylphenidate and atomoxetine.

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ADHD Atten Deficit Hyperact Disord. 2010;2:107-13.

REBOXETINE FOR ADHD IN CHILDREN NON-RESPONDERS OR WITH POOR TOLERANCE TO METHYLPHENIDATE: A PROSPECTIVE LONG-TERM OPEN-LABEL STUDY.

Quintero J, Lopez-Munoz F, Alamo C, et al.

Up to 30% of patients with attention-deficit hyperactivity disorder (ADHD) treated with psychostimulants discontinue the treatment because of intolerance or lack of therapeutic response. Therapeutic alternatives are needed for such patients. In the present case series, we study the effectiveness of reboxetine over a period of 6 months in a sample of 14 children diagnosed with ADHD according to DSM-IV-TR criteria, who had responded only partially or had presented poor tolerance to conventional treatment with methylphenidate. Clinical efficacy was evaluated through the application of the 18-item Attention-Deficit Hyperactivity Disorder Rating Scale (ADHD-RS-IV) and the Clinical Global Impressions-Global Improvement Scale (CGI-I). Percentages of responders (ADHD-RS (greater-than or equal to) 25%) and improvers (CGI-I absolute value < 4) were 90.9 and 72.7%, respectively. No serious side-effects were observed during treatment, the most frequent effects being headaches and insomnia. The initial findings of our study show that reboxetine may constitute an effective tool for long-term treatment of children with ADHD who present poor response or poor tolerance to initial treatment with methylphenidate.

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ADHD Atten Deficit Hyperact Disord. 2010;2:133-38.

A RANDOMIZED, RATER-BLINDED, CROSSOVER STUDY COMPARING THE CLINICAL EFFICACY OF RITALIN(REGISTERED TRADEMARK) LA (METHYLPHENIDATE) TREATMENT IN CHILDREN WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER UNDER DIFFERENT BREAKFAST CONDITIONS OVER 2 WEEKS.

Schulz E, Fleischhaker C, Hennighausen K, et al.

Several extended-release methylphenidate medications are available for treatment of children with ADHD. Pharmacokinetic investigations suggest that the serum levels of methylphenidate are partially altered when the medication is taken without breakfast. Clinical data comparing different breakfast situations are missing. In this study, different breakfast compositions and their influence on treatment with Ritalin LA are investigated. A total of 150 patients were enrolled in a rater-blinded, randomized crossover trial that compared a minimal breakfast with a standard breakfast in patients under stable treatment with Ritalin LA. Ratings for clinical efficacy were carried out after 1 week by teachers and parents (FBB-ADHS), as well as physicians (CGI). Additionally, a math test was administered to the patients. Of the total patients, 144 finished the trial with a breakfast compliance of 93%. All of the clinical rating scales showed consistently no difference between the two breakfast conditions. Non-inferiority of minimal breakfast versus standard breakfast was shown to be statistically significant (FBB-AHDSTeacher: 0.97 with minimal breakfast, 1.01 with standard breakfast, $P < 0.0001$). The clinical efficacy of Ritalin LA is not influenced by breakfast and works independently of food intake.

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ADHD Atten Deficit Hyperact Disord. 2010;2:171-83.

SELF-PERCEPTION OF SELF-REGULATORY SKILLS IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AGED 8-10 YEARS.

Rizzo P, Steinhausen HC, Drechsler R.

Several studies have reported a characteristic "positive illusory bias" in the self-evaluation of children with ADHD. However, results are controversial. The aim of the present study was to investigate whether children with ADHD aged 8 to 10 years can rate their self-regulatory skills accurately when assessed with an age appropriate instrument. Twenty-seven children with ADHD and 27 matched normal control children completed the Selfrating Scale of Self-regulatory Function (SelfReg), a new rating scale that has been specifically designed for this age group. As expected, children with ADHD rated themselves significantly more dysfunctional than control children. In most domains, self-ratings of children with ADHD did not diverge from parent and teacher ratings to a greater extent than self-ratings of control children, although overall results indicated a moderate tendency toward a positive bias. When a cluster analysis based on discrepancies between children's and adults' evaluations was carried out, three groups with different self-rating patterns emerged: A "positive bias" group containing exclusively children with ADHD, a "negative bias" group containing both children with ADHD and control children, and the largest group of accurate self-raters which also included children from both diagnostic groups. It is concluded that overly positive selfjudgments are not a ubiquitous finding in ADHD, but may be confined to a specific subgroup of children whose specific characteristics remain to be determined.

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ADHD Atten Deficit Hyperact Disord. 2010;2:161-70.

THE QUALITY OF LIFE OF CHILDREN AND ADOLESCENTS WITH ADHD UNDERGOING OUTPATIENT PSYCHIATRIC TREATMENT: SIMPLE DISORDERS OF ACTIVITY AND ATTENTION AND HYPERKINETIC CONDUCT DISORDERS IN COMPARISON WITH EACH OTHER AND WITH OTHER DIAGNOSTIC GROUPS.

Remschmidt H, Matthejat F.

(1) How does the quality of life of patients with ADHD treated in an ambulatory care setting compare to that of other patient groups in child and adolescent psychiatry? (2) Can differences in the quality of life be demonstrated between patients with simple disorders of activity and attention and those with hyperkinetic conduct disorders? (3) How does the quality of life in these patient groups change over one year of treatment? The Inventory for the Assessment of Life Quality in Children and Adolescents (Inventar zur

Untersuchung der Lebensqualität von Kindern und Jugendlichen, ILK) was applied to a sample of 726 patients derived from nine different outpatient practices for child and adolescent psychiatry. Among them were 196 patients with a simple disorder of activity and attention and 64 with a hyperkinetic conduct disorder. A comparison between these two groups was the main aim of the study. The mean age of the patients in the sample (all diagnoses) was 8.7 (plus or minus) 3 years. The two groups of hyperkinetic patients made up 35% of the overall sample, and both of them showed a marked male predominance. The hyperkinetic patients tended to have lower quality-of-life scores than patients in the other diagnostic groups. Longitudinal observation revealed improvements in the quality of life across all patient groups, but the patients with hyperkinetic disorders (both groups) improved the least. The parents of the hyperkinetic patients, too, reported suffering greater stress because of their children's condition than the parents of children with other types of disorders. The ILK instrument has test-metrical qualities that render it usable and capable of holding its own among other, comparable instruments. It can be used to assess the quality of life of children with various diagnoses. Children with ADHD tend to have the least favorable quality-of-life scores, yet they do show some degree of improvement in their quality of life after a year of treatment.

ADHD Atten Deficit Hyperact Disord. 2010;2:127-32.

PREVALENCE OF ATTENTION DEFICIT HYPERACTIVITY DISORDER IN SCHOOLCHILDREN IN ATHENS, GREECE. ASSOCIATION OF ADHD SUBTYPES WITH SOCIAL AND ACADEMIC IMPAIRMENT.

Skounti M, Giannoukas S, Dimitriou E, et al.

The aim of this study was to explore the prevalence of attention deficit hyperactivity disorder (ADHD) and social and academic impairment in 6-to 11-year-old children residents of Athens, Greece. We screened 603 elementary schoolchildren following grades first to sixth. A two-stage screening process was employed including a standardized ADHD test for teachers and the Teacher Report Form (TRF). Among the 603 children, 36 (6.0%) met the study criteria for ADHD. The estimated prevalence was 8% for boys and 3.8% for girls. The most prevalent subtype of ADHD was the combined type (3.8%), followed by the ADHD inattentive (1.7%) and the ADHD hyperactive-impulsive type (0.5%). The ADHD combined type was strongly associated with clinical impairment in both areas of functioning (academic and social), where the ADHD inattentive subtype was found to be strongly associated with academic problems. The ADHD hyperactive-impulsive type was the less prevalent and the less impaired subtype in this study. None of the 36 children had been previously diagnosed as having ADHD or other primary disorder. In conclusion, the prevalence of ADHD among schoolchildren in Athens and the risk factors were found to be comparable to those reported in other countries worldwide. Additionally, impairment in social and academic functioning was strongly associated with the subtypes of the disorder.

Allergy Eur J Allergy Clin Immunol. 2011;66:1224-30.

ASSOCIATION BETWEEN CHILDHOOD ASTHMA AND ADHD SYMPTOMS IN ADOLESCENCE - A PROSPECTIVE POPULATION-BASED TWIN STUDY.

Mogensen N, Larsson H, Lundholm C, et al.

Background: Cross-sectional studies report a relationship between childhood asthma and attention-deficit hyperactivity disorder (ADHD) symptoms, but the mechanisms are yet unclear. Our objective was to investigate the longitudinal link between childhood asthma and the two dimensions of ADHD (hyperactivity-impulsivity, HI, and inattention, IN) in adolescence. We also aimed to explore the genetic and environmental contributions and the impact of asthma medication.

Methods: Data on asthma, HI and IN, birth weight, socioeconomic status, zygosity, and medication were collected from the Swedish Medical Birth Register and through parental questionnaires at ages 8-9 and 13-14 years on 1480 Swedish twin pairs born 1985-1986. The association between asthma at age 8-9 and ADHD symptoms at age 13-14 was assessed with generalized estimating equations, and twin analyses to assess the genetic or environmental determinants were performed.

Results: Children with asthma at age 8-9 had an almost twofold increased risk of having one or more symptom of HI (OR 1.88, 95% CI 1.18-3.00) and a more than twofold increased risk to have three symptoms or more of HI (OR 2.73, 95% CI 1.49-5.00) at age 13-14, independent of asthma medication. For IN, no significant relationship was seen. Results from twin modeling indicate that 68% of the phenotypic correlation between asthma and HI ($r = 0.23$, 0.04-0.37) was because of genetic influences.

Conclusions: Our findings suggest that childhood asthma is associated with subsequent development of HI in early adolescence, which could be partly explained by genetic influences. Early strategies to identify children at risk may reduce burden of the disease in adolescence.

Am J Med Genet Part B Neuropsychiatr Genet. 2011;156:730-36.

DOPAMINE (BETA)-HYDROXYLASE GENE ASSOCIATES WITH STROOP COLOR-WORD TASK PERFORMANCE IN HAN CHINESE CHILDREN WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER.

Ji N, Shuai L, Chen Y, et al.

The cognitive deficits observed in attention deficit/hyperactivity disorder (ADHD) are candidate endophenotypes for genetic association studies. Dopamine (beta)-hydroxylase (D(beta)H) converts dopamine to norepinephrine, and its activity is under strong genetic control. Prior studies suggest association between ADHD and DBH gene. The present study examined associations between a putative functional single nucleotide polymorphism (SNP) at DBH with performance on the Stroop task in patients with ADHD and in healthy control subjects. A total of 812 Han Chinese youths with DSM-IV ADHD and 233 unaffected controls were included in the study. Comprehensive phenotype data were collected, including performance on a series of Stroop interference tests examining inhibition of response to interfering stimuli. DBH SNP -1021C/T was genotyped using the 5'-exonuclease (TaqMan(registered trademark)) method. Compared to unaffected controls, children with ADHD performed significantly worse in all categories of the Stroop test. In ADHD cases, DBH genotype at -1021C/T significantly associates with reaction times of incongruent color word parts but not the interference times, with TT genotype performing significantly better in both reaction time and interference time than other two genotype groups. DBH genotype did not associate with cognitive performance in unaffected controls or in the combined group. DBH genotype at -1021C/T associates with differences in performance on the Stroop task in children with ADHD.

Anadolu Psikiyatr Derg. 2011;12:212-20.

ADHD RATE IN PARENTS OF CHILDREN WITH ADHD.

Camcioglu T, Yildiz O, Agaoglu B.

Objective: The purpose of this study was to investigate the rate of ADHD symptoms of the parents of children with ADHD, and the severity of symptoms and comorbidity in children with parental ADHD.

Methods: Eighty-one children between ages of 7-16 with a diagnosis of ADHD and their parents who were referred to the outpatient clinic and as the control group 60 children who did not have a diagnosis of ADHD and with similar features such as age, sex and mental status with the patient group were enrolled in the study. All children were assessed with K-SADS-PL-T and with interviews based on DSM-IV. The symptoms of children were evaluated by the Conners Rating Scale for Parents (CPRS) and the Turgay DSM-IV-Based Child and Adolescent Behavior Disorders Screening and Rating Scale (T-DSM-IV-S). Parents were assessed with the Wender-Utah Rating Scale (WURS) and with the Adult Attention Deficit Hyperactivity Scale (ADHS-A).

Results: The parents of the ADHD group had statistically higher scores of WURS and ADHS-A compared with the control group. Positive correlations were found between WURS and ADHS-A scores of the parents and T-DSM-IV-S and CPRS scores of the children. Prevalence of comorbidity in children with parental ADHD according to WURS and ADHS-A was higher than children with no parental ADHD.

Discussion: It was concluded that ADHD symptom levels was increased in the parents of children with ADHD in comparison to the control group. And also the severity and the comorbidity of ADHD was higher in children with parental ADHD.

Arch Dis Child. 2011;96:A25-A26.

IS ADHD A DISEASE OF AFFLUENCE? A LOCAL AUTHORITY EXPERIENCE IN NORTH-WEST OF ENGLAND.

Ogundele MO, De Doysa R.

Aim: The relationship between social class and ADHD is unclear. We sought to investigate possible effects of social deprivation on ADHD prevalence in Liverpool area.

Method 1069 children from all areas of Liverpool in the North West region of England diagnosed with ADHD based on DSM-IV standards were studied. The coefficients (Spearman's) of correlation between prevalence rates in each lower superior output areas (LSOA) their corresponding IMD2007 scores or rank were calculated. Each of the 32 482 LSOAs in England with an assigned IMD2007 score and rank were grouped into consecutive groups of 10 centile scores and groups of 1000 ranking bands.

Results: The prevalence of ADHD in Liverpool children up to the age of 16 years is 9.91/1000 with a male preponderance (1:6). The prevalence of ADHD patients in each LSOA bands was negatively correlated with the IMD2007 rank. Spearman's correlation (rs) and probability (statistical significance) were 0.9395 and 0.000 respectively. The prevalence of ADHD was also positively correlated with the IMD2007 score bands of their residential postcodes (rs=-0.400827), but this did not reach a statistical level of significance (p=0.097). The ADHD prevalence in each major postcode area (eg, L1, L2 etc.) was also significantly correlated with their average IMD2007 scores (rs=0.494112, p=0.0026). This was also significantly correlated with their average IMD2007 ranking (rs=-0.49291 p=0.0028).

Conclusion: The prevalence of ADHD in a relatively deprived city of England appears to be associated with the degree of the socio-economic deprivation of their residential areas. This study suggests that an improved socio-economic environment may significantly improve the overall outcome of childhood ADHD. The polynomial fitting curve between the LSOA rank orders and the prevalence of ADHD suggests that this might be a useful tool for NHS service commissioners, to predict the expected prevalence of ADHD in their local authorities for future planning (figure 1).

Arch Iran Med. 2011;14:179-82.

OVERLAP OF ADHD AND OPPOSITIONAL DEFIANT DISORDER DSM-IV DERIVED CRITERIA.

Ghanizadeh A.

Objective: One possible reason for being controversies regarding ADHD may be related to the validity and reliability of diagnostic criteria of attention deficit hyperactivity disorder and oppositional defiant disorder. Diagnostic criteria of oppositional defiant disorder include eight symptoms. This study examines the factor structure of oppositional defiant disorder symptoms, its discriminant validity from attention deficit hyperactivity disorder, its convergent validity and internal reliability.

Methods: Parents of 111 referral children and adolescents with attention deficit hyperactivity disorder completed DSM-IV referenced based attention deficit hyperactivity disorder and oppositional defiant disorder checklists.

Results: Factor analysis indicated that the attention deficit hyperactivity disorder symptom of: "often has trouble organizing activities" and "often runs about or climbs when and where it is not appropriate" were a part of the oppositional defiant disorder component. These symptoms less often than other symptoms differentiate attention deficit hyperactivity disorder from oppositional defiant disorder. The convergent validity for oppositional defiant disorder symptoms ranged from 0.64 to 0.79.

Conclusion: The parent-rating checklist of oppositional defiant disorder symptoms properly differentiates oppositional defiant disorder from attention deficit hyperactivity disorder. However, two items of the attention deficit hyperactivity disorder were listed as symptoms of oppositional defiant disorder. If the factor

loading of the items is to be confirmed in further studies, it might be necessary to revise these symptoms criterion in future editions of DSM-IV diagnostic criteria.

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Bipolar Disord. 2011;13:425-32.

A PRELIMINARY STUDY OF SLEEP IN ADOLESCENTS WITH BIPOLAR DISORDER, ADHD, AND NON-PATIENT CONTROLS.

Mullin BC, Harvey AG, Hinshaw SP.

Objectives: To compare the sleep of adolescents with bipolar disorder (BD) to groups of adolescents with attention-deficit hyperactivity disorder-combined type (ADHD-C) and those without psychopathology.

Methods: A sample of 13 adolescents diagnosed with BD who were not in the midst of a mood episode, 14 adolescents with ADHD-C, and 21 healthy controls, all between the ages of 11 and 17 years served as participants. They were psychiatrically evaluated using a structured diagnostic interview and completed four nights of in-home sleep monitoring using actigraphy and sleep diaries.

Results: Sleep diary estimates of sleep indicated that participants with BD experienced more awakenings than their peers with ADHD, whereas actigraphic estimates revealed that participants with BD slept longer and with less wakefulness than their peers.

Conclusions: In between mood episodes, adolescents with BD experience their sleep as more fragmented than that of their peers but do not exhibit more disturbed sleep as estimated by actigraphy. The possible influence of psychotropic medication is an important consideration when assessing sleep in the context of BD.

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Brain Dev. 2011.

THE INTERFERENCE OF LOCAL OVER GLOBAL INFORMATION PROCESSING IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER OF THE INATTENTIVE TYPE.

Song Y, Hakoda Y.

A classic finding in perception of compound patterns is normal individuals cannot skip global analysis in local-oriented processing, but they can successfully resist local analysis in global-oriented processing-the so-called global interference. Recently, studies examining the role of brain hemisphere activity in the Navon task have indicated that the processing of global and local information can be, respectively, attributed to the right and left hemispheres. Moreover, many neuroimaging researches have revealed that certain core symptoms of attention deficit hyperactivity disorder (ADHD) are related to dysfunction of right hemisphere. These findings imply that global interference will be substantially less evident, and possibly even replaced by local interference in ADHD. The present study compared the performance of children with and without attention deficit hyperactivity disorder of the inattentive type (ADHD-I) in the processing of global and local information to examine the local interference hypothesis in ADHD. An ADHD-I group (n = 15) and a paired control group (n = 19) completed tasks using two versions of the Navon task, one requiring divided attention, in which no information was given to participants regarding the level at which a target would appear, and the other requiring selective attention, in which participants were instructed to attend to either the local or the global level. The results showed that children with ADHD-I exhibited local interference, regardless of which attention procedure was used. These results support the weak right hemisphere hypothesis in ADHD, and provide evidence against the deficit hypotheses for ADHD in the DSM-IV criteria, which postulates that inattention symptoms may manifest as a failure to provide close attention to details.

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Brain Impairment. 2011;12:25.

TRAINING EXECUTIVE ATTENTION AND MOTOR SKILLS (TEAMS): A NOVEL INTERVENTION FOR PRESCHOOLERS WITH ADHD.

Halperin JM, Marks DJ, Chacko A, et al.

Objective: To assess the effectiveness of a novel neurocognitive prevention intervention for preschoolers with ADHD that was designed to enhance brain development and yield enduring reductions in ADHD symptom severity.

Participants and Methods: 29 4 and 5 year-old children with ADHD and their parents participated in concurrently-run child (3-5 children/ group) and parent groups. Child groups focused on an array of games targeting distinct neurocognitive domains including inhibitory control, working memory, motor control, set-shifting and planning/organization. Parents received education about ADHD coupled with instruction, modeling, and a description of the cognitive constructs tapped by each of the children's game. Parents were directed to spend at least 30 min. per day playing these games with their children and were instructed in how to individualize (i.e., scaffold) the games to their child's level of proficiency and progressively increase the cognitive/behavioral load of each game as their child achieved mastery of the requisite skill. Daily diaries were collected to measure time engaged in activities outside of sessions. Treatment palatability was evaluated, and parent and teacher ratings on the ADHD-RS-IV were assessed pre-treatment, posttreatment and at 1- and 3-month follow-up. Data are reported for 7 child groups.

Results: Only one child failed to complete the intervention, and session attendance was very high (92.7%). Mean daily playing at home was 35.3 min/day, and parent satisfaction ratings were quite high. Parent and teacher ratings on the ADHD-RS-IV significantly improved from pre- to post-treatment (both $p < .01$), and behavioral gains reported by parents ($p < .01$) and teachers ($p < .05$) persisted 1- and 3-months post-treatment.

Conclusions: These data indicate that a structured play-based approach to neurocognitive training may be an effective treatment for preschoolers with ADHD. Double-blind, randomized controlled trials are beginning.

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Brain Impairment. 2011;12:25.

PSYCHOLOGICAL TREATMENTS FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD): A META-ANALYSIS OF PAEDIATRIC OUTCOME STUDIES.

Denson LA, Hodgson KD, Hutchinson AD.

Objective: We expanded on the Fabiano et al. (2008) meta-analysis of behavioral treatments for ADHD, a neurobiological disorder presenting in childhood, by systematically comparing the efficacy of seven types of psychological intervention.

Participants and Methods: After a systematic literature search, we conducted a meta-analysis of 14 controlled treatment studies evaluating behavior modification, neurofeedback, multi-modal psychosocial treatment, school-based programs, working memory training, parent training and self-monitoring. Mean weighted effect sizes for the treatment outcomes of 625 children and adolescents (382 treatment, 243 controls) were calculated. Moderator analyses examined contributions of age, gender, ADHD subtype and treatment 'dosage' to outcomes.

Results: Two treatments were most supported by this evidence: behavior modification produced statistically significant improvement across the most outcome measures, and neurofeedback had the largest effect size. Treatments were generally more efficacious for girls than for boys, and least efficacious for the 'combined' ADHD subtype. There was no dose effect. Older children did not benefit more from treatment than younger children.

Conclusions: Our small study, based on limited literature, supports two psychological treatments for young people with ADHD and indicates directions for more, and better, evaluation research.

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Child & Family Behavior Therapy. 2011 Jul;33:217-30.

SPORT-BASED GROUP THERAPY PROGRAM FOR BOYS WITH ADHD OR WITH OTHER BEHAVIORAL DISORDERS.

Lufi D, Parish-Plass J.

A group of children with Attention Deficit Hyperactivity Disorder (ADHD) was compared to children with other behavior and emotional problems. All the participants participated together in 20 weekly sessions for 1 academic year. The participants were assessed with three questionnaires on three different occasions: before the beginning of the group, at the completion of the group, and 1 year after the completion of the group. The results showed that the children indicated improvement in two behavior domains while their parents indicated improvement in the children's behavior in five domains. The most striking improvement was reduction of anxiety.

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Child Neuropsychol. 2011 May;17:209-24.

WORKING MEMORY INFLUENCES PROCESSING SPEED AND READING FLUENCY IN ADHD.

Jacobson LA, Ryan M, Martin RB, et al.

Processing-speed deficits affect reading efficiency, even among individuals who recognize and decode words accurately. Children with ADHD who decode words accurately can still have inefficient reading fluency, leading to a bottleneck in other cognitive processes. This "slowing" in ADHD is associated with deficits in fundamental components of executive function underlying processing speed, including response selection. The purpose of the present study was to deconstruct processing speed in order to determine which components of executive control best explain the "processing" speed deficits related to reading fluency in ADHD. Participants (41 ADHD, 21 controls), ages 9–14 years, screened for language disorders, word reading deficits, and psychiatric disorders, were administered measures of copying speed, processing speed, reading fluency, working memory, reaction time, inhibition, and auditory attention span. Compared to controls, children with ADHD showed reduced oral and silent reading fluency and reduced processing speed—driven primarily by deficits on WISC-IV Coding. In contrast, groups did not differ on copying speed. After controlling for copying speed, sex, severity of ADHD-related symptomatology, and GAI, slowed "processing" speed (i.e., Coding) was significantly associated with verbal span and measures of working memory but not with measures of response control/inhibition, lexical retrieval speed, reaction time, or intra-subject variability. Further, "processing" speed (i.e., Coding, residualized for copying speed) and working memory were significant predictors of oral reading fluency. Abnormalities in working memory and response selection (which are frontally mediated and enter into the output side of processing speed) may play an important role in deficits in reading fluency in ADHD, potentially more than posteriorally mediated problems with orienting of attention or perceiving the stimulus.

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Child Psychiatry Hum Dev. 2011 Aug;42:377-89.

ATYPICAL BEHAVIORS AND COMORBID EXTERNALIZING SYMPTOMS EQUALLY PREDICT CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER'S SOCIAL FUNCTIONING.

Graziano PA, Geffken GR, McNamara JP.

The goal of the current study was to determine within a clinical sample what differentiates children with ADHD who experience social functioning difficulties from those who appear to have healthy social functioning. Participants for this study included 62 children (mean age = 11.3 years) with a DSM-IV diagnosis of ADHD confirmed by a comprehensive clinical diagnostic assessment. Multiple indicators of children's social functioning were collected via parent report including: social skills, social adaptability, peer difficulties, and social quality of life. Parent reports of children's externalizing, internalizing, and atypical behaviors were also collected. Results indicated that both externalizing symptoms and atypical behaviors predicted children with ADHD's social functioning, even after controlling for ADHD symptoms severity. No association was found between internalizing symptoms and social functioning. The current study provides initial data suggesting that atypical behaviors found in children with ADHD are as powerful as comorbid externalizing symptoms in predicting social functioning difficulties. Due to the shared variance from relying

solely on parent report, it will be critical for future research to replicate our findings using multi-informant data such as peer and teacher reports which provide unique information on children's social functioning.

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Clin Neurophysiol. 2011.

AUDITORY SELECTIVE ATTENTION AND PROCESSING IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Gomes H, Duff M, Ramos M, et al.

Objective: This study sought to better characterize the contributions of deficits in attention allocation and distracter inhibition to the poor performance on attention tasks often seen in children with ADHD.

Methods: Electrophysiological (Nd, P3b) and behavioral measures (speed and accuracy) were examined during an auditory selective attention task in children with ADHD, children with typical development (TD), and adults. Thirty children (15 ADHD; 13 females) between the ages of 7 and 13 and 16 adults (8 females) participated.

Results: Nd waveforms were elicited from adults and children with TD, but not from children with ADHD. Further, those with ADHD exhibited significantly smaller auditory responses at 100 ms (Ta). P3bs were elicited in all three groups by targets but not by unattended deviants. Performance was significantly poorer in children with ADHD than TD and RTs were more variable.

Conclusions: Children with ADHD evidenced poorer attention allocation, as measured by Nd and hits, but were not more distracted by unattended deviants, as measured by P3b and false alarms, than children with TD. Significance: Findings for Nd, P3b, and Ta considered together suggest that deficits in auditory selective attention in children with ADHD may be attributable to reduced information early in the processing stream.

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Cognitive and Behavioral Practice. 2011 May;18:267-80.

THE SUPPORTING A TEEN'S EFFECTIVE ENTRY TO THE ROADWAY (STEER) PROGRAM: FEASIBILITY AND PRELIMINARY SUPPORT FOR A PSYCHOSOCIAL INTERVENTION FOR TEENAGE DRIVERS WITH ADHD.

Fabiano GA, Hulme K, Linke S, et al.

Teenage drivers with attention-deficit/hyperactivity disorder (ADHD) are at considerable risk for negative driving outcomes, including traffic citations, accidents, and injuries. Presently, no efficacious psychosocial interventions exist for teenage drivers with ADHD. The Supporting a Teen's Effective Entry to the Roadway (STEER) program is a multicomponent intervention that was developed to help families with a teenager with ADHD negotiate the transition independent driving. The present report includes outcomes from 7 teens with ADHD who enrolled in the 8-week program. Using a multiple baseline design across participants, teens had driving behavior continuously monitored using on-board monitors that measured driving behaviors (i.e., hard breaking, speed), and the parents and teens reported on driving-related impairment each week. Results indicated promising effects across participants, though there were individual differences in treatment response within and across participants and measures. The STEER program was viewed as acceptable to participants as all families completed the STEER program and reported it to be a palatable intervention.

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Dev Med Child Neurol. 2011;53:843-49.

EFFECT OF OSMOTIC-RELEASE ORAL SYSTEM METHYLPHENIDATE ON DIFFERENT DOMAINS OF ATTENTION AND EXECUTIVE FUNCTIONING IN CHILDREN WITH ATTENTION-DEFICIT-HYPERACTIVITY DISORDER.

Blum NJ, Jawad AF, Clarke AT, et al.

Aim This study investigated whether components of attention and executive functioning improve when children with attention-deficit-hyperactivity disorder (ADHD) are treated with osmotic-release oral system (OROS) methylphenidate.

Method Thirty children (24 males, six females; mean age 8y 6mo, SD 1y 11mo; range 6y 5mo -12y 6mo) with ADHD combined type participated in a double-blind, placebo-controlled crossover trial with the child's clinically most effective dose as identified with a systematic open-label titration procedure. After 1week on each treatment (placebo and OROS methylphenidate), a neuropsychological battery that assessed sustained attention, selective attention, attentional control, response inhibition, and working memory was administered. This battery included the Gordon Diagnostic System, seven subtests of the Test of Everyday Attention for Children, and two tests of working memory.

Results Performance on two of three tests of response inhibition improved on OROS methylphenidate compared with placebo ($p < 0.01$). Performance on one of two tasks assessing attentional control and one of five measures assessing sustained attention demonstrated clear improvement. There was no improvement on the two tasks assessing selective attention or the two tasks assessing working memory.

Interpretation When OROS methylphenidate was used to treat children with ADHD at the clinically most effective dose, general improvement was noted on tasks requiring response inhibition; response to treatment in other domains was either variable or not demonstrated.

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Dev Neuropsychol. 2011 Jul;36:566-77.

COMPARING ATTENTIONAL NETWORKS IN FETAL ALCOHOL SPECTRUM DISORDER AND THE INATTENTIVE AND COMBINED SUBTYPES OF ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Kooistra L, Crawford S, Gibbard B, et al.

The Attention Network Test (ANT) was used to examine alerting, orienting, and executive control in fetal alcohol spectrum disorder (FASD) versus attention deficit hyperactivity disorder (ADHD). Participants were 113 children aged 7 to 10 years (31 ADHD-Combined, 16 ADHD-Primarily Inattentive, 28 FASD, 38 controls). Incongruent flanker trials triggered slower responses in both the ADHD-Combined and the FASD groups. Abnormal conflict scores in these same two groups provided additional evidence for the presence of executive function deficits. The ADHD-Primarily Inattentive group was indistinguishable from the controls on all three ANT indices, which highlights the possibility that this group constitutes a pathologically distinct entity.

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Drug Alcohol Depend. 2011;117:242-47.

CIGARETTE AND CANNABIS USE TRAJECTORIES AMONG ADOLESCENTS IN TREATMENT FOR ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND SUBSTANCE USE DISORDERS.

Gray KM, Riggs PD, Min SJ, et al.

Background: Cigarette smoking is common in adolescents with attention-deficit/hyperactivity disorder (ADHD) and substance use disorders (SUD). However, little is known about the relationship between cigarette and cannabis use trajectories in the context of treatment for both ADHD and SUD. To address this research gap, we report collateral analyses from a 16-week randomized, controlled trial ($n = 303$) of osmotic-release methylphenidate (OROS-MPH) in adolescents with ADHD concurrently receiving cognitive behavioral therapy (CBT) targeting non-nicotine SUD.

Methods: Participants completed cigarette and cannabis use self-report at baseline and throughout treatment. Analyses were performed to explore the relationships between cigarette smoking, cannabis use, and other factors, such as medication treatment assignment (OROS-MPH versus placebo).

Results: Baseline (pre-treatment) cigarette smoking was positively correlated with cannabis use. Negligible decline in cigarette smoking during treatment for non-nicotine SUD was observed in both medication groups. Regular cigarette and cannabis users at baseline who reduced their cannabis use by >50% also reduced cigarette smoking (from 10.8 (plus or minus) 1.1 to 6.2 (plus or minus) 1.1 cigarettes per day).

Conclusions: Findings highlight the challenging nature of concurrent cannabis and cigarette use in adolescents with ADHD, but demonstrate that changes in use of these substances during treatment may occur in parallel.

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European Child & Adolescent Psychiatry. 2011 Jun;20:301-09.

THE PARALLEL DEVELOPMENT OF ODD AND CD SYMPTOMS FROM EARLY CHILDHOOD TO ADOLESCENCE.

Diamantopoulou S, Verhulst FC, van der Ende J.

This study examined the developmental relations between symptoms of oppositional defiant disorder (ODD) and conduct disorder (CD) from early childhood to adolescence. Specifically we tested, according to parent-reported problems, whether symptoms of ODD precede the development of CD symptoms, whether ODD and CD symptoms are reciprocally associated across time, or whether ODD and CD symptoms develop parallel to each other across time. Participants were a community-based sample (at time 1: N = 485, 48% boys) assessed biannually five times from age 4 to 6 until age 12–14. The findings suggested that, with control for stability effects, baseline SES, and symptoms of attention deficit hyperactivity disorder, ODD and CD symptoms develop parallel to each other. No gender differences were obtained. We conclude that without the initial presence of CD symptoms, ODD symptoms are not developmental precursors to CD symptoms.

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Eur Child Adolesc Psychiatry. 2011;20:S119.

BIRTH MONTH AS A RISK FACTOR FOR ADHD IN SWEDEN.

Halldner Henriksson L.

Aim: It was recently reported that US children born the month before the cutoff date for school eligibility (i.e. the youngest in their classes) are more likely to be diagnosed with ADHD and are prescribed ADHD drugs at a higher rate than children born the month after the cutoff date. We wanted to examine the effect of birth month as a risk factor for ADHD-diagnosis and treatment in Sweden.

Materials and methods: Using the Swedish Prescribed Drug Registry we identified individuals prescribed amphetamine, dexamphetamine, methylphenidate or atomoxetine, which are drugs that are fairly specific for ADHD-treatment. In a nested case-control design and by means of a logistic regression model analysis we compared cases with residents of the Swedish population matched by sex and birth year.

Results: We found that children born in the end of the year were more likely to be prescribed ADHD drugs than were children born in the beginning of the year (born in December versus born in January: odds ratio (OR) 1.46 (95% confidence interval (CI) 1.33-1.59), and OR 1.39 (CI 1.29-1.48) for children aged 6-12 years and 12-18 years, respectively). The higher prescription rate for individuals born late in the year was not as pronounced for young adults aged 18-24 years (born in December vs. born in January: OR 1.13 (CI 1.02-1.25)) or for adults aged 24-35 years (OR 1.14 (CI 1.02-1.27)).

Conclusion: In Sweden the cutoff date for school eligibility is December 31st. Therefore the results of our analysis would support the hypothesis that children are diagnosed with and treated for ADHD partly because of school immaturity.

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Eur Child Adolesc Psychiatry. 2011;20:S130-S131.

ADHD IN PEOPLE WITH MENTAL RETARDATION.

Hassler F.

Hyperactivity syndromes and disorders (ADHD and HKD) include symptoms of overactivity, inattention, and impulsivity. These symptoms occur also in many other mental disorders including mental retardation (MR). Thus, it is not surprising that symptoms of ADHD have been found at significantly higher levels in several studies of mentally retarded children. For example, Dekker and Koot (2003), found a prevalence rate of 14.8% for ADHD of any kind in Dutch children attending special schools. Emerson (2003) reported rates of 8.7% of HKD in children with global learning disability which is a tenfold increased risk compared to the prevalence of hyperactivity (0.9%) in the general population sample. Only few studies on ADHD in children with mental retardation have been performed. Several features distinguish the diagnoses of ADHD and MR. A first way of differentiating between ADHD and MR should consider the course of the two disorders over the life-span. MR is rather a trait while ADHD should be considered a state. Secondly, among children with mental retardation gender differences in ADHD appear to be much smaller than gender differences in children with normal abilities (Hastings, 2005). In contrast to our limited knowledge about the differences and similarities of ADHD and MR, there are many studies about stimulant medication as a pharmacological management strategy for children suffering from either ADHD or MR or both. Results based on these studies indicate that psychostimulants may improve the target symptoms of hyper-activity, impulsivity, disinhibition and inattention with some limitations. ADHD symptoms in patients with MR may be less responsive to medical treatment, compared to patients without MR. Moreover, people with MR may be more susceptible to side effects (Thomson et al. 2009).

Eur Child Adolesc Psychiatry. 2011;20:S130.

Group intervention for children with ADHD. A prospective intervention technique in a private CAMHS setting.

Goel B, Menon S, Gupta D.

Purpose: In the following paper, we aim to explain the development of a group intervention program for children with Attention Deficit Hyperactive Disorder (ADHD).

Background: ADHD is one of the most prevalent and well researched mental health problems amongst young children and adolescents across the globe. Over the years various therapeutic interventions have been validated for the management of ADHD, like Cognitive Behavior Therapy, Behavior Modification Plan and Psychotropic Medications. However, a child with ADHD often faces a lot of comorbid psychological issues secondary to impulsivity, hyperactivity and attention difficulties. These could include low confidence, poor peer relations, low self esteem and aggression. Experiential understanding of their difficulties and hence forth developing their insight intelligence for the management of these difficulties is one of the main focuses of the intervention. A group intervention provides an opportunity for a child self growth and improve social skills.

Methods: In the following research we included a mixed group of children, diagnosed with ADHD (DSM-IV-TR), within the age group of 8-10 years, belonging to upper middle class section of New Delhi. Parents of the participant children filled in the Strengths and Difficulty Questionnaire (SDQ) form, once before the enrollment and second after 4 weeks and third after 8 weeks of group interventions. Techniques used in the sessions included role play, enactment of emotions, drawings, dance, music and other form of activities to improve the child's functioning in a natural setting.

Conclusion: Over the past 2 months, an initial qualitative and quantitative analysis of the current group has shown promising results, indicating that group intervention is a possible promising therapeutic technique for symptomatic management for ADHD children in a private Child and Adolescent Mental Health Services (CAMHS) setting.

Eur Child Adolesc Psychiatry. 2011;20:S118.

ADHD SYMPTOMS, EMOTIONAL BEHAVIORAL PROBLEMS AND PSYCHOPATHOLOGY IN SIBLINGS OF ADHD CHILDREN.

Gokcnulle Ymren S, Arman A, Yulaf Y, et al.

Background: Attention Deficit Hyperactivity Disorder (ADHD) is the most common and highly heritable disorder in the field of child psychiatry. Beside the genetic background, the siblings of ADHD children are at increased risk for developing psychopathology because of the negative effects of this chronic disorder on the family unit. Objective: In this study, it was aimed to compare psychopathology, the symptoms of ADHD, and emotional-behavioral difficulties in siblings of ADHD (ADHD-sibs) children with siblings of children without any psychiatric diagnosis.

Methods: The siblings aged between 8 and 17 of randomly selected ADHD children were included in the study (n:50). The results were compared with siblings of healthy controls (CONTsibs) who matched with ADHD-sibs in terms of age and gender (n:48). Clinical assessments were made with Kiddie Schedule for Affective Disorders and Schizophrenia Present and Lifetime Version; ADHD symptoms were measured with DSM-IV ADHD Symptom Checklist based on parent and teacher report, Conners' Parent Rating Scale, and Conners' Teacher Rating Scale; emotional and behavioral problems were measured with Child Behavior Checklist for 4-18 years (CBCL), the Screen for Child Anxiety Related Emotional Disorders (SCARED) with both parent and child report, and childhood depression scale based on self-report; adverse life events were assessed with a detailed list.

Results: According to the findings, ADHD-sibs were found out to have less academic success; the diagnosis of ADHD, enuresis and anxiety disorder were more common and they had more ADHD symptoms, emotional and behavioral problems compared to CONTsibs. Maternal education level was related with the presence of psychiatric disorder in ADHD-sibs.

Conclusion: ADHD-sibs should be evaluated closely for early diagnosis and possible interventions because they have increased risk of psychopathology and emotional behavioral problems whose symptoms may not be recognized by parents.

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Eur Child Adolesc Psychiatry. 2011;20:S107.

LONG-TERM CARDIAC ADVERSE EFFECTS OF ADHD MEDICATION IN CHILDREN AND ADOLESCENTS: A NATIONWIDE REGISTERBASED FOLLOW-UP STUDY.

Dalsgaard S, Nielsen HS, Simonsen M.

Background: The most commonly used pharmacological agent in the treatment of ADHD is methylphenidate (MPH). Numerous studies offers overwhelming evidence for the positive effects of MPH with significant reductions in severity of ADHD, impairment and a reduced risk of developing substance use disorder. There is concern on the long-term effects of this treatment both in the public, among parents and also among professionals within mental health services. Based on small clinical samples and case series the American Food and Drug Administration (FDA) issued a warning in 2007 that MPH may increase the risk of sudden death and that it is mandatory for doctors to assess cardiovascular history prior to treatment. However, additional population-based studies that address associations between heart disease and long-term use of MPH, dosage comparisons, and interactions with pre-existing cardiac risk factors are needed.

Aims: To study the long-term cardiac adverse effects of MPH in children with ADHD.

Materials and methods: A cohort consisting of all children born in Denmark in the period 1990-1999 was identified using nation-wide registers (n = 712,059). This cohort was followed prospectively until December 2007. Data on clinical diagnoses of ADHD and all prescriptions of MPH in these individuals was extracted from registers along with data on cardiovascular diagnoses and data on prescriptions on any cardiac medication. In order to adjust for family history of psychopathology and cardiovascular disease corresponding data on all of these children's parents was also obtained, giving a complete dataset without any attrition.

Results and conclusions: Data has not yet been analysed. In the preliminary descriptive analyses around 6,500 children in the total study population were given a cardiovascular diagnosis and around 7,000 children had a clinical diagnosis of ADHD. The results of the analyses on associations between ADHD, treatment with MPH and later cardiovascular disease will be presented.

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Eur Child Adolesc Psychiatry. 2011;20:S108.

A cross-over study in prepubertal boys with ADHD to investigate efficacy and bioequivalence of two modified release methylphenidate formulations.

Fleischhaker C, Hennighausen K, Schneider-Momm K, et al.

Objectives: The primary objective of this single-blind, randomized, crossover study was to determine Pharmacokinetics (PK) and bio-equivalence of 20 mg Ritalin LA compared to 20 mg Medikinet retard. Secondary objectives were efficacy, safety and tolerability.

Methods: 24 prepubertal boys aged 8-14 years with ADHD were enrolled. Cohorts of 6 subjects each were assessed on two different visit days by a 9-h classroom setting. Serum MPH concentrations, ratings of classroom behavior on the SKAMP were measured repeatedly.

Results: Among the patients (mean age 10.6 (plus or minus) 1.8 years), the complete determination of the pharmacokinetic parameters could be performed for 20 patients. The mean C_{max} serum MPH concentration for Ritalin LA was 18.3 (plus or minus) 8.7 ng/ml compared to Medikinet retard 22.6 (plus or minus) 9.3 ng/ml. The mean AUC (0-8 h) serum MPH value for Ritalin LA was 93.1 (plus or minus) 57.2 ng/ml/h compared to Medikinet retard 111.4 (plus or minus) 45.8 ng/ml/h. Equivalence could not be concluded at a 5% significance level. In approx. 50% of patients, MPH concentrations have formed two distinctive peak levels around 2 and 5.5 h. In a cross-over analysis, the SKAMP Scales showed no significant treatment effects. Regarding the subject's condition in the week prior to the visits, however, there was a significant positive effect in favor of Ritalin LA as assessed by the primary caregiver. For both medications, no serious adverse events could be observed.

Conclusions: An analogue classroom setting provides a reliable parallel assessment of behavioral and PK data. PK data showed remarkable inter-individual variations. In both medication groups, the pharmacokinetic profiles have revealed two distinctive peak levels in more than 50% of patients.

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Eur Child Adolesc Psychiatry. 2011;20:S141-S142.

Differentiating Autism Spectrum Disorders from attention deficit hyperactivity disorder and anxiety disorders.

Fung DSS, Yoon Phaik O, Rescorla L, et al.

Background: There is growing interest in the diagnostic overlap between Autism Spectrum Disorders (ASD) and other disorders, such as Attention Deficit Hyperactivity Disorder (ADHD) and Anxiety Disorders. In previous studies, more than 10% of children with ASD met criteria for ADHD and Anxiety Disorders (de Bruin et al., 2007; White et al., 2009), and children with ADHD and Anxiety Disorders also presented elevated levels of autistic-like symptoms (Pine et al., 2008; Santosh and Mijovic, 2004). This report summarizes findings from two studies that tested the ability of the Child Behavior Checklist (CBCL; Achenbach, 1991) syndrome scales to differentiate between children with ASD, ADHD, and Anxiety Disorders.

Method: The sample included a total of 723 participants (between 4 and 18 years) diagnosed by their child psychiatrists using the ICD-9 and DSM-IV criteria to have either: (a) ASD (n = 86), (b) ADHD-Inattentive type (n = 117), (c) ADHD-Hyperactive and Impulsive type (n = 426), (or) Anxiety Disorders (n = 94). Archival data of participants' CBCL measure were used.

Results: Analyses from logistic regression indicated that the withdrawn/depressed, social problems, and thought problems syndromes significantly discriminated the ASD group from both the ADHD groups. On the other hand, the anxious/depressed, somatic complaints, social problems, and attention problems syndrome scales significantly discriminated the ASD group from the anxiety group. A 9-item ASD scale

(from the CBCL items) significantly differentiated children with ASD from children in the other diagnostic groups.

Conclusions: Findings from this study add an important contribution to the literature on differentiating ASD from other psychiatric disorders and provide strong support for the CBCL as a screening tool for ASD.

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Eur Child Adolesc Psychiatry. 2011;20:S170.

THE EFFECT OF TREATMENT ON MULTIPLE SYMPTOM DOMAINS AND QUALITY OF LIFE IN CHILDREN AND ADOLESCENTS WITH ADHD: A 3-YEAR FOLLOW-UP STUDY.

Gurkan CK, Yurumez E, Akca OF, et al.

Introduction: The aim of this study was to evaluate the effect of treatment on depressive, anxiety, obsessive-compulsive symptom domains and quality of life in a group of children with ADHD, and to explore the differences between individuals who quitted treatment and those who stayed on during the last 3 years.

Methods: Twenty children and adolescents with ADHD, who had initially taken part in a three-month methylphenidate treatment study, were consented to participate in the current study. They were reassessed with self-report instruments in terms of anxiety, depressive and obsessive-compulsive symptoms and quality of life after 3 years after their treatment commenced. Fifteen of the children continued to use medication. Changes in symptom domains along 3 years were evaluated by repeated measures of ANOVA. Correlational analyses were used to examine the association between the severity of the symptoms and dose and duration of the medication.

Results: Compared to beginning, medication use decreased by one third and the mean duration of medication use in children who stayed on treatment was 15.4 (SD = 10.0) months during the last 3 years. After Bonferroni correction, none of the symptoms and quality of life scores was significantly different from baseline level at the end of the 3 years (repeated measures of ANOVA, $p > 0.0125$). State ($p = 0.046$) and trait anxiety scores ($p = 0.018$) were significantly higher in subjects who quitted treatment (Mann Whitney U test). Correlational analyses yielded no significant results between the change in symptom severity and quality of life levels and duration of medication use and its dose ($p > 0.05$).

Discussion: Improvement in symptoms and quality of life during the first 3 months seemed to be lost at the third year of the treatment. Non-compliance is a critical matter to be addressed and the reasons for returning baseline functioning level even in children and adolescents who continued treatment should be discussed.

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Eur Child Adolesc Psychiatry. 2011;20:S22.

GROUP THERAPY WITH IN ADHD.

Bourrat MM, Olliac B.

The children with ADHD we meet in consultations in child psychiatry, require often particular adaptation of treatments. Therapeutic groups for children and adolescents are specific practices we have tried as a possible response and an access to treatment in the field of ADHD. Indeed we wished to make the access to treatment easier and facilitate the collaboration with parents and their children by this therapeutic approach in accordance with the different states of development. Hence the not inconsiderable interest of a therapeutic tool, whose use can surprise at first, but has the merit of often allowing a better integration and participation of the entire family in the treatment. We will expose the specific organization, and some adjustments of the therapeutic environment we have used

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Eur Child Adolesc Psychiatry. 2011;20:S58.

WHY DO ADHD SYMPTOMS AND READING DIFFICULTIES CO-OCCUR?

Greven C, Asherson P, Trzaskowski M, et al.

Background: Children with attention deficit hyperactivity disorder (ADHD) often experience reading difficulties. In particular, inattentiveness rather than hyperactivity-impulsivity is linked to reading difficulties. Quantitative genetic studies indicate that this is largely due to shared genetic influences between the inattentive symptoms of ADHD and reading difficulties.

Aim: To examine two questions about the genetic association between ADHD symptoms and reading difficulties. First, does the association extend to aspects of scholastic achievement other than reading, as predicted by the Generalist Genes Hypothesis? Second, what are the longitudinal, potentially causal, relationships underlying ADHD symptoms and reading difficulties?

Materials and methods: ADHD symptoms and reading in over 6,000 twin pairs from the UK population-representative Twins Early Development Study were assessed across middle childhood to early adolescence. ADHD symptoms were assessed using the Revised Conners' Parent Rating Scale. Scholastic achievement was assessed using teacher ratings.

Results: The genetic association between ADHD symptoms and reading difficulties was similar to that for ADHD symptoms and other aspects of scholastic achievement. Quantitative genetic cross-lagged results showed that ADHD symptoms, in particular inattentiveness, contributed significantly to later reading difficulties, whereas the reverse effect was half the magnitude.

Conclusion: The genetic links between inattentive ADHD symptoms and reading largely extend to other aspects of scholastic achievement. Moreover links appear to be causal from inattentiveness to reading, suggesting that inattentiveness may serve to exacerbate reading difficulties across time. We are currently testing our quantitative genetic results using genome-wide association analyses.

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Eur Child Adolesc Psychiatry. 2011;20:S56.

HEALTH-RELATED QUALITY OF LIFE AND ITS CORRELATES WITH SELF-CONCEPT IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Rodopman Arman A, Ozaner S, Kulah Y, et al.

Attention-deficit/hyperactivity disorder (ADHD) in children is associated with deterioration of several dimensions of health related quality of life (HRQoL), as well as the fluctuations of self-concept.

Aim: The objective of the present study is to evaluate the burden of illness of ADHD on HRQoL with respect to self-concept in children.

Materials and methods: 80 school children were diagnosed as ADHD in Marmara University Hospital Child Psychiatry Clinic, who were compared with 74 healthy controls. The children were newly diagnosed ADHD cases based on Kiddie Schedule for Affective Disorders and Schizophrenia for School Aged Children-Present and Lifetime Version. The children completed the Piers-Harris Self Concept Scale (PHSCS). Mothers completed the Child Health Questionnaire-Parent Form 50 (CHQ-PF50) for evaluating HRQoL in children.

Results: ADHD and the control group did not differ in age (mean age 10.4 (plus or minus) 2.4 vs. 10.7 (plus or minus) 2.4) and sex distribution (56 vs. 42 boys). Being female and parental separation is related with lower HRQoL in ADHD group ($p < 0.05$ for both). Children with ADHD had worse psychosocial and physical HRQoL than healthy controls ($p < 0.05$). No relationship was found between academic achievement and CHQ-PF50. Psychosocial QoL scores were found significantly higher in children with ADHD-hyperactive type ($p < 0.05$). Children with ADHD report lower self-concept than controls ($p < 0.01$) and the decreasing tendency of self-concept scores in older ages was not observed, which was seen in healthy controls. Positive judgement on Happiness/satisfaction and Behavioural adjustment subscales of PHSCS appear to effect the HRQoL positively ($p < 0.01$) and adverse life events affect HRQoL negatively ($p < 0.05$) in ADHD group.

Conclusion: Low self-esteem in the presence of worse HRQoL may create difficulties in the adjustment processes of ADHD children. Families with ADHD children may be more prone to perceive HRQoL worse when there is history of adverse life events. This study is supported by Marmara University Scientific Research Projects Commission (project number: SAG-D-110411-0096).

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Eur Child Adolesc Psychiatry. 2011;20:S7.

PUZZLING THE MOSAIC-ELUCIDATING FUNCTIONAL ROLES OF GENES IN ADHD PATHOPHYSIOLOGY.

Renner T.

Background: Altered neurotransmission plays a major role in the pathophysiology of ADHD. Molecular genetic approaches aim to reveal new candidates and their specific impact on functional levels.

Objectives/aims: In a differential approach we aimed to elucidate the potential role of KCNJ6, a gene involved in monoaminergic neurotransmission, in the pathophysiology of ADHD, especially in cognitive functions and reward processes.

Methods: Association between KCNJ6 and ADHD was investigated in two independent samples. Further, the influence of rs7275707 on brain activation of ADHD patients and healthy controls during a continuous performance test (EEG) and in healthy probands during reward conditions (fMRI) was assessed.

Results: Association was found in the family-based design, but not in the adult case-control sample. A specific effect of rs7275707 on brain activation in ADHD patients and a general influence on reward related activation was detected.

Conclusions: Though association with the general ADHD phenotype was not confirmed, our results indicate a specific influence of KCNJ6 on brain activation in ADHD and a role as general modulator in reward processes.

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Eur Child Adolesc Psychiatry. 2011;20:S89-S90.

DEVELOPING A COHERENT SERVICE MODEL FOR ADHD CARE-FROM GUIDELINES TO PRACTICE.

Sandhu T, Mushtaq I, Keskinen M, et al.

Background: ADHD is a lifelong disorder which presents predominantly in childhood but with significant number continue to have the disorder into adulthood. ADHD is now well established as a medical condition with sound evidence through neuroimaging, genetics and epidemiology. The ADHD/HD worldwide-pooled prevalence is 5.29% (Polanczyk et al 2007). It is a public health issue of significant impact on society that needs a coherent service model across Europe. Medication has been an effective and evidence based intervention for many decades. However in last two decades there has been increasing interest in multimodal approach for a holistic care of ADHD. The MTA Study has shown that combined behaviour and medication is more effective than medication or behaviour interventions alone. There is also increasing evidence that co-morbidity is a rule than exception in ADHD and even 70% might have co morbid disorders (Brown et al, 09). This creates further challenges as to develop service model that could best meet the needs of these patients.

Methods: In this 120 min workshop we will use 90 min of three interactive lectures 30 min each and 30 min of group discussion, quick audience survey, comments and questions. The workshop will provide an overview of the current main guidelines and critically review the issues in their implementation. It will also examine the existing clinical practices in terms of ADHD management and service models in European countries against the European and various other guidelines. The workshop will provide an excellent opportunity to share good practices in Europe for a streamlined ADHD Care. Through interactive discussion with the audience the workshop will attempt to create clear recommendations for a potential services model that can reflect the best compliance with guidelines and multimodal approach.

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Eur Child Adolesc Psychiatry. 2011;20:S8.

PROGRESS IN UNDERSTANDING AND TREATMENT OF ADHD - A NEUROBIOLOGICAL PERSPECTIVE.

Rothenberger A, Steinhausen HC.

Overview: Neurobiological research in ADHD is rapidly and successfully progressing. It seems important to provide a perspective which tries to check the practical value of the obtained results, especially related to improvement of understanding, psychoeducation and treatment of ADHD. The three presentations of this symposium allow to give new insights into the pathophysiology of ADHD (here: genetics, neurochemistry and neurophysiology) as well as possible new treatment approaches (here: neurotherapeutics via electrical brain stimulation and serotonergic modulation of emotions and cognition). Hence, the symposium will present empirical evidence which may be relevant for future clinical use.

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Eur Child Adolesc Psychiatry. 2011;20:S126.

TRANSCRANIAL CURRENT DIRECT STIMULATION (tDCS): THERAPEUTIC CHALLENGES FOR ADHD.

Rubio-Morell B, Rotenberg A, Herreros O, et al.

Background: Attention deficit-hyperactivity disorder (ADHD) is a common neurodevelopmental disorder, in part a disorder of neuro-plasticity, that is refractory to conventional pharmacotherapy in as many as one third of all subjects. Thus, nonpharmacologic treatment strategies based on noninvasive brain plasticity neuromodulation could be promising. There are two primary methods of noninvasive brain stimulation currently available: transcranial magnetic stimulation (TMS) and transcranial direct current stimulation (tDCS). Although their utilization remains limited in pediatric neurology and psychiatry, there may be enough evidence for their rational, safe use in this population.

Aim: To review the principles that support development of tDCS as a safe therapeutic approach in pediatric ADHD.

Conclusion: Published data suggest that tDCS may ameliorate executive dysfunction and inhibitory control deficits, and may control hyperactivity in children with ADHD. tDCS appears safe and well-tolerated and warrants further study as a therapeutic tool. In particular, patients with ADHD symptoms that are refractory to pharmacotherapy, or patients with comorbidities, such as brain trauma, Tourette syndrome and epilepsy, might obtain greater benefits from tDCS than from ADHD pharmacotherapy alone.

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Eur Child Adolesc Psychiatry. 2011;20:S118.

FAMILY FUNCTIONING AND ITS RELATION WITH CHILDREN'S EMOTIONAL BEHAVIORAL PROBLEMS IN ATTENTION DEFICIT HYPERACTIVITY DISORDER IN TURKEY.

Gokcnulle Ymren S, Arman A, Berkem M.

Objectives: ADHD may disrupt family functioning in many ways. The purpose of the study was to examine family functioning and its relation with emotional behavioral problems in children and adolescents with Attention Deficit and Hyperactivity Disorder (ADHD).

Methods: Fifty children diagnosed with ADHD and forty nine healthy controls (aged 8-15 years) were assessed with Kiddie Schedule for Affective Disorders and Schizophrenia Present and Lifetime Version; Parents completed the Child Behavior Checklist (CBCL) 4-18 for their children's emotional and behavioral problems; the McMaster Family Assessment Device (FAD) for family functioning which assesses 6 dimensions of family functioning (problem solving, communication, behavior control, affective involvement, affective responsiveness, and roles and also includes a general functioning subscale).

Results: 34% of the ADHD children had comorbid psychiatric disorders, Mean age and gender between ADHD and control groups were similar. ADHD families scored high at the level of nullunhealthy functioningnull in the problem solving, roles, affective involvement, general functioning, and behavior control subscales of FAD. Besides, problem solving behaviour and general functioning were significantly poorer than control families and they had more difficulties in area of roles. The scores in problem solving, roles, affective responsiveness, behavior control subscale of FAD were significantly correlated with the scores of internalizing behaviors subscales of CBCL in ADHD group.

Conclusion: In this study the families of ADHD children had poorer family functioning in most of the subscales of FAD. These problematic functions are related with children's internalizing problems. The treatment of children diagnosed with ADHD should include parental treatment and intervention addressing parental skills.

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Eur Child Adolesc Psychiatry. 2011;20:S133.

NON-SHARED ENVIRONMENTAL EFFECTS OF BIRTH WEIGHT ON ADHD SYMPTOMS PERSIST INTO EARLY ADOLESCENCE. A 10-YEAR LONGITUDINAL TWIN STUDY.

Greven C, Ronald A, Plomin R, et al.

Background: Markers of poor fetal development, especially low birth weight, have been associated with attention-deficit hyperactivity disorder (ADHD). However, genetic factors may underlie this association, as the same genes may be involved in low birth weight as well as ADHD.

Aim: This study examines whether birth weight is associated with ADHD symptoms using a monozygotic (MZ) twin differences design to isolate non-shared environmental influences from genetic and shared environmental factors.

Materials and methods: ADHD symptoms in up to 5,200 MZ twins from the UK population-representative Twins Early Development Study were rated by parents (ages: 2, 3, 4, 7, 8, 9, 12 years) and teachers (ages: 7, 9, 12 years). Twin birth weight was obtained via parent report when the twins were 18-24 months old. Results: Birth weight and ADHD symptoms were negatively associated. Within MZ pair comparisons revealed that the lighter twin in a pair had, on average, more ADHD symptoms than the heavier co-twin, suggesting that the association between birth weight and ADHD symptoms was non-shared environmentally mediated. Neither gestational age, gender nor socio-economic status moderated this non-shared environmental association. Effect sizes were generally stronger for more discordant twins and for parent than teacher rated ADHD symptoms. Although effect sizes were small, the magnitude of the associations was consistent over a 10-year period spanning ages 2-12 years.

Conclusion: Results suggest that poor fetal development, as evidenced by lower birth weight in relation to the co-twin, is a nonshared environmental risk factor for ADHD symptoms, with influences that persistent into early adolescence.

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Eur Child Adolesc Psychiatry. 2011;20:S121.

ATTENTION DEFICIT HYPERACTIVITY DISORDER: AGREEMENT BETWEEN CLINICAL IMPRESSION AND SNAP-IV SCREENING TOOL.

Jose Angel AD, Serrano E.

Introduction: Attention deficit hyperactivity disorder (ADHD) is the most common childhood-onset neuro-behavioural disease. There are no definitive methods to diagnose pediatric ADHD. Symptoms of ADHD persist into adolescence in approximately 80% of children, and they may even continue into adulthood. Adult ADHD is underdiagnosed in Spain.

Objective: The CONCOR study was undertaken to assess the usefulness and accuracy of the SNAP-IV screening tool, which is completed by the parents, and this was compared with the pediatricians' clinical impression regarding the presence of ADHD in Spanish children that they were treating.

Methods: Multicentre, case-controlled, cross-sectional study. Exclusion criteria included health professionals other than physicians and specialties other than pediatrics.

Results: 1169 physicians were included in the study, providing results from 7263 children. There was good concordance between SNAP-IV and the pediatricians impression of ADHD (kappa concordance index 0.6471; 95% confidence intervals 0.6296, 0.6646), and SNAP-IV showed good sensitivity and specificity (82.3 and 82.4%, respectively). The negative predictive values of SNAP-IV were 97.7-99.3% for an ADHD prevalence of 3-10%, with positive predictive values of 12.6-34.2%. Thus, the SNAP-IV questionnaire appears to be a useful screening tool which would allow early identification of children who are unlikely to

have ADHD, bringing those in whom there is a possibility of ADHD to the attention of the pediatrician for clinical evaluation.

Discussion: The SNAP-IV screening tool effectively identified Spanish children with a low potential for the presence of ADHD, i.e. it had good concordance with the pediatricians' clinical impression of the presence/absence of ADHD according to DSM-IV (kappa index 0.6646, with narrow CIs), and a high NPV (>90%). Diagnosis of ADHD during childhood, facilitated by the SNAP-IV screening tool, may also help reduce the incidence of undiagnosed adult ADHD.

Eur Child Adolesc Psychiatry. 2011;20:S125-S126.

EVALUATION OF PSYCHOPATHOLOGICAL RISK FOR DEPRESSIVE DISORDER IN ADOLESCENTS WITH ADHD SUBJECTS BY THE ADMINISTRATION OF THE QUESTIONNAIRE C.D.I.

Riccio MP, Sarnataro E, Majorano A, et al.

Introduction: Attention-deficit/hyperactivity disorder is a neurobio-logical syndrome with an estimated prevalence among children and adolescent of 5%. Children with ADHD are characterized by early onset of symptoms of hyperactivity, impulsivity and poor sustained attention. It is a highly heritable disorder, but acquired factors of etiology are sometimes uncovered that may amenable to preventive measures or specific therapy. Frequently it is associated with other psychiatric disorders, especially Oppositional Defiant Disorder (40%), anxiety disorders (34%), Conduct disorder (14%), Tic (11%) and mood disorders (4%).

Aim: To assess the extent of depressive symptoms in a population of individuals with ADHD.

Patients and methods: 11 male patients aged between 14 and 16 years with ADHD, including 3 patients with ADHD inattentive subtype, 8 patients with ADHD combined subtype, came at the center of reference for ADHD of the Second University of Naples, in period between April 2009 and April 2010. All patients perform multimodal treatment. Patients were screened by the administration of the questionnaire CHILDREN DEPRESSION INVENTORY (CDI) to identify early indicators of depressive illness.

Results: The analysis of data collected in the questionnaire CDI shows an average score of 15.45, indicative for symptomatic aspects of depressive disorder. In particular, we highlight the presence of feelings of low self-esteem, insecurity and guilt. Patients with ADHD inattentive subtype have, on average, a higher score (equal to 17.33) to the questionnaire than other patients, although this score does not exceed the cut-off scale for depression.

Conclusions: The results appear indicative of an increased risk of psychopathology in the adolescent with ADHD to depression. The early detection of depressive symptoms allows a targeted and immediate intervention aimed at preventing the onset of depressive comorbidity.

Eur Child Adolesc Psychiatry. 2011;20:S132-S133.

EVALUATION OF THEORY OF MIND IN CHILDREN WITH ATTENTION DEFICIT-HYPERACTIVITY DISORDER COMPARED WITH CONTROL GROUP.

Tehrani-Doost M, Mohammadzadeh A, Khorrami A.

Introduction: Theory of mind (TOM) has been described as the ability to understand others' mental states. One of the main aspects of theoryofmindisintentionality which referstopeople's intentions intheir behaviors. Several studies suggest that children with attention-deficit/hyperactivity disorder (ADHD) have some impairment on TOM tasks. There is no evidence addressing the issue of intentionality in children with ADHD. The aim of this study was to investigate intentionality in children with ADHD using the Movement Shapes Paradigm.

Methods: Thirty children with ADHD were compared to thirty ages and IQ matched typically developing children. All participants were assessed using the modified version of Moving Shapes Paradigm. All animations which are two triangles were presented between 34 and 45 s. Then participants were asked to describe the movements of triangles according to what they understand in terms of actions, interactions, and mental states. Children's answers were rated according to the accuracy, type of applying descriptions,

using of mental states and emotional words, and length of phrase. The scoring reflects the degree of intentionality.

Results: ADHD patients showed significant differences in terms of intentionality, appropriateness and length of phrases in all TOM tasks compared to normal children. According to intentionality score, ADHD children performed worse than control group ($P < 0.05$). Based on appropriate score the accuracy of their answers was lower than control group, and children with ADHD use longer phrases compared to control group. Of emotional words which were used by ADHD patients 41.9% were negative in comparison with 33% of normal children's.

Conclusion: According to findings of this study ADHD children have poorer theory of mind especially intentionality compared to normal children and this deficit may reflect their impairment in social interaction.

Eur Child Adolesc Psychiatry. 2011;20:S116.

THE CoMeCo-TRIAL: COMPARISON OF THE EFFICACY OF TWO METHYLPHENIDATE PREPARATIONS FOR CHILDREN AND ADOLESCENTS WITH ADHD IN A NATURAL SETTING.

Doepfner M, Ose C, Fischer R, et al.

Objectives: The comparison of the efficacy of Medikinet (registered trademark) retard and Concerta (registered trademark) (CoMeCo) trial was a multisite, randomised, double-blind, crossover trial which aimed to compare the effects of two different modified release methylphenidate (MPH) preparations (Medikinet(registered trademark) retard: 50% immediate release (IR); Concerta (registered trademark): 22% IR) in a natural setting across the day in 113 randomised children and adolescents with ADHD (age range 6;0-17;11 years). The duration of the study per patient was 3 weeks.

Methods: The primary outcome variable was the German version of the nullSwanson, Kotkin, Agler, M-Flynn, and Pelham scalenull; SKAMP-D) in the first 3 h of school as assessed by teachers.

Results: Medikinet(registered trademark) retard in an equivalent daily dose was superior to Concerta (registered trademark) ($p = 0.0009$) and Medikinet (registered trademark) retard in the reduced daily dose was non-inferior to Concerta (registered trademark) on the primary outcome. Further exploratory analyses on teacher and parent ratings on ADHD and on externalizing symptoms during the day revealed no evidence for the superiority of Concerta (registered trademark) on Medikinet (registered trademark) retard in an equivalent daily dosage throughout the day.

Conclusion: Children and adolescents may also be treated with a lower daily dose of Medikinet (registered trademark) retard (which has a similar IR component as Concerta (registered trademark)) without resulting in a clinically relevant worse effect during school time.

Eur Child Adolesc Psychiatry. 2011;20:S89.

DEVELOPING INTEGRATED CAREPATHWAYS FOR ADHD.

Hoare P.

There is a strong drive in the National Health Services in the UK to develop evidence based, streamlined Integrated Care Pathways (ICP) for most of the medical conditions that would ensure high quality services and good outcomes, as measured against certain set standards. The presentation will describe the development of the model of Interagency Care pathways for ADHD that has involved a multidisciplinary expert group from across the UK including the author as key member. The Integrated Care Pathways follow a patient journey and would provide a practical tool to the clinicians working in range of settings from primary care to multidisciplinary secondary/tertiary services

Eur Child Adolesc Psychiatry. 2011;20:S7-S8.

NEURONAL INHIBITION AND ITS MODULATION BY TMS-NEUROTHERAPEUTIC PERSPECTIVES FOR ADHD.

Bender S.

Background: The inhibition of unwanted movements is a core problem in attention deficit/hyperactivity disorder (ADHD). Trans-cranial magnetic stimulation (TMS) is a compelling method to assess and influence inhibition in the brain.

Objectives/aim: What can TMS tell us about inhibitory deficits in ADHD? Can these deficits be ameliorated by a TMS intervention (repetitive TMS)?

Methods: We assessed an inhibitory component of the EEG-response to TMS in 8-14-year-old ADHD children and whether a TMS intervention would influence this inhibition marker (N100).

Results: We found a reduced N100 in ADHD children. During a 1-Hz TMS intervention, there was a significant further decrease and no normalization of this inhibitory EEG-response. There were no significant effects on hyperactive behaviour with this TMS-protocol.

Conclusions: The EEG-response to TMS reveals inhibition deficits in ADHD and is an excellent marker to monitor TMS-intervention effects-because TMS protocols must be optimized in order to ameliorate behavioural symptoms.

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Eur Child Adolesc Psychiatry. 2011;20:S119.

PSYCHIATRIC COMORBIDITY IN CHILDREN AND ADOLESCENTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER: A CLINIC SAMPLE FROM TURKEY.

Herguner A, Herguner S, Cicek E.

Introduction: It is well known that more than half of individuals with attention deficit hyperactivity disorder (ADHD) have comorbid psychiatric disorders. There is increasing evidence that co-occurring psychiatric disorders affect the manifestation and severity of symptoms, long-term prognosis and treatment response. The aim of this study was to investigate the comorbid psychopathology in clinic-referred children and adolescents with ADHD.

Methods: The study group included 133 children and adolescents who had been referred to the Department of Child and Adolescent Psychiatry, Meram Faculty of Medicine, Selcuk University. All of the cases were diagnosed as ADHD according to DSM-criteria. Psychiatric assessment was done by using a standardized diagnostic instrument, Kiddie-Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Version (K-SADS-PL).

Results: Among 133 participants, 81 (60.9%) subjects were diagnosed with combined-type, 48 (36.1%) were the predominantly inattentive type, only 4 (3.0%) was determined to have the predominantly hyperactive-impulsive type. Ninety-eight (73.7%) subjects had at least one comorbid disorder. The most common psychiatric disorders were disruptive behavior disorders and anxiety disorder. Correlation analysis revealed that there was a significant relation between age and number of diagnosis.

Discussion: The results of this study confirm that children and adolescents with ADHD have a very high rate of psychiatric comorbidity as it was shown in previous studies. Psychiatric assessment should be done in cases with ADHD.

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Eur Child Adolesc Psychiatry. 2011;1-2.

IS THERE POTENTIAL FOR THE TREATMENT OF CHILDREN WITH ADHD BEYOND PSYCHOSTIMULANTS?

Hoekstra PJ.

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Eur Child Adolesc Psychiatry. 2011;20:S142.

AUTISTIC SPECTRUM DISORDERS IN CHILDREN AND ADOLESCENTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER IN A CLINIC-REFERRED SAMPLE.

Herguner A, Herguner S.

Introduction: Autism spectrum disorders (ASD) are characterized by impairments in social interaction and communication as well as repetitive and restricted behavior and interests. Attention deficit hyperactivity disorder (ADHD) is characterized by severe inattention, hyperactivity, and impulsivity. ADHD and ASD appear to often co-occur in families. Several studies reported that 30-80% of children with ASD meet criteria for ADHD and 20-50% of children with ADHD meet criteria for ASD. We aim to investigate the frequency of autism spectrum disorders in clinic-referred children and adolescents with ADHD.

Method: A consecutive series of 147 children and adolescents (mean age, 9.95 (plus or minus) 3.02 y) with a diagnosis of ADHD according to DSM-IV criteria were included in the study. Fourteen cases (9.5%) were diagnosed as having a comorbid ASD (3 with autistic disorder, 3 with Asperger syndrome and 8 with atypical autism). Subjects with ASD plus ADHD were compared with subjects with ADHD without ASD.

Results: Hyperactive-impulsive subtype was more frequent in ADHD plus ASD group. ADHD and ASD comorbidity was significantly associated with a higher rate of males. Frequency of psychiatric disorders was higher in ADHD and ASD group.

Discussion: Family and twin studies supported the hypothesis that ADHD and ASD originate from partly similar genetic factors. A screening for ASD should be performed in patients with ADHD, as these patients and their parents are frequently not aware that the impairment may be partly due to a comorbid ASD.

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Eur Child Adolesc Psychiatry. 2011;20:S115-S116.

ADHD AND INTELLECTUAL DISABILITY: PRELIMINARY RESULTS IN PERFORMANCE AND REWARD EFFECTS IN A SUSTAINED ATTENTION TASK.

Bescos M, Smith A, Simonoff E.

Deficits in sustained attention and motivational effects in cognitive tasks have been mainly described and tested in children with attention-deficit hyperactivity disorder (ADHD) and average IQ, but under researched in comorbid ADHD and intellectual disabilities (ADHD + ID). This pilot study examines whether ADHD + ID children, according to the null dual deficit hypothesis, show worse deficits than those with ADHD in a Continuous Performance Task (rewarded CPT-AX) and the effects of reward on their performance. **Methods:** 17 ADHD children with mild/moderate ID, 24 with ADHD and average IQ and 28 healthy controls were compared on the CPT-AX. We predicted that the ADHD + ID group would have slower reaction times (RT), higher standard deviations of RT (SD-RT) and more omission, commission errors and premature responding. Both ADHD groups would improve or normalised their performance under reward due to increased motivation. Mixed two-way analysis of variance (ANOVA), Kruskal-Wallis test and logistic regression analysis were used where appropriate, including mental age (MA) later as a covariate. **Results:** The main results were for SD-RT, after covarying for MA, higher SD-RT in the combined group compared to the average IQ groups were reduced to a trend. The ADHD + ID group was similar in omission errors to the ADHD group and both differed significantly from controls. Premature responding to a target in the combined group was significantly different from controls and non-significant, but pointing to a significant trend compared to ADHD children. The previously described differences remained after controlling for MA. No differences in RT, commission errors or differential reward effects in any variable were found. **Conclusions:** ADHD + ID children showed a similar deficit in omission errors to that of children with ADHD in the CPT, while the results in premature responding may point to a distinct deficit. Reward did not affect performance differently in the ADHD + ID group as compared to other groups.

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Eur Child Adolesc Psychiatry. 2011;20:S114.

FERRITIN LEVELS AND SEVERITY OF ATTENTION DEFICIT-HYPERACTIVITY DISORDER SYMPTOMS IN CHILDREN AND ADOLESCENTS.

Alda JA, Serrano E, Ortin A, et al.

Introduction: Many studies have indicated that dopamine may have an important role in the symptomatology of Attention Deficit Hyperactivity Disorder (ADHD). Iron is a coenzyme of tyrosine hydroxylase, which is critical in dopamine synthesis. Low ferritin levels in childhood have been reported to affect the development of the central nervous system, leading to behavioural disorders.

Objectives: To study the relation between ADHD symptoms and behaviour problems with serum ferritin levels.

Methods: Ninety-nine naive ADHD children and adolescents between 5 and 17 years old (mean 9.86; SD = 3.03 years), consecutively referred to ADHD unit were evaluated with the Conners Parent Rating Scale (CPRS), Conners Teacher Rating Scale (CTRS), Attention Deficit Hyperactivity Disorder Rating Scale-IV (ADHD-RS-IV) Home and School version, Child Behaviour Checklist (CBCL), Teacher Report Form (TRF), and blood tests including serum ferritin levels.

Results: There was a negative correlation between serum ferritin levels and scores on the ADHD-RS-IV Home version ($r = -0.212$; $p = 0.05$). ADHD children with low ferritin levels (<30 (mu)g/L) obtained significant differences on the TRF scales of externalizing problems ($t = 2.291$, $p = 0.024$, CI 0.573-8.066) and on the CTRS scale of ADHD Index ($t = 2.42$, $p = 0.018$, CI -0.307 to 7.130).

Conclusions: These findings add to the growing literature about relation of serum ferritin levels and severity of ADHD symptoms and behavioural problems reported by teachers and parents.

Eur Child Adolesc Psychiatry. 2011;20:S126-S127.

LISDEXAMFETAMINE DIMESYLATE (LDX) IN CHILDREN WITH ADHD AFTER SUBOPTIMAL RESPONSE TO METHYLPHENIDATE.

Jain R, Duncan D, Babcock T, et al.

Background: Lisdexamfetamine dimesylate (LDX), a prodrug stimulant approved in Canada and the USA for treatment of ADHD, is now under evaluation for use in children and adolescents in Europe.

Aims: Assess LDX efficacy in children aged 6-12 years with ADHD, in particular those with suboptimal response to methylphenidate (MPH).

Methods: Post hoc analyses were performed of 3 studies of LDX in children with ADHD: a randomized, double-blind, forced-dose titration,¹ an open-label, dose-optimization² and a randomized, double-blind, dose-optimization, laboratory school study.³ Among other efficacy measures assessed in subjects with prior MPH treatment were the ADHD-RS-IV and CGI-I scale.

Results: Of children who received LDX ($n = 213$) or placebo ($n = 72$) in the forced-dose titration study,¹ 26 (19 LDX, 7 placebo) were prior MPH users who remained symptomatic (ADHD-RS-IV > 18). ADHD-RS-IV total scores, changes from baseline, clinical responsiveness and rates of symptomatic remission in this subgroup were comparable to the overall population assessed in the trial. In the open-label study (83/316 previous MPH)² and placebo-controlled study (67/129 previous MPH),³ over 80% of children who had previously received MPH were classified as clinical responders ((greater-than or equal to)30% reduction in ADHD-RS-IV total score; CGI-I score of 1 or 2) when subsequently treated with LDX. A statistically significant improvement was seen on all other assessments for patients treated with LDX (SKAMP-D,³ EESC, BRIEF and PERMP [attempted and completed] - further details in poster).

Conclusions: Clinical ADHD symptoms improved in children treated with LDX following prior MPH treatment in all 3 studies, with similar efficacy to the overall population studied in the forced-dose titration study.

Eur Child Adolesc Psychiatry. 2011;20:S124.

ASSESSMENT OF OXIDATIVE STRESS IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Altun H, Oztop D, Akyol G, et al.

Objectives: ADHD is principally a genetic disorder; however, environmental and biochemical factors may play role in etiopathogenesis of disease. Little investigation has been performed to evaluate biochemical causes. In the present study, it was aimed to assess role of oxidative stress parameters in etiology of ADHD.

Methods: 30 ADHD patients between 6 and 12 years old without current or previous psychiatric disease history who have been firstly diagnosed and have not launched any medical therapy and 30 healthy children as control enrolled to study. Socio-demographic data sheet, Conners' Teacher Rating Scale, Conners' Parents Rating Scale and, to determine ADHD symptoms for disruptive behavior disorder DSM-IV Based Screening and Rating Scale were completed by teachers and parents of the children. Children both in patient and control group have been assessed with Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (K-SADS-PL) and Wechsler Intelligence Scale for Children Revised (WISC-R) was performed to assess neuropsychological status. Venous blood samples were obtained after 12 h fasting and oxidant levels and anti-oxidant activities were measured.

Findings: No significant difference was found between patient and control group in terms of socio-demographic characteristics, except gender. Among oxidant parameters, malonyldialdehyde (MDA) and 8-hydroxy-2'-deoxyguanosine (8-OHdG) levels were found significantly lower than controls in patient group. No significant difference was found in advanced oxidation protein products (AOPP), an oxidant parameter, and paraoxonase1 (PON1) and thiol, both anti-oxidant parameters, levels between two group.

Conclusion: In present study, nonetheless presence of oxidative in children and adolescents with ADHD has not been supported due to low oxidant parameter and lack of alteration in anti-oxidant activity; it has been considered that further studies were needed in this issue.

Eur Child Adolesc Psychiatry. 2011;20:S115.

ATTENTION DEFICIT-HYPERACTIVITY DISORDER AND INTELLECTUAL DISABILITY: NEUROPSYCHOLOGICAL PROFILE IN A RESPONSE INHIBITION TASK.

Bescos M, Smith A, Simonoff E.

The cognitive aspects of attention deficit hyperactivity disorder (ADHD) and comorbid intellectual disability (ID) are still unknown in contrast with the vast literature in ADHD and average IQ. This study examines whether children with ADHD + ID, according to the null dual diagnosis hypothesis, show more impaired profiles to those with ADHD using a selective inhibitory motor response task (Go-No Go), which consistently reveals deficits in children with ADHD and average ability. Participants and method: Children between 6 and 16 years old (23 with ADHD and mild/moderate ID, 23 with ADHD and average IQ and 23 healthy controls) were compared during the Go-No Go task. We predicted the ADHD + ID group would obtain significantly higher scores in reaction time (RT), standard deviation of reaction time (SD of RT) and omission errors and lower scores in probability of inhibition (PI). Analysis of variance (ANOVA) was used for RT, SD of RT and PI; and ordinal logistic regression analysis for omission errors. Mental age (MA) was later included as a covariate. Results: Contrary to our predictions, the ADHD + ID group showed significantly faster RT than the ADHD group but it did not differ from controls. ADHD + ID children had also similar levels of PI and SD of RT to the ADHD group. Both clinical groups were significantly different than the control group again in PI and SD of RT. Although differences remained for the ADHD + ID group after controlling for MA in PI, they disappeared for SD-RT. Finally, ADHD + ID children had more omission errors than ADHD and controls, even after controlling for MA. Conclusions: The differences found in RTs are unexpected given the general literature of ADHD, but consistent with those found in adults with ID. Children with combined type ADHD + ID show similar deficits in PI than combined type average IQ ADHD children, but a distinctive deficit in omission errors when performing in the Go-No Go task. This can have implications for management plans in the ID group.

Eur Child Adolesc Psychiatry. 2011;20:S131.

A COMPARISON OF ALARM TREATMENT RESULTS FOR BRAZILIAN CHILDREN WITH ENURESIS PLUS ADHD X NO ADHD.

De Mattos Silveiras EF, Bezerra De Sousa CR.

Bedwetting and ADHD association is frequent; approximately 20-30% of children with Monosymptomatic Nocturnal Enuresis (MNE) show also ADHD, but literature on such comorbidity is rare. This study compares results of alarm treatment for children with (MNE plus ADHD) null (MNE without ADHD). 31 MNE children (6-13 years of age) were divided: experimental group EG (n = 13 MNE plus ADHD children) and Control Group-CG (n = 18 MNE without ADHD children). The treatment was the same for both groups: Full Spectrum Home Training, with bi-weekly sessions of psychological therapy, for a period of 32 weeks. There was no significant difference between groups regarding socio-demographical variables or outcomes. EG data = 53.8% discharge criteria (14 dry nights after starting over learning time), 7.7% initial success (first 14 dry nights after alarm treatment started), 7.7% failure (no initial success) and 30.0% dropout (or treatment discontinuation) as opposed, respectively to CG = 61.1, 11.1, 16.6 and 11.1%. It was not either found difference on average of weeks to reaching initial success in the two groups (EG = average of 13 weeks null CG = average of 16 weeks). The EG, however, had greater information missing (lack of records) during treatment course - an indirect adherence problem sign. Outcomes that disconfirm data of scarcely studies found in literature about treatment of this comorbidity are discussed as well as the data on the adherence to Enuresis treatment (other rare topic in literature). Limitation on the composition of the study sample will also receive attention on the end by its implications on literature of either ADHD or Enuresis epidemiology. FAPESP&CNPq.

Eur Child Adolesc Psychiatry. 2011;20:S55.

VAGAL TONE AS A NEUROBIOLOGICAL MARKER OF COGNITIVE PERFORMANCE: FINDINGS FROM A POPULATION COHORT AND CLINIC-REFERRED ADHD SAMPLE. THE TRAILS STUDY.

Dietrich A, Althaus M, Hoekstra P.

Aim: Based on the polyvagal perspective, we examined whether higher vagal tone predicts better cognitive performance in normally developing children and children with attention deficit/hyperactivity disorder (ADHD).

Methods: Measures of executive functioning, i.e., response variability (RV) on a sustained attention task, working memory (WM), attentional flexibility (AF), and response inhibition (RI), were regressed upon vagal tone, indexed by resting respiratory sinus arrhythmia (RSA), in both a large general population (n = 1,389) and referred ADHD sample (n = 210) of 10-to-12-year-olds. Gender, pubertal stage, medication use, and respiratory power were included as covariates. Further, moderating effects of gender, stimulant medication use, and the severity, type, and comorbidity of ADHD were investigated in the ADHD sample.

Results: No significant associations between RSA and cognitive performance were found in the population sample. However, in the ADHD sample, higher resting RSA was significantly associated with slower WM (b = 0.15, p < 0.05, R² = 2.1%), AF (b = 0.16 p < 0.05, R² = 2.3%), and RI responses (b = 0.25, p < 0.001, R² = 6.1%), and moreover with greater RV in ADHD combined type (b = 0.32, p < 0.01, R² = 9.3%). Post-hoc analyses indicated an effect for AF mainly in ADHD without comorbidity (b = 0.30, p < 0.05, R² = 8.1%).

Conclusions: We conclude that higher vagal tone may serve as a marker of poorer cognitive performance in children with ADHD. Findings are consistent with the underarousal hypothesis and cognitive-energetic model of ADHD.

Eur Child Adolesc Psychiatry. 2011;20:S67.

EMPATHY DEFICITS IN 6-7 YEAR OLDS WITH DBD AND ADHD: A COMPUTER GAME BASED INTERPERSONAL RESPONSE TASK.

Deschamps P, Schutter D, Kenemans L, et al.

Background: Deficits in empathy have been shown in patients with disruptive behaviour disorder (DBD) and attention deficit/hyperactivity disorder (ADHD). However, systematic studies to examine whether or not impairments in empathy in young children with DBD and ADHD share a common mechanism are lacking. **Aim:** To explore empathic deficits in 6-7 year olds with DBD with ADHD compared to ADHD-only and to healthy control children using a computer-based paradigm designed to elicit emotional responses.

Methods: The Interpersonal Response Task (IRT) is a computer ball game assessing the extent to which the child participant will ignore a distressed child in order to obtain monetary rewards. Dependent measures included whether or not the participant allowed the 'sad' child to reach maximal distress and throws the ball to a 'sad' player as opposed to a 'happy' player (i.e., prosocial response). An adapted version of the IRT was used, which allowed the assessment of influence of gender of the distressed child.

Results: Both DBD (n = 30) and ADHD children (n = 21) as compared to healthy controls (n = 40) more often allowed maximal distress (both p-values < 0.001). No difference was found between ADHD and DBD children (p > 0.20). With respect to prosocial response, DBD children ignored the distress in the other child more often than healthy controls or children with ADHD (both p-values > 0.01). No differences were found between ADHD and healthy controls (p > 0.20). No gender effects were found in the interaction between the child participant and the distressed child (p > 0.30).

Conclusion: Our preliminary results suggest reduced empathic responsiveness in young DBD children with ADHD compared to healthy controls demonstrated by ignoring emotional distress of another child in a computer-based ball game. ADHD only children allowed more distress, but responded in a way similar to healthy children that may be suggestive for an attentional problem rather than emotional deficit.

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FACIAL AFFECT RECOGNITION IN AUTISM SPECTRUM DISORDER, ATTENTION DEFICIT HYPERACTIVITY DISORDER AND TYPICALLY DEVELOPED CHILDREN IN EGYPT.

ElSheikh S, Moilanen I, Omar M, et al.

Background: Interpersonal relationship impairment in Autism Spectrum Disorder (ASD) is a result of failure to understand others' thoughts and emotions. Recent studies suggest impairment in affect recognition in Attention Deficit Hyperactivity Disorder (ADHD) as well as in ASD.

Aim: To assess the facial affect recognition in ADHD, ASD and typically developed (TD) children in Egypt.

Materials and Methods: Study groups included 34 ASD children (age, mean (plus or minus) SD, 8.49 (plus or minus) 2.36; IQ (greater-than or equal to)70) and 36 ADHD children (age, 9.87 (plus or minus) 1.56; IQ (greater-than or equal to)90) recruited from a tertiary-referral hospital and a private clinic in Cairo. Control group included 34 randomly selected school children (age, 10.23 (plus or minus) 2.4). ADI-R, ADOS and Kiddie-SADs were used. Facial affect recognition was assessed using a computer based program (The Frankfurt Test and Training of Facial Affect Recognition).

Results and Conclusion: Statistical significant difference was found between ADHD and ASD in anger scale (mean: 48.82 (plus or minus) 21.42 vs. 61.67 (plus or minus) 16.30; p = 0.007), surprise scale (21.08 (plus or minus) 24.03 vs. 47.22 (plus or minus) 27.16; p = 0.000), disgust scale (36.03 (plus or minus) 33.81 vs. 52.08 (plus or minus) 33.47; p = 0.050) and neutral scale (37.58 (plus or minus) 23.84 vs. 56.17 (plus or minus) 23.89; p = 0.002). However, there was no statistically significant differences between the 2 study groups in happiness scale (63.24 (plus or minus) 26.64 vs. 72.92 (plus or minus) 16.22), sadness scale (50.00 (plus or minus) 20.14 vs. 42.90 (plus or minus) 17.03), and fear scale (33.99 (plus or minus) 32.93 vs. 25.62 (plus or minus) 29.07). Of the facial affect recognition scales, significant difference existed between TD children and ADHD children in surprise scale only (62.25 (plus or minus) 25.06 vs. 47.22 (plus or minus) 27.16; p = 0.019) and between TD children and ASD group in surprise scale (62.25 (plus or minus) 25.06 vs. 21.08 (plus or minus) 24.03; p < 0.0001), disgust scale (57.35 (plus or minus) 37.19 vs. 36.03 (plus or minus) 33.81; p = 0.016), and neutral scale (56.21 (plus or minus) 25.06 vs. 37.58 (plus or minus) 23.89; p = 0.002).

minus) 23.84; $p = 0.003$). Our findings imply that facial affect recognition is reduced in ASD and ADHD. Specific facial emotions could be difficult for TD children to recognize.

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SELF-ESTEEM IN ADOLESCENCE RELATED TO ADHD SUBTYPES IN EARLY ADULTHOOD: A SEVEN-YEAR FOLLOW-UP.

Edbom T, Larsson JO.

Background: Attention-deficit hyperactivity disorder (ADHD) is known as a developmental disorder and consists of persistent symptoms of inattention, hyperactivity, and impulsivity. The disorder does not only affect children but also adults with risk for coexisting problems such as anxiety, depression, social interaction, relationship difficulties and low self-esteem.

Aim: The aim is to study self-esteem in adolescents and its long-term relationships with symptoms of ADHD in young adulthood. We will test the hypothesis that a low self esteem is more associated to the development of the inattentive subtype of ADHD compared with the hyperactive/impulsive subtype.

Method: All twins that were born in Sweden between May 1985 and December 1986 was eligible for participation. Data on self-esteem were collected at 14 years of age and ADHD subtypes at 21 years of age. The self-reported symptoms of ADHD subtypes were classified in both dimensional and categorical measures, at follow-up, were used as the outcome measure and the relationship with self-esteem at age 14 was analyzed.

Results: The highest odds ratio for adolescents with low self-esteem to have a high score in an ADHD subtype at age 21 was found for high score subtype inattention (2.69 for boys, 2.86 for girls and 2.47 for the total group) compared to hyperactivity (1.33 for boys 1.91 for girls 1.73 for the total group) and combined group (2.66 for boys, 2.84 for girls and 2.78 for total group).

Conclusion: There was a relationship, especially in boys, between low self-esteem in adolescence and high scores of the ADHD inattention subtype in early adulthood.

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ALTERATIONS IN SOCIAL RECIPROCITY IN ATTENTION-DEFICIT HYPERACTIVITY DISORDER.

Ayaz AB, Ayaz M, Yazgan Y.

Background: Children with ADHD often engage in inappropriate social interactions as well as they have impairments of functioning in cognitive and behavioral domains. It is considered that social problems in ADHD may originate from a failure to attend to the appropriate cues of affect.

Aims: To explore the association between the ability of decoding emotional facial expressions and social reciprocity in a group of children with ADHD between 12 and 16 years ($n = 64$) and to compare them with healthy control children ($n = 69$).

Methods: Parents completed Child Behavior Checklist (CBCL) and Social Reciprocity Scale (SRS). Participants were required to interpret emotional cues from pictures of facial expressions with a test adopted from Reading Mind in the Eyes Test (RMET).

Results: Children with ADHD were significantly less accurate while interpreting emotions and scored lower on a measure of social reciprocity than healthy controls ($p = 0.00$ and $p = 0.00$ respectively). Gender did not affect decoding ability or social reciprocity whereas boys revealed more problems than girls. In both groups, there were significant correlations between the scores on all subtests of CBCL and specific domains of social dys-functioning. A regression analysis indicated that the presence of a diagnosis of ADHD and lower interpreting ability of emotional facial expressions were found to predict impairments in social reciprocity.

Conclusions: Our results support previous findings that the degree of social reciprocity in ADHD children is associated with the ability to decode emotional facial expressions and is lower in the case of an ADHD diagnosis.

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Eur Child Adolesc Psychiatry. 2011;1-11.

NEUROFEEDBACK IN ADHD: A SINGLE-BLIND RANDOMIZED CONTROLLED TRIAL.

Bakhshayesh AR, Hansch S, Wyschkon A, et al.

Neurofeedback treatment has been demonstrated to reduce inattention, impulsivity and hyperactivity in children with attention deficit/hyperactivity disorder (ADHD). However, previous studies did not adequately control confounding variables or did not employ a randomized reinforcer-controlled design. This study addresses those methodological shortcomings by comparing the effects of the following two matched biofeedback training variants on the primary symptoms of ADHD: EEG neurofeedback (NF) aiming at theta/beta ratio reduction and EMG biofeedback (BF) aiming at forehead muscle relaxation. Thirty-five children with ADHD (26 boys, 9 girls; 6-14 years old) were randomly assigned to either the therapy group (NF; n = 18) or the control group (BF; n = 17). Treatment for both groups consisted of 30 sessions. Pre- and post-treatment assessment consisted of psychophysiological measures, behavioural rating scales completed by parents and teachers, as well as psychometric measures. Training effectively reduced theta/beta ratios and EMG levels in the NF and BF groups, respectively. Parents reported significant reductions in primary ADHD symptoms, and inattention improvements in the NF group were higher compared to the control intervention (BF, $d_{corr} = -.94$). NF training also improved attention and reaction times on the psychometric measures. The results indicate that NF effectively reduced inattention symptoms on parent rating scales and reaction time in neuropsychological tests. However, regarding hyperactivity and impulsivity symptoms, the results imply that non-specific factors, such as behavioural contingencies, self-efficacy, structured learning environment and feed-forward processes, may also contribute to the positive behavioural effects induced by neurofeedback training.

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THE PERSONALITY CHARACTERISTICS OF ADULT ADHD.

Hwang ST, Jo NK, Oh HJ, et al.

The purpose of this study was to confirm personality characteristics in adult ADHD tendency. The Conners Adult ADHD Rating Scale Korean version (CAARS-K), Barkley childhood ADHD Rating Scale and Korean Temperament and Character Inventory-Revised Short (TCI-RS) for adults and Korean Adolescent Personality inventory-HPR (KAPI-HPR) and Korean Junior Temperament and Character Inventory 12-18 (JTIC 12-18) for adolescence were carried out to 768 persons (Adults 359 and Adolescence 409). As a result of correlation analysis between ADHD tendency and temperament and character, positive relation was found in novelty-seeking, harm-avoidance, reward-dependence, persistence and self-directedness, while negative relation was shown in self-directedness and cooperativeness for adult ADHD. On the other hand, for adolescence ADHD, positive relation was shown in novelty-seeking and negative relation was shown in self-directedness. T test was carried out to figure out the differences of temperament and character between adult ADHD and adolescence ADHD. As a result, adult ADHD tendency group showed a meaningfully higher rate in novelty-seeking, harm-avoidance and self-transcendence than control group, while control group had a higher rate in self-directedness and cooperativeness. Between adult ADHD and adolescence ADHD, adult ADHD tendency group had a statistically meaningful difference in novelty-seeking, harm-avoidance, reward-dependence, persistence, self-directedness and cooperativeness. Finally, temperament and character was examined by classifying subtypes of adult ADHD through multiple regression analysis. For ADHD-I, it appeared to contribute to novelty-seeking, harm avoidance meaningfully. ADHD-H had a meaningful difference in novelty-seeking, reward-dependence,

cooperativeness and self-transcendence, whereas ADHD-C showed a meaningful difference in novelty-seeking, cooperativeness and self-transcendence.

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Eur Child Adolesc Psychiatry. 2011;20:S66.

RESPONSE HETEROGENEITY IN CHILDREN WITH ADHD DURING TREATMENT WITH MODIFIED-RELEASE METHYLPHENIDATE: A GROWTH MIXTURE MODELING ANALYSIS.

Doepfner M, Hautmann C, Rothenberger A.

Introduction: OBSEER was a prospective, observational study examining effectiveness and safety outcomes over 3 months in patients (aged 6-17 years) with attention deficit hyperactivity disorder (ADHD) receiving once-daily modified-release methylphenidate (Equasym XL) under routine care.

Aims: Clinical practice shows that response to drug treatment differs among children with ADHD. Some patients demonstrate small-to-large improvements during treatment while for others, no substantial symptom reduction can be observed. The aim of this analysis was to investigate this heterogeneity and identify clusters of children with similar treatment response trajectories.

Methods: Changes in ADHD symptoms, as rated by parents and teachers on the German ADHD Symptom Checklist (FBB-ADHD), were examined post-hoc in patients who had measurements at all three study visits (baseline, and 1-3 and 6-12 weeks after first use of Equasym XL), using growth mixture modelling to detect trajectory groups. Model selection was based on a formal statistical criterion (Bayesian information criterion [BIC]) and clinical considerations.

Results: Models with up to 8 classes were computed for parent (n = 699) and teacher (n = 521) ratings; in both cases, a 6-class model fitted the data best. For both parents and teacher ratings, substantial reductions of ADHD symptoms were observed in four classes, comprising the majority of patients (parents 78.0%; teachers 81.2%). In the other two classes, comprising approximately one-fifth of patients (parents 21.9%; teachers 18.7%), there was no substantial improvement with Equasym XL compared with prior treatment.

Conclusions: Approximately 80% of patients were located to classes with either rapid improvement after onset of treatment with Equasym XL or prolonged improvement after optimizing medication. These results could help to inform practitioners which patients are most likely to benefit from treatment with Equasym XL.

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DULOXETINE IN COMPARISON WITH METHYLPHENIDATE IN TREATMENT OF ADOLESCENTS WITH ADHD.

Dodangi N, Tehrani-Doost M, Mahmoudi-Gharaei J, et al.

Background: ADHD is one of the most common childhood onset psychiatric disorders. Stimulants are the first line treatment but alternative treatments are necessary. Several studies have reported that venlafaxine is effective in treatment of ADHD. Duloxetine another antidepressant agent with the same mechanism may be effective in treatment of ADHD.

Aim: In this study, in a 6 weeks clinical trial we compared the treatment effect of duloxetine with methylphenidate in two groups of adolescents with ADHD.

Materials and methods: A total number of 34 adolescents aged 11-18 years with ADHD were enrolled in the study and allocated between Methylphenidate and Duloxetine groups. Subjects were selected from adolescents who were referred to child and adolescent psychiatric clinic of Roozbeh Hospital and Tehran Children Medical Center in 2009. The diagnosis was made by two child and adolescent psychiatrist according to DSM-IV-TR criteria. Demographic characteristics were recorded at first. K-SADS-PL interview was used for diagnosis of ADHD and the comorbidities. ADHD symptoms severity were assessed using Conners Parent Rating Scale-Revised: Short (CPRS-R: S) at base line and every 2 weeks. Depressive and anxiety symptom severity were assessed by Children Depressive Inventory (CDI) and Revised Children's Manifest Anxiety Scale (RCMAS) before and at the end of the trial. Drug side effects were evaluated each 2 weeks during study.

Results: 30 patients completed the study (15 patients in each group). statistical analysis did not show any significant differences in gender, age, past medical history, ADHD subtypes and comorbid psychiatric disorders. Within group comparison by repeated measure ANOVA statistical analysis showed significant improvement in ADHD symptoms in all Conners subscale in both groups but no differences were detected between two groups.

Conclusion: Our study showed that Duloxetine may be as effective as Methylphenidate in treatment of ADHD in adolescents.

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Neural substrates associated with reward system of ADHD using fMRI.

Mizuno K, Tomoda A, Yoneda T, et al.

Background: Attention deficit hyperactivity disorder (ADHD) has a low motivation for learning and an impairment of reward system such as reward anticipation processing based on the dopaminergic dysfunction. Methylphenidate (MPH) which is a dopamine transporter inhibitor is one of the therapeutic agents in the ADHD patients. However, the effect of MPH on the neural reward system of the ADHD patients is still unclear.

Aim: The aim of study was to investigate the effect of MPH on the neural substrates associated with the reward processing of the ADHD patients using functional magnetic resonance imaging (fMRI).

Materials and methods: A monetary reward task (Izuma et al. 2008) was used in the fMRI experiments to compare neural activations during the monetary reward processing between sex- and age-matched healthy children and ADHD patients before the MPH treatment.

Results: Activation of the striatum during the monetary reward processing of the ADHD patients was lower than that of the healthy children.

Conclusions: Our findings provide evidence of the impairment of reward system in the ADHD patients based on the decrease in activation of the striatum during the monetary reward processing. The striatum is critical for not only reward processing but also academic achievement motivation (Mizuno et al. 2008). Therefore, it is possible that the MPH treatment of the ADHD patients contribute both improvements of the reward processing and academic achievement motivation. We are now performing the follow-up study for evaluating the effect of MPH treatment in the ADHD patients.

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Eur Child Adolesc Psychiatry. 2011;20:S40.

SYMPOSIUM SUMMARY ABSTRACT: CONVERGENCE OF NEUROIMAGING FINDINGS IN ASD VERSUS ADHD.

Kiviniemi V.

Background: Resting state fMRI studies and task activation have been opposed in the past by several neuroimaging researchers. However the task activation studies actually are often based on differentiating activation signal increases from baseline activity. It seems logical that if the baseline activity is abnormal then activation results will be destined to be abnormal as well.

Aim: Find out if resting state, task activation and DTI results might converge in detecting differences between Autisms Spectrum Disorders (ASD) group and controls.

Materials and methods: 30 adolescent ASD cases and matched controls was assessed with multiple tests (DSM-IV). The MRI-data was analyzed with FSL PICA, regional Homogeneity (ReHo) and Fractal dimension (Df) of resting state BOLD signal and TBSS for DTI. All Task activation data [N-back and dynamic facial expression (fear and happy)] were analysed using FEAT in FSL.

Results were corrected for multiple comparisons ($p < 0.05$). Results: Both N-Back and Facial happy differences overlapped with Df and ReHo differences in right insular areas related to salience network (SN). Fear related differences overlapped with PICA and Df differences in visual cortex V1. The only significant difference in white matter tracts in TBSS exists in the inferior longitudinal fasciculus (IFL) that connects the SN and V1.

Conclusion: Baseline BOLD signal fluctuations abnormalities and task activation abnormalities converge in visual and salience processing areas. White matter tract joining these areas is abnormal. ADHD differences do not converge/overlap with the differences of ASD.

Symposium abstracts: 1. Working memory in autism: V. Vuontela, et al. 2. Valence scaling of dynamic facial expressions altered in high-functioning ASD: an f-MRI study: Nummenmaa L, et al. 3. Resting state neuronal network in adults with adolescent ADHD: Lindholm P, et al. 4. Resting state neuronal network in ASD subjects: Kiviniemi V et al.

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Eur Child Adolesc Psychiatry. 2011;20:S74.

What underlies the highly variable performance in attention deficit hyperactivity disorder? A focus on brain processes and genetic risk factors.

Klein C, Rommelse N, Kuntsi J, et al.

A frequent observation by both clinicians and researchers is the high moment-to-moment, intra-individual variability (IIV) in behavioural performance in children and adolescents with attention deficit hyperactivity disorder (ADHD). In neuropsychological studies this is observed in high reaction time (RT) variability across tasks, which is one of the best cognitive discriminators between ADHD and control groups. The association between ADHD and high behavioural variability is now robustly established; yet the investigation of the processes underlying intra-individual variability and their implications for the management of ADHD is only beginning. This workshop will address three topic areas that are crucial for the understanding of IIV as a window to the aetiology of ADHD and its potential implications for the management of the disorder: genetic basis, neural correlates and data-driven theoretical models. During the first part of the workshop, Drs Rommelse and Kuntsi will present large-sample behaviour genetic data from ADHD and control sibling pairs to show that IIV is a unitary construct that shares a large proportion of familial variance with ADHD, and will present new data from investigations of the molecular genetic underpinnings of increased RT variability. During the second part, Drs McLoughlin and Klein will present electroencephalogram (EEG) data that used Independent Component Analysis (ICA) of multi-channel EEG recordings in samples of ADHD participants and twin pairs to identify the neural basis of RT variability. The third part will focus on concepts (Dr Palva) and models (Professor Sagvolden) of IIV in ADHD that help conceptualising both the structure of IIV and its implications for ADHD as a dynamic developmental disorder. Taken together, the workshop will emphasise the potential of measures of IIV as a biological-genetic marker of ADHD and in understanding the causal pathways, and will discuss the implications for intervention.

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Eur Child Adolesc Psychiatry. 2011;20:S122.

CHARACTERISTICS OF PATIENTS WITH ADHD IN PSYCHIATRIC AND PEDIATRIC ADHD CLINICS.

Kolar D, Hechtman L, Francoeur E, et al.

Background: Variety of clinicians are engaged in the treatment of children with ADHD, but most frequently they are treated by child psychiatrists and pediatricians. This study explores whether the child psychiatry ADHD clinic and the pediatric ADHD clinic serve different population of patients regarding the patient characteristics, severity of ADHD symptoms and comorbid disorders.

Methods: Charts of 163 children and adolescents treated in two clinical settings - the child psychiatry ADHD clinic and the pediatric ADHD clinic at the Montreal Children's Hospital - were analyzed with regards to demographic characteristics, family structure, DSM-IV diagnosis of ADHD, and a variety of comorbid characteristics assessed through the Child Symptom Inventory-4 or Adolescent Symptom Inventory-4.

Results: Patients in the child psychiatry ADHD clinic were older and consequently have more years of schooling. According to parent and teacher ratings the child psychiatry ADHD clinic had a greater number of patients with inattentive and hyperactive/impulsive symptoms of ADHD as well as more patients with combined subtype of ADHD than the pediatric ADHD clinic. Likewise, the child psychiatry clinic had a higher number of patients with oppositional defiant disorder, separation anxiety disorder, dysthymia, and vocal tics. Concerning the agreement between parent and teacher ratings on the Child/Adolescent

Symptom Inventory we found the high level of agreements on oppositional defiant disorder, social phobia, and substance use disorders. There was a trend of agreement in the diagnoses of generalized anxiety disorder and specific phobia.

Conclusion: The child psychiatry ADHD clinic received patients who were older, had more severe symptoms of ADHD, and had more patients with comorbid psychiatric disorders. The study suggests that the triage system that was established worked well.

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ADHD AND MOMENT-TO-MOMENT BEHAVIOURAL VARIABILITY: A GENETIC INVESTIGATION.

Kuntsi J, Pinto R, Iliott N, et al.

Introduction: Twin studies indicate that ADHD is highly heritable (70%) and that the genetic risk factors influence levels of ADHD symptoms throughout the population. Our recent analyses on a large sample of ADHD and control sibling pairs suggest that 85% of the familial risk factors on ADHD are shared with those influencing behavioural variability during neuropsychological assessments, as captured in reaction time (RT) variability (Kuntsi et al. 2010). The RT familial cognitive impairment factor separated from a second familial cognitive impairment factor in ADHD. Further, the association between ADHD and high RT variability is not a non-specific effect mediated by lower general cognitive ability (Wood et al. 2011). We now aim to identify genetic risk variants that account for the association between ADHD and RT variability. A better understanding of such potential causal pathways is required for improved assessment and treatment of ADHD.

Methods: 1,156 twins (ages 7-10) were assessed on a four-choice RT task and a go/no-go task. Parents and teachers provided ratings on ADHD symptoms. We examined associations with 12 previously identified ADHD risk genes.

Results: Our strongest result suggests an association between a serotonin receptor 2A gene (HTR2A) polymorphism and both RT variability ($p = 0.003$) and ADHD symptoms ($p = 0.02$). Overall, our pattern of results is consistent with our previous analyses that suggest the existence of two familial pathways to cognitive impairments in ADHD.

Conclusions: Our recent genetic investigations are consistent with two current models that distinguish between two underlying cognitive impairments in ADHD: the arousal-attention model and a developmental model. We are currently investigating the genetic and developmental pathways further within follow-up and genomewide association studies.

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COMPARATIVE STUDY OF QUALITY OF LIFE FOR CHILDREN WITH ADHD AND CHILDREN WITH DIABETES MELLITUS.

Panaete A, Patca S, Andreica B, et al.

The term nullquality of life related to healthnull includes the areas of physical, mental and social health, seen as distinct areas influenced by experiences, beliefs, expectations and personal perceptions. The aim of this comparative study is to assess the quality of life for children with diabetes and those with ADHD and to compare how it affects different areas of activity (psychological, social, school). The study was done on children of school age, diagnosed with ADHD in Pediatric Psychiatry Clinic and children diagnosed with DZ in Pediatric Clinic II, Cluj-Napoca. The two lots are similar in terms of age and sex ratio, and the children have no other diagnosis except for the selection criterion of the two groups. For the evaluation we used a unique questionnaire obtained by combining questions contained in Child Health and Illness Profile-Child Edition/Child Report Form (CHIP-CE/CRF) and Diabetes Quality of Life Clinical Trial Questionnaire (DQLCTQ), aiming at the threshold of tolerance discomfort, psychological and social status (school, the daily functioning and interpersonal relationships). The questions assess the degree of malfunction in these domains. Chronic somatic or mental disease is radically changing patients' life. They must cope with the following changes: physical disability caused by disease, relationships with others, negative emotions, routines related to medication, side effects of medication. Chronic diseases affect the patient in different

ways, starting with the extra efforts to make necessary adjustments to the medical condition, to managing emotions like anxiety and depression, which accompany the disease. To self-define the quality of life is increasingly important because the outcome of any treatment, even if it can be measured objectively, has as the most relevant benefit an increase of the autonomy degree and an enhancement of the range of options regarding the daily activities and improve patient self image.

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ADHD AND SEASON OF BIRTH: IS THERE ANY RELATION?

Shirazi E, Estakhri H, Shahrivar Z.

Background: A season of birth (SOB) tendency is found for some psychiatric disorders. SOB was associated with ADHD in two existing studies. Identification of seasonally mediated risk factors for ADHD could help design preventive and therapeutic intervention programs.

Aim: To investigate the association between SOB and ADHD.

Materials and methods: SOB were examined in a clinical sample of 474 children (73% boys, 27% girls), born between 1990-2000 (mean age = 9.85, SD = 2.7), diagnosed as having ADHD by means of Diagnostic Interview of Children and Adolescents (DICA), DSM-IV checklist, and the clinical judgment of a child psychiatrist and a general psychiatrist, referred between 2001 and 2004 to 4 child and adolescent psychiatric clinics located in different zones of city of Tehran, and the results were compared with the SOB of live-born children in the same period, gathered from Iran census data.

Results: The sample included 70% mixed type, 15% inattentive type, and 15% hyperactive-impulsive type of ADHD, and they had comorbidities with OCD (48.3%), learning disorders (19%), enuresis (13.5%), and tic disorders (10.8%). There was not any significant difference in SOB variations between this clinical sample of ADHD children and that of the general population ($P = 0.788$).

Conclusion: Although the possibility of a relation between SOB and some neurodevelopmental disorders can not be ruled out, our findings showed little evidence that SOB is associated with ADHD. Considering that seasonality may be sensitive to the selection of time cutpoints, further studies are warranted.

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SUBTHRESHOLD ADHD AND DISRUPTIVE BEHAVIOR DIAGNOSES IN TEENAGERS; ASSOCIATIONS WITH OTHER PSYCHIATRIC PROBLEMS IN THE KIDDIE SADS: PL QUESTIONNAIRE .

Malmberg K, Edbom T, Wargelius H, et al.

Objective: To study how subthreshold diagnoses of attention deficit hyperactivity disorder (ADHD) and disruptive behavior disorders (DBD) symptoms are related to symptoms of child and adolescent psychiatric disorders and risk behaviors of smoking, alcohol use and drug use.

Methods: A population based sample of twins including 177 girls and 135 boys were interviewed with the Swedish version of Kiddie-SADS Present and Lifetime Version (K-SADS-PL) and the odds ratio (OR) for the screening question was calculated. The symptoms of attention-deficit/hyperactivity disorder (ADHD) combined and DBD were according to DSM-IV when the symptom was assessed as null/possible/likely or null/certain/likely due to the K-SADS interview and subthreshold diagnoses was compiled.

Results: Significant OR were associated with subthreshold diagnoses for ADHD combined and DBD for symptoms of depression, mania panic attacks, phobias, anorexia nervosa, motor tics posttraumatic stress disorder (PTSD) for girls and in boys there were significant OR for symptoms of depression and posttraumatic stress disorder. The OR for both subthreshold diagnoses of ADHD-comb and DBD symptoms were also significant for smoking and a high consumption of alcohol for both boys and girls. Similar associations were found concerning the frequency of drinking. Often parents did not know about their children's drug habits.

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NEURAL SIGNATURE OF MOMENT-TO-MOMENT VARIABILITY IN ADHD: A TWIN STUDY.

McLoughlin G, Palmer J, Rijsdijk F, et al.

Introduction and objective: ADHD is strongly associated with reaction time variability (RTV), shown in moment-to-moment inconsistency in responding (Klein et al. 2006; Kuntsi et al. 2010). RTV is heritable and shares genetic/familial influences with ADHD (Wood et al. 2009). One of the most convincing proposals for the cause of increased RTV in ADHD is that it represents lapses in attention due to under-arousal/state regulation difficulties (Sergeant et al. 2005); however, this has never been directly tested. This study proposes to use Independent Component Analysis (ICA) (Delorme and Makeig 2004) to study this question in detail. ICA exploits the temporal resolution of EEG to provide a rich characterisation of neural activity associated with RTV in ADHD, in particular indices of arousal and attention.

Methods: 68 twin pairs were recruited from the Twins Early Development Study. EEG data was recorded during three attentional tasks. Using ICA, fluctuations in neural event-related indices of attention and arousal were identified in the EEG data, and their genetic architecture and relationship with ADHD was examined using structural equation modelling.

Results: We observed that variability of neural indices associated with attention was heritable (57-70%). Intra-individual variability (IIV) in neural activity shares a large genetic overlap with RTV (95%). Further, IIV in brain indices of attention share genetic overlap with ADHD (27-50%). Discussion: The large genetic overlap between RTV and IIV in brain indices of attention suggests there are shared genes contributing to IIV at the cortical and behavioural level in ADHD. Overlap with ADHD indicates ICA-derived brain measures may be promising endophenotypes.

Conclusion: ICA provides a useful means of measuring genetically significant neural factors in ADHD. These findings will aid in the characterisation of intra-individual variability in ADHD and potentially provide a basis for non-pharmacological treatments.

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Eur Child Adolesc Psychiatry. 2011;20:S73.

ELECTRO-CORTICAL CORRELATES OF INTRA-SUBJECT VARIABILITY IN ATTENTION-DEFICIT HYPERACTIVITY DISORDER.

Klein C, Feige B.

Increased intra-subject variability (ISV) of manual reaction times figures prominently in the literature on attention-deficit hyperactivity disorder (ADHD) as one of the most robust and replicable correlates of ADHD symptoms. This study addresses two questions that are of fundamental importance to our understanding of this phenomenon and, potentially, ADHD. First, what is the nature of increased ISV in ADHD? To address this question, we derived a differentiated set of RT parameters from our tasks which reflect different facets of ISV (e.g. moment-to-moment fluctuations, periodicities etc). Second, what is the neural basis of increased ISV in ADHD? This question was addressed by relating single-trial RTs with single-trial event-related potentials (ERP). Twenty-three healthy adults (aged 20-25 years), 25 healthy children (aged 11-12 years) and 26 patients with ADHD (aged 11-12 years) took four visual choice reaction time tasks of the 0-back and 1-back type and using jittered (2.0-3.0 s) versus constant (2.0 s) inter-trial intervals (2 null 180 trials, 25% targets each). The EEG was recorded from 64 channels using active electrodes and DC amplifiers (sampling rate 500 Hz, DC-250 Hz; Brain Products, Munich). Independent Components Analysis (ICA) was employed for artifact correction and single-trial ERP analysis, distinguishing between early/perceptual, medium-latency/cognitive and late/motor components. Results suggest greatest behavioral differences between patients and controls in various, inter-related measures of ISV and significant correlations between amplitude or latency of single-trial cognitive ERP and single-trial RT. Results will be discussed in the broader context of the neural bases of ADHD and their implications for the treatment of the disorder.

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Eur Child Adolesc Psychiatry. 2011;20:S89.

OVERVIEW OF CURRENT ADHD GUIDELINES.

Mushtaq I.

Aims: To provide an overview of the current Attention Deficit Hyperactivity Disorder (ADHD) guidelines in the Europe and critical review of their implementation.

Presentation: The presentation will discuss the main ADHD guidelines, such as NICE¹ (U.K), SIGN² (Scottish) and European guidelines³ in terms of their key recommendations about ADHD assessment and management, similarities and differences. It will also explore the current practices in European countries and challenges in terms of guidelines implementations.

Summary: The presentation will be interactive and will be sharing the good clinical practices based on ADHD guidelines and will discuss about their usefulness in clinical practice.

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Eur Child Adolesc Psychiatry. 2011;20:S195.

SALIVARY CORTISOL LEVEL IN ATTENTION DEFICIT HYPERACTIVITY DISORDER AND AUTISM SPECTRUM DISORDER CHILDREN (A PILOT STUDY).

Omneya I, Omar M, Haggag W, et al.

Objective: There is growing concern about increasing rates of diagnosis of autism and attention-deficit hyperactivity disorder (ADHD). Past series of studies have investigated certain common deficits present in children with attention deficit hyperactivity disorder (ADHD) and autistic disorder.

Subjects and methods: A descriptive cross-sectional study held in Suez Canal University Hospital in Ismailia, participants recruited from attendance of the childhood and adolescent psychiatry clinic. The participants are estimated to consist of 128 children between 6 years and 12 years of age, 44 diagnosed with ASD, 44 ADHD diagnosed children and 44 neurotypical children. 4 children from each group are taken till now. Saliva collected and cortisol levels estimated and compared. A battery of psychological assessments done includes: Stanford-Binet intelligence test; 4th edition, Childhood Behaviour Check List (CBCL). Wisconsin card sorting test (WCST), Conners test and Childhood autistic rating scale (CARS).

Results: Preliminary results revealed no significant changes between cortisol levels, but psychological tests revealed various changes.

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Eur Child Adolesc Psychiatry. 2011;20:S89.

GROUP INTERVENTIONS FOR ADHD AND OTHER NEURODEVELOPMENTAL DISORDERS.

Keskinen M.

According to the most recent guidelines Behaviour interventions and Parent support are integral component of non-medicinal management of Children with ADHD and other neuropsychiatric disorders. These children have moderate to severe degree of difficulties in communication and social skills that can result in problems in family life, education and social relations outside the family leading to significant impairment in functioning. The presentation will describe the model developed in Ostrobothnia region of Finland for children with neurodevelopmental disorders in conjunction with Department of Child Psychiatry Seinäjoki Central Hospital. To maximise the benefit, a more integrated approach was used by working both on children and parents' groups as part of meticulously planned package that had consistency around the contents and goals for both children and parents' groups. The presenter will share the outcomes and efficacy of this Integrated Group Interventions approach in light of their experiences so far and through discussion at the workshop will attempt to develop further ideas for more effective use of group intervention in children with neurodevelopmental disorders.

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Eur Child Adolesc Psychiatry. 2011;20:S124.

THE OCCURRENCE OF PSYCHIATRIC DISORDERS AMONG CD/ODD, ADHD AND COMORBID CD/ODD AND ADHD DIAGNOSED ADOLESCENTS IN NORTHERN FINLAND 1986 BIRTH COHORT.

Nordstrom T, Hurtig T, Rodriguez A, et al.

Background: Three very common psychiatric disorders among children and adolescents are Conduct Disorder (CD), Oppositional Defiant Disorder (ODD) and Attention-Deficit Hyperactivity Disorder (ADHD). These disorders are usually associated with other psychiatric disorders. Aims: To examine if there are differences between CD/ODD, ADHD or the comorbid CD/ODD and ADHD diagnosed adolescents in the occurrence of the psychiatric disorders.

Materials and methods: The Northern Finland Birth Cohort 1986 (NFBC 1986) is a prospective longitudinal study which initially consisted of 9 432 children born between 1st July 1985 and 30th June 1986 in Northern Finland. After exclusions, we included total of 8,998 subjects to analyses. The study population was divided into four groups: those who had been diagnosed (1) with only CD or ODD (n = 121), (2) with only ADHD (n = 96), (3) with both CD/ODD and ADHD (n = 80) and (4) all the rest, including those who had not been diagnosed with any of these three disorders (n = 8701). We used the Kaplan-Meier survival analysis and the Cox regression models to evaluate the differences in the occurrence of other psychiatric disorders between the disorders of our interest.

Results: The proportion of other psychiatric disorders was 59% in CD/ODD group, 12% in ADHD group and 25% in comorbid CD/ODD and ADHD group. All proportions were significantly larger than in the reference group where it was only 5%. The CD/ODD group emerged psychiatric disorders mainly between ages from 11 to 17, ADHD before age 8 and the comorbid group quite evenly ages through 3 to 22. The CD/ODD group had an 18.1-fold HR for other psychiatric disorders, ADHD a 2.3-fold HR and the comorbid group a 5.9-fold HR compared with the reference group.

Conclusions: An adolescent diagnosed with CD/ODD is in a high risk for other psychiatric disorders. There are differences between CD/ODD, ADHD and the comorbid CD/ODD and ADHD in the occurrence of the other psychiatric disorders.

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Eur Child Adolesc Psychiatry. 2011;20:S143.

IDENTIFYING AND DIFFERENTIATING PDD-NOS: A COMPARISON WITH AUTISM AND ADHD.

Karabekiroglu K, Akbas S.

Purpose: We aimed to investigate differential features of pervasive developmental disorder-not otherwise specified (PDD-NOS) in terms of presenting symptoms, developmental history, and comorbidity with respect to autism and attention deficit hyperactivity disorder (ADHD).

Method: The study involved 188 children (PDD-NOS n = 94; ADHD n = 47; autism n = 47) (male n = 150, female n = 38) who were 5.5(plus or minus) 2.5 years old on average (range 2-11 years). Preliminary PDD-NOS screening scale (PPSSS) was developed based on the 'presenting' symptoms of PDD-NOS that were systematically collected in a pilot group of children. The clinical diagnoses and comorbidities were based on the comprehensive mental status examination, Schedule for Affective Disorders and Schizophrenia for School Age Children-Present and Lifetime Version-Turkish Version (K-SADS-PL-T), and the consensus between two child and adolescent psychiatry specialists.

Findings: The prevalence rates of the most common presenting symptoms in the PDD-NOS and autism groups have shown a similar pattern of distribution from most common to the least, even when the results were corrected for age. However, almost all of these symptoms are reported significantly less in prevalence in the PDD-NOS group. Using subjects in all diagnostic groups (n = 188), a principal axis factor analysis with Promax rotation revealed ten factors; seven were found to be discriminative. In addition, another factor analysis revealed three factors: (1) nullautism spectrum,null (2) nulldisruptive behaviors spectrum,null and (3) nullanxiety spectrum.null The first two factors were found to discriminate between the diagnostic groups.

Discussion and conclusion: The results suggest that PDD-NOS may be assumed as a quantitative partial subtype of autism, and it represents a less severe form that lies on a continuum of social-communication skills.

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Eur Child Adolesc Psychiatry. 2011;20:S39.

RESTING STATE NEURONAL NETWORK IN ADULTS WITH ADOLESCENT ADHD.

Lindholm P, Kiviniemi V, Nikkinen J, et al.

Background: Resting state fMRI studies have shown differences in regional brain activity and functional connectivity between subjects with and without ADHD. Prevalence of ADHD seems to decline after adolescence but it has been questioned whether the decline is real or due to underestimation of the prevalence of adult ADHD.

AIM: The aim of our study was to find out whether there are group level differences in resting state brain network activity between the adults assessed as ADHD cases in adolescence when compared to controls, despite of probable ADHD symptom reduction.

Materials and methods: Present ADHD status of 43 adolescent ADHD cases and 43 age and gender matched controls was assessed with a semi structured interview covering the diagnostic ADHD symptoms (DSM-IV). Resting state fMRI-imaging was made with GE 1.5 T, TR 1,800 ms, TE 40 ms, flip angle 90, 64 null 64 matrix, FOV 25.6 cm, 28 4 mm slices. The data was analyzed with group independent component analysis using dual regression approach (Kiviniemi et al. 2009).

Results: Only two of 43 adolescent ADHD cases fulfilled diagnostic ADHD symptom criteria. The ADHD group showed increased resting state brain activity in four perirolandic components including precuneus/S1 (M1), bilateral M1 of hands (superior frontal gyrus, premotor cortex BA 6), hand M1 (precuneus cortex, M1) and bilateral primary upper sensorimotor area of feet (M1 BA 4a, S1 BA 1) and in frontobasal area (subcallosal cortex BA 11, orbitofrontal cortex BA 25) and right dominant DMN (cerebellum I-IV)

Conclusion: ADHD symptom rate decreased as expected. Six IC sources were revealed to differ between the ADHD and the control groups during resting state.

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Eur Child Adolesc Psychiatry. 2011;20:S122.

SUSTAINED RELEASE METHYLPHENIDATE (OROS FORMULATION) IN THERAPY OF HYPERACTIVITY AND ATTENTION DEFICIT IN CHILDREN WITH MENTAL RETARDATION.

Lakic A, Kesic A.

Introduction: Hyperactivity and attention deficit are often disturbing factor in working with children who are mentally retarded (mild mental retardation, moderate mental retardation). Methylphenidate products are the first choice in the treatment of ADHD, whose primary behavioral event is attention deficit and hyperactivity. In this context, the use of preparations of methylphenidate in children with mental retardation seems like a logical choice (especially in relation to current therapeutic approaches in which the use of neuroleptics was the first place). Aim: Assessment of treatment effects of sustained release methyl-phenidate in mental children with mental retardation.

Subjects: 15 children with MR (mild MR, moderate MR) age 7-15 years, with diminishing intellectual functioning as only clinical manifestation. Cause of mental retardation is unknown.

Methods: DSM-IV R, psychological tests (Wechsler scale), neurologic, psychiatric and pediatric check up, blood and urine laboratory tests, urine metabolic screening, electroencephalography, SNAP-IV rating scale for ADHD. Methodology: 6 month follow-up treatment effects of sustained release methylphenidate.

Results: Application of sustained release methylphenidate in children with MR have shown that most of these children was a significant (statistically significant) improvement of behavior primarily in terms of reducing hyperactivity.

Conclusion: Reasons for this results may be contained in the, presumed involvement of different structures and mechanisms that provide a clinical picture of MR and comorbidity of MR and/or ADHD.

Eur Child Adolesc Psychiatry. 2011;20:S72.

TO WHAT EXTENT DO DIVERSE NEUROPSYCHOLOGICAL TASKS TAP INTO AN UNDERLYING IIV-FACTOR AND IS SUCH A FACTOR USEFUL IN ADHD GENE FINDING EXPERIMENTS?

Lambregts-Rommelse N, Wood A, Kuntsi J, et al.

Attention-deficit/hyperactivity disorder (ADHD) is a strongly (70-75%) genetically determined neuropsychiatric disorder that in most cases (>70%) is accompanied by one or more neuropsychological impairments. Because molecular genetic studies have indicated that in the vast majority of patients, multiple genes of small effect are related to the disorder, interest has grown in using neuro-psychological measures to boost gene finding experiments. Despite the fact that this approach to ADHD gene finding looks promising, task-related error variance undermines attempts to combine neuro-psychological datasets across sites for increased statistical power in genetic analyses. Therefore, it is of great interest to examine to what extent different tasks tap into the same underlying construct that is possibly less error-prone than task-specific measures and if such a construct can be useful in molecular genetic analyses. Because of the strong association with ADHD on a phenotypic and genetic level and the fact that widely different tasks produce measures of intra individual variability (IIV), IIV is prime candidate for such an attempt. Findings will be discussed of the Dutch subsample of the International Multi Center ADHD Genetics Project (IMAGE), consisting of 238 ADHD families (350 ADHD-affected children and 195 non-affected children) and 149 control families (271 children). IIV measures are derived from seven neuropsychological tasks that vary greatly with respect to cognitive load, pacing of stimuli, and IIV construct that was used. Results indicate that a unitary IIV construct exist that is common to all tasks that were investigated. This suggest that IIV is a prime candidate to include in diagnostic procedures of ADHD and may be used for early detection of (precursors of) the disorder and monitor treatment outcomes

Eur Child Adolesc Psychiatry. 2011;20:S121.

MOTOR PROBLEMS IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER .

Kesic A, Lakic A.

Introduction: Attention deficit hyperactivity disorder (ADHD) is often accompanied by motor problems. However, they are not in first ADHD therapeutical plane, although have a significant impact on children everyday functioning.

Aim: (a) description of motor problems in our patients with ADHD; (b) comparison of teachers, parents and physicians assessment for presence of motor problems in children with ADHD. Subjects: 30 children aged 5 to 15 with ADHD. All children have IQ > 70, and do not suffer from diagnosed neurological disorder, epilepsy, known genetic syndromes or autism.

Methods: DSM-IV R, psychological tests (Wechsler scale), neurologic, psychiatric and pediatric check up, blood and urine laboratory tests, urine metabolic screening electroencephalography, SNAP-IV rating scale for ADHD (Parent + Teacher), clinical interview, Developmental coordinator Disorder Questionnaire (DCD-Q), Behavioral Activity Rating Scale (BARNS), Abnormal Involuntary Movement Scale (AIMS).

Results: In 30% of examined children neurological check up shows presence of the nullsoftnull neurological signs, previously called as a nullclumpsy child syndromenull. About half children (predominantly boys) rated as motor impaired by their parents and teachers. Behavioral factors play a role in referral.

Conclusion: Motor problems in children with ADHD exists and need clinical attention in sense of recognition and primarily for the specific treatment.

Eur Child Adolesc Psychiatry. 2011;20:S105.

NEUROPSYCHOLOGICAL ABILITIES OF CHILDREN AND ADOLESCENTS WITH ASD AND ADHD.

Moilanen I, Ebeling H.

This symposium is made up of four individual presentations from Finland and Egypt (1) Sherin elSheikh: Facial Affect recognition in Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder and Typically Developed Children in Egypt (2) Sanna Kuusikko: Neuropsychological Performance in Families with Autism Spectrum Disorders (3) Outi Reinvald, University of Helsinki: Neuropsychological Profile of Adolescents with Asperger Syndrome (4) Hanna Ebeling: Alexithymia among ASD children and their families The impairment in interpersonal relationships in ASD has often been explained at least partly to be caused by the difficulty to recognise the emotions of other persons. In the first presentation from Cairo we will hear, if this is true, and if this difficulty also occurs in other neuro-psychiatric disorders, as e.g. ADHD. The facial affect recognition was assessed using a computer-based program. The second presentation from Oulu broadens the scope in reporting neuropsychological performance in families with a child with ASD. In addition, this presentation includes information of possible improving along with age, and also of areas of strength in children with ASD, when compared with typically developed children. The third presentation from Helsinki broadens further the scope to include the whole neuropsychological profile in adolescents with Asperger Syndrome and their typically developed controls, presenting both strengths and weaknesses. The fourth presentation analyses more deeply the possible difficulty of affect recognition by reporting alexithymia with its three subscales, difficulty in identifying feelings, difficulty in describing feelings and externally oriented thinking, in children with ASD and their families.

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Eur Child Adolesc Psychiatry. 2011;20:S24.

THE OVERLAP BETWEEN ASSD AND ADHD: EPIDEMIOLOGY, GENETICS AND IMPLICATIONS FOR TREATMENT.

Simonoff E.

Background: Current diagnostic criteria exclude the possibility of dual diagnosis of ADHD and autism spectrum disorders (ASDs). However, researchers and clinicians have recently appreciated the cooccurrence of symptom patterns that otherwise fully meet the criteria for these two disorders. Aim: The aim of this symposium is to consider the overlap between ADHD and ASD from the perspective of epidemiology, aetiology, including possible biomarkers, and treatment approaches. Senior researchers will present their own results in the context of the wider findings in the field to provide a broad and current perspective.

Materials and methods: Presentations will include: Dr P Santosh, Clinical challenges of differential diagnosis; Prof E Simonoff, Epidemiology of ADHD and ASD: evidence and alternative models; Prof P Bolton, Biomarkers for ADHD and ASD, Dr. Myriam Harfterkamp Pharmacological approaches to ADHD in ASD.

Results: This symposium will highlight the challenges in differential diagnosis and structured approaches that may be used. Shared and disorder-specific genetic and neuropsychological factors, along with their implications for use in diagnosis will be summarized. Epidemiological studies will be used to review the rate of overlap shared and different risk factors and possible causal mechanisms. This will show that intellectual disability has a different role for ADHD according to whether ASD is present. The latest findings with regard to pharmacological interventions and their impact on different symptoms will be discussed. This will include methylphenidate, atomoxetine and the atypical antipsychotic medications.

Conclusions: The audience will have a comprehensive overview of the state of the art.

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Eur Child Adolesc Psychiatry. 2011;20:S125.

IMPACT ON ONLINE GAMING ON ATTENTION DEFICIT HYPERACTIVITY DISORDER: A CASE SERIES.

Perera S.

Aim: To share the experience of three case studies which have led to further study of the impact of online gaming on ADHD.

Settings: Southend University Hospital, ADHD out patient service.

Methods: Three recent case reports of children and young persons who attended the ADHD service are presented. Case 1. Severe sleep deprivation poor school attendance and aggression: Male aged 12 years presented with significant inability to sustain attention, poor impulse control with at risk behaviours. He had significant out bursts of verbal aggression but lesser degree of aggression towards property and physical aggression but not towards self. (Kronenberger et al scales). History revealed significant sleep deprivation due to online gaming and poor attendance at school due to day time addiction to games consoles. His frustration tolerance was very poor. Case 2. Well controlled ADHD in a teenager with gradual loss of organisational skills with an impact on school grades: Young person aged 14 with well controlled ADHD core symptoms presented with failing grades due to poor time management. History revealed more than 6 h a day of online gaming. There were no episodes of significant aggression though the frustration tolerance was reduced. Case 3. Well controlled ADHD with no deterioration of school performance: Male 10 years with ADHD on stimulants, spends more than 6 h a day on online gaming, game consoles, oppositional defiant behaviour in the home setting that has not changed to the worse with gaming. School performance no apparent deterioration.

Recommendations: Impact of online gaming and addiction to electronic games on Desktops, games consoles and social media sites is an ever increasing behavioural change noticed in today's children and young people. The true impact on children who have a poor frustration tolerance, self regulation needs further exploration through large scale studies.

Eur Child Adolesc Psychiatry. 2011;20:S129.

POLYMORPHISM OF THE NOREPINEPHRINE TRANSPORTER TENE (SLC6A2) AND STRUCTURAL BRAIN ALTERATIONS IN KOREAN ADHD SAMPLE: PRELIMINARY STUDY.

Yang YH, Kim JW, Kim BN, et al.

Objectives: we investigated whether there was an association between polymorphism of the norepinephrine transporter gene and volumetric brain alterations in Korean ADHD sample.

Methods: Total of fifty-four children (8 girls and 46 boys, 9.0 (3/4 1.94) years) participated in this study. Subjects were recruited from the outpatient's clinic of child and adolescent psychiatry in the Seoul National University Hospital. The diagnosis of ADHD was made based on DSM-IV-TR. The genotyping of SLC6A2 [G1287A, - 3081(A/T)] was done. All patients were unmedicated at time of MR imaging acquisition. Voxel Based Morphometry (VBM) was used to compare images between two groups divided by genotype.

Results: Total of fifty-three children completed this study. Children with the G/A and A/A genotypes at the SLC6A2 G1287A polymorphism showed smaller brain volume in the right inferior frontal gyrus than children with G/G genotype (FEW-corrected p-value 0.037). There was not significantly smaller brain volume in children with G/G genotype compared to children with G/A and A/A genotypes at corrected p-value <0.05. In -3081(A/T) polymorphism, there were not significant brain volume alterations across genotypes at corrected p-value <0.05.

Conclusion: This study showed that the norepinephrine transporter gene, SLC6A2, might be associated with alteration of brain structure, especially in the frontal lobe in the children with ADHD.

Eur Child Adolesc Psychiatry. 2011;20:S129-S130.

DIFFICULT MOMENTS IN ADHD, A PRACTICUM WORKSHOP ON TREATING PRESCHOOL, SLEEP AND COMORBID EPILEPSY.

Sankar S, Somnath B, Pert L.

Speaker 1 Lyndsey Pert Topic Treating Sleep Problems in Children with ADHD Lisa is a nurse specialist with a vast experience in running specialist sleep clinics. The workshop will look at diagnosis of different sleep problems that occur in children with ADHD. Provide simple diaries which can be used to help collect Data to aid the clinician in choosing appropriate methods of dealing with the problem. There will be a focus on nonpharmacological therapies and management techniques. And the discussion on clear guidelines as

to when we should go for pharmacological treatment. Speaker 2 Dr Somnath Banerjee Topic Treating ADHD with Comorbid Epilepsy Overactivity is a common comorbid symptom seen in children with epilepsy. Up to 33% children with epilepsy have a diagnosis of ADHD. However the percentage of children with epilepsy being treated for their ADHD remains very low. The workshop looks at problems of diagnosis. Reasons for non-treatment and undertreatment. The workshop will look into treatment of both epilepsy in children with ADHD. As well as treatment options for ADHD in children with controlled as well as uncontrolled ADHD Speaker 3 Dr Sachin Sankar Topic Treating ADHD in Preschool Children With increased recognition of ADHD. The age at which children first present at clinics has been steady the falling in the UK. Preschool children especially the ones where an older sibling is undertreatment are often referred for treatment. In the UK there are no drugs licensed for children in the preschool age. The workshop looks into problems of diagnosis. Comparing the common tools used for diagnosis. Looks at when the diagnosis can be made. It will further look at treatment options available in this group of children. It looks at sky side-effect profiles and Common pitfalls of treating children of this age group with common ADHD medication. The workshop will also look at the long-term prognosis in this group of children and the consequences of whether they have been treated.

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Eur Child Adolesc Psychiatry. 2011;20:S127-S128.

EEG AS A BIOMARKER SEPARATED ADHD PATIENTS INTO CLINICALLY MEANINGFUL SUBGROUPS.

Snyder SM, Rugino TA, Hornig M, et al.

To support clinical use of potential ADHD biomarkers, methods are needed to apply biomarkers in a manner that would augment a clinician's ADHD evaluation. One method may be to use a biomarker to separate ADHD patients (as diagnosed by clinicians) into test-result subgroups. The potential utility would be supported by presence of clinically meaningful differences between the subgroups. To evaluate this method using a pre-defined EEG biomarker, investigators conducted a prospective, double-blinded, multi-site, clinical cohort study. Recruits were 364 children and adolescents, ages 6.00-17.99 years, presenting consecutively with attentional and behavioral concerns to 13 clinical sites. ADHD was determined prospectively by best estimate diagnosis per majority agreement of 3 diagnosticians independently reviewing comprehensive clinical data sets collected by each site. After blind-break, EEG results were used to separate ADHD patients into two test-result subgroups: (1) EEG-positive (standardized theta/beta ratio greater than a pre-defined cutoff), N = 101, and (2) EEG-negative, N = 89. As compared with the EEG-positive subgroup, the EEG-negative ADHD subjects were significantly more likely to have at least one of the following clinical features: a psychiatric disorder that could exclude ADHD from primary diagnosis, a medical or neurological condition known to mimic ADHD, an uncorrected vision or hearing problem, history of no improvement or adverse events on ADHD medications, presentation with a primary concern of aggression or anger, satisfactory academic and intellectual performance, and/or evidence of dissatisfaction with ADHD diagnosis (odds ratio = 2.4; 95% confidence interval = 1.3-4.6). In conclusion, EEG parsed ADHD subjects into clinically meaningful subgroups. EEG-negative ADHD patients were more likely to have clinical features that may require further evaluation before accepting ADHD as the primary diagnosis.

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Eur Child Adolesc Psychiatry. 2011;20:S128.

THERAPY EFFECTS BY USING NEUROBIOFEEDBACK AND METHYLPHENIDATE IN THERAPY OF ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Stankovic M, Kostic J, Milosavljevic L.

Objective: This study is intended to show that there is a difference between short-term and long-term effects in therapy of ADHD by using NFB and MPH separately.

Method: We compared the behavioral response among two groups of schoolchildren aged 8-12 years with history of drug-free diagnosed ADHD during 3 months. Both groups did not differ on pretreatment the IOWA-Conners Scale for parents ratings. First group were children whose started using once-daily controlled-release formulation of MPH (average dose was 18 mg per day) and second group were children

whose been treated for 1 h three times a week by NFB stimulation program providing reinforcement contingent on the production of cortical sensorymotor rhythm (SMR, 12-15 Hz) and beta activity (15-18 Hz). After 3 months, we stopped treatment and followed children behavior externalization during next 3 months.

Results: Both NFB and MPH treatment were highly positively correlated with pre and posttreatment (both $p < 0.001$) on IOWA-Conners Behavior Rating Scale. Both treatments resulted in improved parents' ratings, neurofeedback ($p < 0.007$), and methylphenidate ($p < 0.001$). Significant improvement were among predominately inattentive, hyperactive, and combined subtype of children with ADHD ($p < 0.001$). Children from first group showed significantly improvement during first month of drug using and maintained effects until end of using drug. After stopping of drug-taking the same children showed significantly quicker relapse compared to children from second group whose been maintained improvement next three month.

Conclusions: Results indicate that children treated with MPH showed quicker improvement than children whose been stimulated by using NFB whose maintained effects longer after stopping of both treatment methods. These findings suggest that NFB could be also first line treatment in improving symptoms of ADHD in children whose parents favored a non-pharmacological and non-invasive treatment.

Eur Child Adolesc Psychiatry. 2011;20:S124-S125.

THE ASSOCIATIONS BETWEEN (ALPHA)-2A-ADRENERGIC RECEPTOR GENE POLYMORPHISM, NEUROPSYCHOLOGICAL PERFORMANCE AND WHITE MATTER CONNECTIVITY AMONG ADHD CHILDREN.

Park MH, Park S, Kim HJ, et al.

To establish the relationships between alpha-2A-adrenergic receptor gene (ADRA2A) polymorphism of ADHD children and their neuro-psychological performance as well as white matter connectivity by diffusion tensor imaging (DTI). The subjects of our study were unmedicated ADHD children (6-18 years old). Children with mental retardation, genetic disorders, neurological disorders, or past history of brain damage, developmental disorders, schizophrenia, bipolar disorder, other psychoses, Tourette's disorder, OCD, language disorders, or severe learning disorders were excluded. The children performed neuropsychological tests including CPT, STROOP, CCTT and WCST. The ADRA2A polymorphisms were genotyped as previously described, with slight modifications. Student t tests were used to compare results of neuropsychological assessment and white matter connectivity, determined by fractional anisotropy (FA) values, according to the genotype at the ADRA2A MspI. The present study included 53 children with ADHD (M = 45, F = 8). The genotype frequencies (C/C, C/G, and G/G) at the ADRA2A MspI (rs1800544) were 0.15, 0.38, and 0.47, respectively. These frequencies were under Hardy-Weinberg equilibrium ($p > 0.05$). Children with the C allele (C/C+C/G) at the ADRA2A MspI polymorphism showed lower performance in the response time of CCTT-2 ($p = 0.02$) and preservative responses of WCST ($p = 0.04$), than those with the G/G genotype. Children with the C allele (C/C+C/G) at the ADRA2A MspI polymorphism showed decreased FA values in the right body of corpus callosum compared to those with the G/G genotype, although difference between these two groups was not statistically significant at corrected p-value < 0.05 (corrected p-value 0.6). The results of this study suggest that C allele in ADRA2A MspI polymorphism might be associated with neurocognitive performance and pathophysiology of ADHD.

Eur Child Adolesc Psychiatry. 2011;20:S7.

NEURAL CORRELATES OF PROCESSING EMOTIONAL STIMULI IN CHILDREN AND ADOLESCENTS WITH ADHD: AN FMRI STUDY ON SEROTONERGIC MODULATION.

Zepf F, Beate HD, Gaber TJ, et al.

Background: Children and adolescents with ADHD often show co-varying problems in affective regulation. The neurotransmitter serotonin (5-HT) has been linked to affective and emotional processes, with evidence coming from human studies involving adults and pharmacological studies using the administration of SSRIs. However, studies in children and adolescents are scarce, and it is not known how an acute central nervous deficit in 5-HT synthesis affects affective and emotional processes in adolescents with ADHD. The present study investigated the effects of an acutely diminished central nervous 5-HT synthesis in

combination with functional magnetic resonance imaging (fMRI) in order to study the neural correlates of processing emotional stimuli in adolescents with ADHD.

Methods: Male patients with ADHD aged 9-17 years received the rapid tryptophan depletion-test (RTD) Moja-De in a double-blind within-subject crossover-design. They participated on 2 days in the investigation, with the two testing days spaced 7 days apart. On one day they received the RTD-test Moja-De within an amino acid drink lacking tryptophan (TRP), the physiological precursor amino acid of 5-HT, thus leading to a diminished central nervous 5-HT synthesis. On a second day they received a TRP balanced amino acid mixture as a control condition. Under depletion/the control condition the participants had to do an emotional word-face matching task in an fMRI environment (Siemens Trio, 3T) in a rapid event-related task design.

Results and discussion: We will show imaging data on the serotonergic modulation of brain regions involved while the subjects performed the emotional word-face matching paradigm. Implications for neurocircuitries involved in affective, cognitive and emotional processing will be discussed.

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CO-OCCURRENCE OF AUTISM SPECTRUM DISORDERS AND ATTENTION-DEFICIT AND HYPERACTIVITY DISORDER SYMPTOMATOLOGY IN YOUNGSTERS AND ADULTS.

Papanikolaou K, Pehlivanidis A, Giouroukou E, et al.

Background: According to current diagnostic criteria the diagnosis of autism spectrum disorders (ASD) remains in the exclusionary criteria for attention deficit and hyperactivity disorder (ADHD). However, high levels of clinical comorbidity have been reported between the two disorders. In addition, similarities in symptoms can lead to a misdiagnosis. The objective of this presentation is to pinpoint the occurrence of a misdiagnosis in a group of ASD youngsters and a group of ADHD adult patients.

Methods: This chart review examined data from all consecutive new cases referred to a children and young adolescents' autism clinic and from consecutive ADHD patients referred to an adult ADHD clinic during year 2010. Diagnoses were based on DSMIV-TR criteria and semistructured interviews for young ASD patients.

Results: Of 77 youngsters with ASD, 33.8% fulfilled DSMIV TR criteria for ADHD; 47% of Asperger Syndrome (AS) cases and 30% of other ASD cases. 24% had previously received only an ADHD diagnosis with this rate being higher in AS patients. Of 50 patients referred to the adult ADHD clinic 10% received an Asperger syndrome diagnosis in addition to ADHD diagnosis for the first time in their lives.

Conclusions: In accordance to previous reports, the clinical comor-bidity between ASD and ADHD is high. Many patients with ADS and especially with AS are initially misdiagnosed as having only an ADHD diagnosis. A better understanding of similarities and differences between the ADHD and AS symptoms would help in a better diagnostic classification and effective treatment of the patients.

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Eur Child Adolesc Psychiatry. 2011;20:S129.

CHARACTERISTICS OF NEUROCOGNITIVE FUNCTION IN ADHD CHILDREN - COMPARATIVE STUDY OF CLINICAL ASSESSMENT FOR ATTENTION (CAT).

Ushijima H, Kodaira M, Kuroe M, et al.

Purpose: Purpose of this study was to evaluate the neurocognitive function included executive function, decision making, and attention in Attention Deficit Hyperactivity Disorder (ADHD) children by using several neuropsychological tests.

Method: Twenty-five unmedicated ADHD children (ADHD group; 22 boys and 3 girls, mean age was 142.5 (plus or minus) 25.1 month) and 17 healthy children (control group; 12 boys and 5 girls, mean age was 145.6 (plus or minus) 17.2 month), aged 10 to 15 year old participated in this study. We divided all participants into two age groups. One is elementary school group and the other is junior high school one. In both age groups, we compared neurocognitive function between ADHD and control subjects. To evaluate neurocognitive function, we used Wisconsin Card Sorting Test (WCST), Iowa Gambling Task (IGT), and Clinical Assessment for Attention (CAT). CAT is a comprehensive assessment battery for attention

constructed by the Brain Function Test Commission of Japan Society for Higher Brain Dysfunction. CAT comprises 8 components including Span, Cancellation and Detection Test, Auditory Detection Task, Symbol Digit Modalities Test (SDMT), Memory Updating Test, Paced Auditory Serial Addition Test (PASAT), Position Stroop Test, and Continuous Performance Test (CPT). Result: There is no significant difference in performance on WCST and IGT between ADHD group and control group in each age. In elementary school, performance on Auditory Detection Task, SDMT, Memory Updating Test, Position Stroop Test and CPT in ADHD group is significantly worse than that in control group. In junior high school, performance on Auditory Detection Task and Position Stroop Test in ADHD group is significantly worse than that in control group.

Conclusion: Neurocognitive function deficit in ADHD children might be defined in attention, especially in selective attention (auditory input) and alternating attention (conflict monitoring).

Eur Child Adolesc Psychiatry. 2011;20:S125.

THE ITALIAN ADHD NATIONAL REGISTRY: 3 YEARS OF ACTIVE PHARMACOVIGILANCE IN DEVELOPMENTAL NEUROPSYCHIATRY.

Peddis C, Esu L, Tronci MG, et al.

Introduction: In 2007 the Italian Drug Regulatory Agency (AIFA) activated the ADHD National Registry, aimed to collect data on diagnostic procedures, drug schedule (doses and duration), efficacy and side effects of MPH and ATX (pharmacovigilance) and to detect and prevent medication abuse/disuse.

Patients and methods: Patients aged 6-18 years with ADHD treated with ATX or MPH were enrolled. Complete clinical assessment was performed at enrollment and every 6 months; specific adverse events were actively inquired by the investigators, data collected by a centralized electronic CRF.

Results: During the 36 months Register activity 1,815 patients were enrolled, 49.7% prescribed with MPH, 50.3% with ATX. About two thirds of the enrolled patients reported at least an adverse event (781 with ATX, 643 with MPH), but in only 63 patients (52 with ATX) the adverse events was classified as null/severe: dysphoria, suicidal ideation, anorexia, seizures, neurogenic bladder, aphasia, lengthened QT, tachycardia, hypotension. Forty-nine patients discontinued medication (40 ATX), 2 changed from ATX to MPH. Significant differences in the prescription practices were observed among region: in Sardinia 146 patients were enrolled, 119 with MPH, 27 with ATX. Fifty percent of the patients reported at least a mild adverse event, but only in two cases (1 with ATX, 1 with MPH) they were reported as null/severe, leading to medication withdrawal.

Discussion: The register was able to verify diagnostic accuracy and patterns of drug prescription establishing accurate benefit/risk balance and ensuring high level of health protection for the population. At National level, MPH and ATX are prescribed in the same percentage of patients. Reports of adverse reactions and rate of early withdrawn were significantly higher for ATX than for MPH.

Conclusion: The register may serve as model for pharmacovigilance in other psychiatric disorders in children and adolescents.

Eur Child Adolesc Psychiatry. 2011;20:S131.

DIFFERENCES AND SIMILARITIES IN PHARMACOLOGICAL TREATMENT OUTCOMES BETWEEN CHILDREN AND ADOLESCENTS WITH ADHD TRANSITIONING ONTO OROS MPH.

Schaeuble B, Berek M, Kordon A, et al.

Objective: To explore differences in function and quality of life outcomes in children versus adolescents with ADHD transitioning from IR MPH, ER MPH or ATX onto OROS MPH.

Methods: Pooled analyses of two similar 12 week, open-label, flexibly dosed trials studying children (6-12 years of age) and adolescents (13-18 years of age) with ADHD insufficiently responding to current treatment transitioning onto OROS MPH. Outcome parameters included safety measures, Connors parents' rating scale (CPRS), and functionality and quality of life outcomes (ILC) based on proxy assessments (parents).

Results: 583 children and 239 adolescents (N = 822, 85% boys) were analyzed. Adolescents were first diagnosed at 10 + 2.9 years compared to 7.3 + 1.9 years in children ($p < 0.001$). Co-morbid anxiety, OCD, ODD and conduct disorder were diagnosed at similar rates in both groups. Substance use occurred only in the adolescent group ($p < 0.001$). Mean OROS MPH starting and final dose were higher in adolescents (37.6 mg/day vs. 29 mg/day, respectively, at start and 32.8 vs. 41.9 mg/day at endpoint). Mean treatment duration on study was longer in adolescents (87.4 vs. 82.9 days, $p < 0.012$). 61.5% of adolescents versus 53.1% of children experienced an at least 30% reduction on CPRS ($p = 0.03$) while having comparable baseline scores. ILC total score (proxy) was lower in adolescents at study start ($p = 0.009$), but comparable at endpoint ($p = 0.607$). Adolescents showed worse baseline scores (proxy) in nullschool performancenull, nullfamily functioningnull, nullmental healthnull, and nullglobal QoLnull (all $p < 0.008$). Of these single items, nullfamily functioningnull continued to be lower in adolescents compared to children ($p < 0.001$).

Conclusion: Clinically relevant differences between children and adolescents with ADHD are present. Adolescents appeared to have a lower quality of life and function compared to children at baseline, however, they were able to reach comparable ratings at endpoint for most items. OROS MPH was generally safe and well tolerated.

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Eur Child Adolesc Psychiatry. 2011;20:S95.

THE CATEGORIZATION OF DYNAMIC EMOTIONAL FACIAL EXPRESSIONS BY CHILDREN WITH HIGH-FUNCTIONING AUTISM SPECTRUM DISORDERS OR ADHD.

Schaller UM, Biscaldi M, Fleischhaker C, et al.

Background: High-functioning Autism Spectrum Disorders (ASD) and Attention Deficit/Hyperactivity Disorder (ADHD) are supposed to exhibit deficits in the categorical perception of facial emotions. Several studies presented evidence for these impairments while others have not. Most of these studies, however, displayed static and exaggerated emotional facial stimuli without any time restrictions. Aim: To prove that the use of dynamic facial stimuli of basic emotions elicits distinct differences in emotion categorization between ASD and ADHD in contrast to typically developing (TD) individuals.

Method: 68 children, aged 6-13 years (ADHD: $n = 13$; ASD: $n = 29$; TD: $n = 26$) participated in the Dynamic Emotional Categorization Test (DECT): Two natural and two artificial actors (produced by a new real-time animation system - the nullAgent Frameworknull of the Institute of Animation, Visual Effects and Digital Postproduction of the Filmakademie Baden-Wuerttemberg) displayed dynamic facial expressions of the six basic emotions on three intensity levels (weak, medium, and strong) within a time limit of 6 s. After the video clip/animation, participants had to categorize the presented facial expression in a forced choice task with the six basic emotions as options.

Results: Children with ASD descriptively showed the worst performance, but significant differences in emotion categorization could only be obtained for ASD and ADHD in comparison to TD. No significant differences were found with respect to decision time. Increased severity of social impairment (as measured by the Social Responsiveness Scale [SRS]) predicted lower performance in the DECT ($r = -.35$, $p < .002$).

Conclusions: The results strongly corroborate the assumption of a general emotion categorization impairment in ASD and ADHD. Furthermore, our study provides the first evidence for an increase of deficits of emotion categorization in ASD and ADHD by using dynamic facial animations with a high degree of ecological validity.

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Eur Child Adolesc Psychiatry. 2011;20:S131-S132.

CHANGES IN FUNCTION AND QUALITY OF LIFE ASPECTS IN CHILDREN WITH ADHD AFTER TRANSITIONING ONTO OROS MPH.

Schaeuble B, Mattejat F, Rettig K, et al.

Objective: To explore function and quality of life outcomes in children with ADHD transitioning from IR MPH, ER MPH or ATX onto OROS MPH.

Methods: Pooled analyses of two similar 12 week, open-label, flexibly dosed trials exploring clinical outcomes in children (6-12 years of age) with ADHD transitioning onto OROS MPH because of inadequate efficacy and/or tolerability. Outcome parameters included safety measures, Connors parents' rating scale (CPRS), children's global assessment scale (C-GAS), and functionality and quality of life outcomes (ILC) based on children and proxy (parents) assessments. Missing values were imputed using last-observation-carried-forward (LOCF). Relationships between functional and symptomatic parameters were explored using Spearman's rank correlation coefficients.

Results: 583 children (86% boys) were analyzed (ITT population). Average OROS MPH dose increased from 29.1 + 11.7 to 32.8 + 12.7 mg/day at endpoint ($p < 0.0001$). 20.6% terminated the study prematurely. All function and quality of life measures improved on self and proxy assessments at endpoint (except for null physical health null; all $p < 0.001$). School performance, social integration, pursuing interests and hobbies, mental health and decreased burden of disease were areas of largest improvements at endpoint ($p < 0.0001$). Mean change from baseline to endpoint in CPRS was -9.7 + 11.4 ($p < 0.001$). Pre-post-changes of ILC and CPRS, ILC and C-GAS correlated modestly in proxy ratings ($r = -0.57$ and $r = 0.49$, respectively). Treatment-emergent AEs occurred in 37.1% of patients. AEs $> 4\%$ were insomnia (8.9%), involuntary muscle contractions (5.7%), anorexia (5.3%). Vital signs were virtually unchanged.

Conclusion: Transitioning onto OROS MPH in children with ADHD was associated with a clinically relevant improvement in daily functioning, several aspects of quality of life and decreased burden of disease. OROS MPH was generally safe and well tolerated.

Eur Child Adolesc Psychiatry. 2011;20:S56-S57.

NEURAL CORRELATES OF SOCIAL COOPERATION: DEVELOPMENTAL CHANGES AND SPECIFICS IN ADHD.

Siniatchkin M, Steinmann E, Prehn-Kristensen A, et al.

Objectives: One of the important prerequisites for a successful social interaction is the willingness of each individual for social cooperation. Using Ultimatum game, several studies have demonstrated that the process of decision-making to cooperate or to defeat in interaction with a partner is associated with activation of the dorsolateral pre-frontal cortex (DLPFC), anterior cingulate cortex (ACC), insula, superior temporal sulcus (STS). This study investigates developmental changes in the neuronal network of reciprocal cooperation and its specifics in ADHD.

Methods: 15 healthy children, 15 healthy adults and 18 ADHD patients were investigated using Ultimatum game (contact with a real player before the game, fair offers 5:5, unfair offers 3:7 and 1:9, play with human or computer). Neuronal networks of social cooperation were characterized using functional MRI (3T Philips; TR = 2250 ms, TE = 45 ms, 30 slices, SPM-5, all results $p < 0.001$ non-corrected).

Results: In all groups, the process of decision-making in reaction on unfair offers was associated with haemodynamic changes in the DLPFC, ACC and insula. However, in healthy adults the decision-making was accompanied by a significant activation in the posterior STS and inferior frontal cortex (IFC)-brain regions closely related to empathy. Healthy children did not show activation in the STS and IFC and did not differentiate between interaction with a human or a computer. Children with ADHD demonstrated a typical network activation only in interaction with a human.

Conclusion: The process of decision-making during social interaction in adults is associated with the stronger involvement of neural structures which are usually active during empathy, compared with children. It seems likely that adults try more to anticipate and forecast the behavior of a partner during interaction than the children that do. Moreover, children with ADHD are characterized by an increased sensitivity to psychosocial context.

Eur Child Adolesc Psychiatry. 2011;20:S54.

CONTROVERSIES IN ADHD.

Taylor E.

The treatment of ADHD varies considerably across countries. This lecture focuses on significant clinical disagreements, where guidelines have been unable to produce clear recommendations because of uncertainties in the research evidence. For how long should treatment last? In the absence of clear scientific evidence, an individually sensitive approach will be recommended. A key consideration is the mediators of long-term outcome: these should be targets of therapy and deserve more attention. What is the first choice of therapy? Evidence to be reviewed includes the meta-analyses and economic evaluations by NICE; and the extent to which treatment response is predictable and allows different algorithms for different clinical groups. What is the place of diet treatment? Trials of elimination of specific foodstuffs, and supplementation with long-chain polyunsaturated fatty acids, will be described. There is evidence for some such interventions being useful, not for others. What is the place of cognitive therapies? Cognitive therapy is frequently applied, but only occasionally recommended, because of a lack of supporting RCT evidence (except in adults). Future developments will be reviewed. When should females be treated? ADHD symptoms in girls are less frequent than in boys by 1:2-3. ADHD presentations in many clinics are more like 1:9. Should we seek to treat girls more frequently? Is medication safe? A systematic review by EUNETHYDIS has sought to quantify risks for: sudden death, cardiac arrhythmias, hypertension, deceleration of growth in height and weight, and substance misuse. Resulting knowledge of gaps in the evidence has led to EU-funded, multicentre precautionary research.

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Eur Child Adolesc Psychiatry. 2011;20:S126.

EFFECTS OF OROS(REGISTERED TRADEMARK) METHYLPHENIDATE (MPH) TREATMENT ON BEHAVIOR AND PERFORMANCE IN CHILDREN WITH ADHD WITH AND WITHOUT COMORBID LEARNING DISABILITY.

Starr HL, Armstrong R, Damaraju CV, et al.

Objective: Learning disabilities (LDs) are more common in children with ADHD than without ADHD. We evaluated effects of OROS MPH on performance in children with ADHD with and without LDs.

Methods: We analyzed 2 double-blind, randomized, placebo-controlled, crossover, analog classroom studies evaluating OROS MPH in 9-12-year-olds with ADHD (NCT00799409, NCT00799487). Subjects had Wechsler Abbreviated Scale of Intelligence scores >80 with or without mild/moderate math LD (Wechsler Individual Achievement Test(registered trademark) - 2nd Edition Numerical Operations scores (greater-than or equal to)71 and (less-than or equal to)85) and/or language LD (Gray Oral Reading Test fluency or Comprehensive Test of Phonological Processing standard scores >4 and <8). Subjects took individually determined doses of OROS MPH for 6 weeks, except on 2 laboratory school days when randomized to OROS MPH on day 1/placebo on day 2 or the reverse. Permanent Product Math Test number attempted (PERMP-a) and correct (PERMP-c) and Swanson, Kotkin, Agler, M-Flynn, and Pelham (SKAMP) scores were measured on both days.

Results: Of 139 subjects, 89 (64%) had no LD, 46 (33%) had LD, and 4 (3%) were undetermined. Subjects had greater LS mean PERMP-a and -c scores with OROS MPH than placebo. Treatment effects for PERMP-a occurred in subjects without LD (OROS MPH, 114.6; placebo, 82.2) and with LD (OROS MPH, 100.9; placebo, 81.6), $p < 0.0001$. Treatment effects for SKAMP composite scores: subjects without LD (OROS MPH, 8.4; placebo, 19.5) and with LD (OROS MPH, 10.4; placebo, 19.2), $p < 0.0001$. Similar patterns were seen in SKAMP attention and deportment scores. AEs in (greater-than or equal to)10% of subjects: headache, upper abdominal pain, decreased appetite, irritability, and initial insomnia. Two subjects discontinued due to AEs. No serious AEs or deaths were reported.

Conclusions: Behavior and performance improved during treatment with OROS MPH in children with ADHD with and without comorbid learning disability.

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Eur Child Adolesc Psychiatry. 2011;20:S132.

VOLUNTARY WORK WITH ADHD CHILDREN AS PSYCHOSOCIAL AND PSYCHOEDUCATIONAL INTERVENTION.

Suzovic V, Marusic R, Simovic T.

The aim of the study was to examine the impact of voluntary help on academic achievement and discipline problems in children with attention deficit and hyperactivity disorder. Twenty eight children in elementary schools were clinical diagnosed in Primary Health Care Centre Zemun-Department for Mental Health. Young volunteers, children of 7th and 8th grade, and students of Faculty for Special Education and Rehabilitation, worked weekly for houer and half after school. Those volunteers were the members of non-governmental and non-profit association Center for Voluntary Work and Children's Help nullDuganull (nullRainbownull) witch specialized in organizing and implementing psychosocial, voluntary and education projects, with the aim of improving the quality of children's life. Volunteers helped children in learning disabilities-homework reading, writing, exercises on specific deficits and problems in discipline (training for control and modifying the problems in discipline: reward system-positive reinforcement, evaluating-determine the cause, technique for social interaction). The two third of the children the end of the school year had a better academic achievement and reduced discipline problems than before. Volunteers help is related to academic achievement and discipline problems in generally. It appears to be significantly influenced independent of intelligence or abilities to learn.

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Eur Child Adolesc Psychiatry. 2011;20:S128-S129.

NEUROPSYCHOLOGICAL AND CLINICAL EFFECTS OF A MULTIMODAL BEHAVIORAL ADHD SUMMER CAMP TRAINING.

Steinmann E, Gerber-von Muller G, Siniatchkin M, et al.

Background: Several previous studies demonstrated that learning theory-based methods decrease behavioral difficulties of individuals with ADHD. But the specific effects of these strategies without applying additional medication are not clear. The present study investigates whether a multimodal, intensive, learning theory-based ADHD summer camp group training (ASCT) without medication leads to improvements in neuropsychological functions and clinical symptoms.

Methods: 24 children and adolescents with ADHD (mean age 10.1; age range 7-14; 4 girls) participated in an ASCT during 2 weeks. The training program included social skills training, sports activities, a specific attention training and a parental education intervention. In all daily situations and activities a systematic response cost and token strategy (RCT) was applied. In an experimental pre-post design executive functions were assessed using the Trail Making Test (TMT), the Test for Attention Performance (TAP) and the digit-span task. Additionally, teachers and parents completed clinical questionnaires for symptoms of ADHD and disruptive behavior. Medication was discontinued for all patients before and during the ASCT.

Results: The results showed a significant improvement in specific neuropsychological functions like attention regulation, speed of information processing, cognitive flexibility and working memory. The ASCT improved inhibitory control and decreased the response variability of the children. Six weeks after the camp the scores in parent-reported and teacher-rated behavioral symptoms were lower.

Conclusions: The results of the study demonstrate that a multimodal, intensive, learning theory-based summer camp training combined with RCT leads to improvement in neuropsychological functions and clinical symptoms.

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Eur Child Adolesc Psychiatry. 2011;20:S128.

MONITORING SOCIAL BEHAVIOR USING THE CHILD CONFLICT INDEX IN CHILDREN WITH ADHD TREATED WITH OROS(REGISTERED TRADEMARK) METHYLPHENIDATE.

Starr HL, Armstrong R, Damaraju CV, et al.

Objective: This study evaluated social behavior of children treated with OROS(registered trademark) methylphenidate.

Methods: Data from 2 open-label dose-optimization studies evaluating OROS MPH in children aged 9 to 12 years with ADHD (NCT00799409, NCT00799487) were pooled. OROS MPH 18-mg/d treatment was flexibly dosed to a maximum of 54 mg/d. Subjects continued their optimized dosage for up to 6 weeks. The Child Conflict Index (CCI), 1 which captures conflict/attention-seeking and negativity/withdrawal behaviors, was administered by telephone to parents/caregivers just before baseline, at each dosage-adjustment visit,

and at the final study visit. Changes from baseline total CCI scores were evaluated using paired Student t tests.

Results: Of 167 subjects in the safety analysis set, 115 were boys and 52 were girls. Mean optimized OROS MPH dosage was 41.1 mg/d (SD = 12.9). Mean baseline total CCI score was 8.5 (SD = 4.22) for boys and 7.0 (SD = 2.92) for girls. Statistically significant ($P < 0.05$) improvements in total CCI score occurred at the first dosage adjustment visit (change of -1.9 [SD = 4.24] for boys, -1.0 [SD = 2.61] for girls) and at most subsequent dosage-adjustment visits for each gender group and dosage level (18, 36, and 54 mg/d). At the final study visit, both boys and girls had statistically significant improvements from baseline CCI scores (change of -6.2 [SD = 3.99] for boys, -4.9 [SD = 3.75] for girls; $P < 0.0001$ for both). Two subjects discontinued because of adverse events (AEs) during the dosage adjustment period. AEs reported by (greater-than or equal to) 10% of subjects were headache, abdominal pain upper, decreased appetite, irritability, and initial insomnia. No serious AEs or deaths were reported.

Conclusions: Statistically significant improvement on the CCI occurred during the first week of OROS MPH treatment and was sustained at the final study visit for both girls and boys. No unexpected or severe AEs were reported.

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Eur Child Adolesc Psychiatry. 2011;20:S57.

RAINBOW DIARIES: AN INNOVATIVE APPROACH TO IDENTIFYING ADHD.

Stein S.

ADHD is a complex neuro-developmental disorder characterised by developmentally inappropriate attention, hyperactivity and impulsivity. Unfortunately, there is no single test for diagnosing ADHD. Instead, a range of questionnaires have been developed to assist with assessment and diagnosis, including the Conners Rating Scales, SNAP-IV, ADHD Rating Scale-IV, Vanderbilt ADHD Teachers/Parent Rating Scale and ADHD Symptoms Rating Scale. However, these rating scales often ask the parents or teachers to answer very general questions relating to nonspecific behaviours that took place a week ago, several months ago, in the last year or even over the child's lifetime. The Rainbow Diary is designed to track adverse behaviour, as it happens, from when the child wakes up until they go to bed. What often emerges is that hyperactive outbursts are not unpredictable or unprovoked. The diary sheets can highlight this escalating pattern, as well as occasions on which the escalation has been prevented by vigilant interventions. A set of early warning signals can also be identified which allow adults to predict potential outbursts. In addition, the diary sheets help to identify sources of adverse behaviours, such as times of day, days of the week, specific activities, stressful events, particular lessons or even individual teachers. The Rainbow Diaries therefore provide a unique and innovative approach to assessing adverse behaviour as it occurs, highlighting possible social and environmental causes that may otherwise be missed, and identifying escalating patterns of interaction at home and school. The diaries are not dependent on accurate recollection of past events, and are of direct use in treatment and prevention. The benefit of using these diaries, and their significant impact on clinical care, will be the focus of the paper/workshop/poster.

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Eur Neuropsychopharmacol. 2011;21:S309-S310.

DEFAULT-MODE NETWORK DEFICITS IN MEDICATION NAIVE ADHD CHILDREN.

Choi J, Jeong B.

Objective: The aim of this study is to test whether resting state default mode network brain activity is compromised in medication-naive boys with attention-deficit/hyperactivity disorder (ADHD), using independent component analysis (ICA) of Functional MR data.

Background: Pathophysiologic models of ADHD have focused on prefrontal-striatal and mesolimbic circuits on the basis of findings of executive and motivational dysfunction. A complementary approach is to examine the neural substrates of ADHD-relevant behaviors, such as attentional lapses, through functional connectivity analysis. Momentary lapses in attention have been associated with failure to suppress activity in the default-mode network.

Methods: Medication-naïve ADHD boys were recruited by advertisements targeted towards children who visit at child and adolescent psychiatric clinic in Deajeon St. Mary's Hospital. Healthy control subjects were also recruited by advertisement targeted towards children who have no history of Axis I (DSM-IV) psychopathology. Subjects were excluded who had any history of substance abuse, any recent substance use, psychotropic medication, head trauma, significant fetal exposure to alcohol or drugs, perinatal or neonatal complications, neurological disorders, or medical conditions that could adversely affect growth and development. The St. Mary's Hospital IRB approved all procedures. The purpose and meaning of this study were explained to subjects and their parents, who gave their written informed consent. DSM-IV criteria on structured diagnostic interview (Kiddie-Schedule for Affective Disorders and Schizophrenia-Present and Life time Version-Korean Version) were used for diagnosis. For the assessment of ADHD symptoms severity, Korean ADHD Rating Scale was assessed. Twenty medication-naïve boys with ADHD (mean age 10.3(plus or minus)2.5) and 28 age-, gender-matched healthy volunteers (mean age 10.3(plus or minus)2.0) were measured resting state brain activity with a 1.5T Philips scanner and clinical assessment. Functional MR data acquired during resting state of 7 minutes were preprocessed with temporal filtering with a 0.1 Hz low-pass filter, realignment and smoothing with 5mm FWHM using MELODIC of independent component analysis (ICA) module of the FSL software. The number of components was automatically estimated from the fMR data by MELODIC. We identified independent components (ICs) showing significant differences in their activation between control and ADHD groups. To correct for false positives, we used an alternative hypothesis test based on fitting a Gaussian/Gamma mixture model to the distribution of voxel intensities within spatial maps and a posterior probability threshold of $P = 0.5$.

Results: No demographic difference was found between two groups except IQ, which was higher in healthy control group ($P < 0.001$). ADHD group showed significantly higher scores than control groups in Korean ADHD Rating Scale ($P < 0.001$). An independent component (IC) which includes bilateral precuneus/posterior cingulate cortex, occipito-temporal junction, and anterior cingulate cortex was significantly less activated in ADHD than in control groups ($P < 0.05$).

Conclusions: We found there was a specific IC showing resting state-related abnormality in medication-naïve ADHD group. Our results suggest that the abnormality in the non-goal-directed null/default-modern null network prevent attentional lapses might interfere frontal foci involved cognitive control network in ADHD. To confirm the interaction between networks, further studies including task-based intrasubject variability are needed.

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Eur Neuropsychopharmacol. 2011;21:S197.

Differential effects of methylphenidate and atomoxetine on brain activation in medication-naïve children with ADHD.

Cubillo A, Smith AB, Barrett N, et al.

Introduction: Methylphenidate (MPH), a catecholamine transporter blocker with predominantly striatal dopamine upregulation effects, enhances frontal, parietal and striatal brain activation in medication-naïve children with ADHD during cognitive tasks [1,2]. Atomoxetine (ATX) is a selective noradrenaline transporter (NET) inhibitor. In healthy adults, a single dose of ATX enhanced right inferior frontal activation during inhibitory control [3]. However, no fMRI study has investigated the effects of an acute dose of ATX on brain activation in ADHD patients, or compared its effects with those of MPH.

Methods: A single clinical dose of MPH, ATX or placebo, was administered to 20 medication-naïve children with combined type ADHD in a randomised double-blind crossover design. They performed 3 tasks in fMRI: Stop, Time Discrimination (TD) and N-back working memory (WM). Repeated-measures ANOVAs were conducted for performance and brain activation with drug condition as a within-subjects factor.

Results: MPH compared to placebo and ATX improved time estimation and enhanced anterior cingulate/Supplementary Motor Area (SMA) activation. Compared to both placebo and MPH, ATX enhanced right inferior prefrontal activation during motor response inhibition and upregulated cerebellar and superior temporal lobe activation during working memory, in addition to deactivating posterior cingulate activation.

Discussion: ATX and MPH have dissociated, task-dependent drug-specific effects on brain activation in ADHD. ATX showed stronger effects on noradrenergically mediated cortical frontal inhibitory and temporo-cerebellar WM networks, while MPH appeared to be more potent in upregulating dopaminergically innervated midfrontal timing networks.

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Eur Neuropsychopharmacol. 2011;21:S620-S621.

IMPACT OF METHYLPHENIDATE TREATMENT ON THE RATE OF ACCIDENTS IN ADULTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD).

Marin M, Ponce G, Martínez I, et al.

Background: Attention deficit hyperactivity disorder (ADHD) is a common childhood disorder clinically characterized by impaired attention and impulse control, hyperactive behavior, inner restlessness and emotional dysregulation, that often continuous to manifest symptoms into adulthood. The prevalence rate of adults who meet the full criteria for ADHD is estimated to range from 1% to 4%. Moreover, in 40% to 60% of the affected children symptoms persist in adulthood. Longitudinal follow-up studies have extensively documented impairment in academic, occupational, social and emotional domains of functioning in adults with ADHD. In addition, recent studies have found an association between adults with ADHD and domestic, industrial and traffic accidents. Moreover, some studies report an improvement of driving abilities under methylphenidate treatment. This is due to methylphenidate's action over sustained attention, visual orientation and visual-motor reaction coordination.

Objectives: To investigate domestic, industrial and driving outcomes in ADHD adults at baseline and under methylphenidate treatment for a period of one year. We hypothesized that patients under treatment with methylphenidate will show a lower rate of accidents compared to non-treated subjects.

Methods: We performed an observational 1-year follow-up study. Subjects were 60 ADHD adults (49 males and 11 females), aged between 18 and 45 years, who were diagnosed at baseline using the Adult ADHD Self-Report Scale (ASRS-v1.1) Symptom Checklist and the Wender UTAH Rating Scale (WURS). A specific protocol developed for the study was used in order to assess outcomes related with domestic, industrial and traffic accidents at baseline and after a follow-up period of 12 months. 30 subjects received treatment with methylphenidate, and 30 subjects did not receive pharmacological treatment. Group comparisons were analyzed using t-test for unrelated samples. Statistical analyses were performed using SPSS 15.0 version.

Results: Number of domestic, industrial and traffic accidents positively correlated with attention deficit and impulsivity symptoms. At baseline, there were no significant differences between treated and non-treated subjects in terms of number of domestic, industrial and traffic accidents during the last year. However, during the follow-up period, subjects treated with methylphenidate showed significantly less number of domestic, industrial and traffic accidents compared to the baseline period and to non-treated subjects. Methylphenidate was well tolerated by our patients, with few side-effects reported.

Conclusions: Although there is a controversy related with treating ADHD adults with methylphenidate, due to its potential risk of abuse and higher rates of medical complications compared to childhood population, our study demonstrates that methylphenidate reduces the number of accidents in adults with ADHD. Our study supports the idea of the need of pharmacological treatment for adults with ADHD in order to improve accident rates, which are an important health concern in this population. Further studies are warranted in order to explore the specific actions of methylphenidate over accident rates.

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Eur Neuropsychopharmacol. 2011;21:S610.

CORRELATIONS BETWEEN SOCIAL, BIOLOGICAL AND PSYCHOLOGICAL FACTORS AND NEUROPSYCHOLOGICAL FUNCTIONING IN ADHD CHILDREN.

Niculae O, Druga S.

Purpose: In recent years, we are witnessing a new understanding of ADHD not only in terms of symptoms but also in the complexity of higher brain function impairment. Neuropsychological studies conducted in

children with ADHD offered a comprehensive view of neurocognitive development and have shown poor executive functioning, visual and selective attention problems, poor performance in terms of language and motor processing, poor planning, deficits in visuospatial processing and visuomotor integration, set shifting and working memory difficulties, deficits in inhibiting impulsive reactions. Our aim was to identify correlations between biological, social and psychological factors and certain neuropsychological deficits in ADHD children.

Clinical sample and Method: We analyzed medical history and psychomotor development of the child, pregnancy and delivery factors, social and familial environment, parenting skills, academic performances and their relation with neuropsychological deficits (attention/executive functions, memory and learning, language, visuospatial and sensorimotor functions) in 46 patients who were referred to Emotional and Behavioral Education Center for Children, in Bucharest, over the last year. Patients were 6 to 14 years of age, their IQ was higher than 80 and they didn't suffer from other psychiatric and neurological disorders. All the patients received a complete psychological and psychiatric evaluation which involved parent, teacher and child interview, functional behavior analysis in school, peer relations assessment. They met DSM-IV criteria for ADHD. We used Child Behavior Checklist for ages 6-18, Stony Brook inventory (for parents) and tests included in the neuropsychological assessment battery - NEPSY. The data were statistically processed using Chi-Square test for qualitative variables.

Summary of results: In the present study there were significant statistical correlations (p -value < 0.05) between sensorimotor functioning (movement coordination, the ability to organize a series of sequences and movements, motor planning, tactile and kinesthetic information processing) and educational level of both parents ($p = 0.046$), socioeconomic status of the family ($p = 0.02$) and school behavioral problems of the child ($p = 0.0006$). We also found that visuospatial processing (mental representation of objects, reproducing three-dimensional spatial relationships, understanding directionality, the ability to understand and interpret symbolic representations, solving non-verbal tasks) was well statistical correlated (p -value < 0.05) to environmental factors (rural/urban areas, $p = 0.026$) and academic performances ($p = 0.0006$). No significant data shows medical problems, pregnancy circumstances, motor, language or cognitive factors and ADHD severity related to neuropsychological deficits in our clinical sample.

Conclusions: Our findings may help to consider preventive interventions in children with ADHD or other neuropsychiatric condition associated with visuospatial and sensorimotor impairment taking into account their socioeconomic background and school functioning. These neuropsychological functions are strongly related to learning disabilities and further studies should be performed in order to identify executive deficits in young pre-school children and initiate psychosocial intervention for improving social and educational functioning.

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Eur Neuropsychopharmacol. 2011;21:S437-S438.

PREVALENCE OF ADULT ATTENTION DEFICIT HYPERACTIVITY DISORDER IN THE RELATIVES OF PATIENTS WITH BIPOLAR DISORDER.

Turkyilmaz E, Karamustafalioglu O, Goksan Yavuz B, et al.

Purpose: Externalizing and behavioral disorders have been increasingly recognized in the offsprings of bipolar adults [1]. Attention deficit hyperactivity disorder (ADHD) in the children of bipolar probands was first reported in 1983 [2]. Since 1988 ADHD and significant behavioral problems have been reported in 27% of offsprings of individuals with bipolar disorder (BD). To the best of our knowledge prior investigations focusing on ADHD in the relatives of bipolar patients have been limited to children and adolescents. Based on this data the aim of this study is to find the prevalence of adult ADHD in the first degree relatives of individuals with bipolar disorder. We hypothesized that probands of bipolar patients would have increased rate of ADHD and subsyndromal manifestations compared to demographically matched probands of healthy controls.

Method: Seventy-three first-degree relatives of 40 bipolar patients with I, II and not otherwise specified mood disorder and 68 first-degree relatives of 40 subjects without any psychiatric disorder were recruited in the study. Control subjects were matched to bipolar patients and first-degree relatives of subjects were matched to first-degree relatives of bipolar patients according to age, gender and educational status. Wender Utah Rating Scale and Turgay's Adult ADD/ADHD DSM-IV Based Diagnostic and Rating Scale

were administered to the participants. SCID-I/CV (Structured Clinical Interview for DSM-IV Axis I Disorder, Clinical Version) was used to diagnose the psychiatric disorders.

Results: There were no statistically significant differences in age, sex, marital status, and level of education between the relatives of BD (RBD) group and control group (RC). Among the seventy-three relatives of BD group 14 (19.2%) had childhood ADHD. There was no statistically significant difference in rate of childhood ADHD between RBD group and RC group. Overall rate of adult ADHD in RBD group was significantly higher than RC group (9.6% vs. 1.5%; $p = 0.037$). Among the seven subjects, diagnosed as having adult ADHD in the RBD group, 3 (4.1%) had inattentive subtype, 2 (2.7%) had hyperactive subtype and 2 (2.7%) had combined subtype of adult ADHD. Among the seven participants with adult ADHD in the RBD group 4 (10.8%) were male and 3 (8.3%) were female. One female had inattentive subtype, 2 had combined subtype of adult ADHD. Among the 4 males 2 had inattentive subtype, and 2 had hyperactive subtype of adult ADHD. Alcohol abuse was significantly higher in the participants with adult ADHD compared to those without adult ADHD ($p < 0.05$).

Conclusion: Our results are consistent with the previous studies evaluating the overall risk for developing ADHD and destructive behaviors in offsprings of individuals with bipolar disorder. Our findings indicate that relatives of bipolar patients have a risk for suffering from ADHD. To the best of our knowledge this is the first study that evaluates the prevalence of adult ADHD in the first degree relatives of patients with bipolar disorder. Under the highlight of our findings assessing adult ADHD in patients with family history of bipolar disorder is important for treatment and prognosis.

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Eur Neuropsychopharmacol. 2011;21:S609-S610.

RISK FACTORS FOR AGGRESSIVE BEHAVIOUR IN ADHD CHILDREN.

Druga S, Niculae O, Grozavescu R.

Purpose: The presence of ADHD in children is a significant risk factor for the development of conduct disorder (TC), chronic aggressive behavior and antisocial behavior. Studies have shown that aggressive behavior has a high prevalence and is one of the most difficult to treat ADHD symptoms in children and adolescents who require psychiatric evaluation and intervention. Our paper examined the demographical, socioeconomic and clinical factors related to a specific pattern of aggressive behavior: hetero-aggressive behavior (verbal and physical) or autoaggressive behavior in ADHD children.

Clinical material and Method: We analyzed prenatal risk factors, family medical history of psychiatric illnesses, developmental milestones, social and familial environment, school performance, quality of peer relationship and their correlation with a certain type of aggressive behavior in a clinical sample of 124 patients, aged 5 to 14 years. All the patients had a positive diagnosis of ADHD based on DSM-IV criteria for ADHD. Their assessment included complete psychiatric and clinical evaluation, child and parents interview, Child Behavior Checklist for ages 6-18, Stony Brook inventory (parent version) and Disruptive Behavior Assessment Scale (parent and teacher version). We didn't consider eligible individuals having an IQ lower than 50 and severe somatic or neurological comorbidities. Data were statistically processed performing A-NOVA analysis of variance and Chi-Square test for qualitative variables. Descriptive statistics were performed for socio-demographic factors.

Results: Physical aggressive behavior was statistically significant (p -value < 0.05) correlated with socioeconomic factors ($p = 0.047$), family emotional environment and parenting skills ($p = 0.038$) behavioral problems and peer relationship ($p = 0.00005$) and severity of ADHD symptoms ($p = 0.007$). Verbal aggressive behavior was well correlated (p -value < 0.05) with educational performance ($p = 0.004$), behavioral problems and peer relationship ($p = 0$). We also found statistically significant correlations between auto-aggressive behavior and family emotional environment and parenting skills ($p = 0.0046$), socioeconomic factors ($p = 0.032$) and educational level of parents ($p = 0.0002$). There were no statistically significant correlations between hetero-aggressive (verbal and physical) or auto-aggressive behavior and factors related to pregnancy and birth circumstances, family medical history of somatic or psychiatric illnesses and severity of ADHD symptoms.

Conclusions: Our findings suggest that familial factors (family functioning, educational level, socioeconomic status, parenting skills) play an important role in the development of both physical and auto-aggressive behavior in ADHD children. Understanding and early identifying of the risk factors involved in

triggering disruptive behavior in ADHD children should be one of the main goals in preventive strategies for comorbid conditions, aggressive behavior and failures in social relationships and academic performance. The most efficient intervention is based on a multimodal approach which involves medical, psychosocial and educational strategies considering familial, environmental and biological risk factors associated with behavioral problems in ADHD children.

Eur Neuropsychopharmacol. 2011;21:S601-S602.

Assessment of sleep characteristics of patients with attention deficit hyperactivity disorder by actigraphy.

Jeong JH, Kim NY, Hong SC, et al.

Purpose of the study: Attention deficit hyperactivity disorder (ADHD), the most common behavior disorder of childhood, is characterized by a pattern of diminished sustained attention and higher level of impulsivity. About 25-50% of ADHD patients have been reported to have sleep problems including higher level of nocturnal activity, longer sleep latency, lower sleep efficiency, more frequent night awakenings and shorter total sleep time. However, although high rates of sleep problems are suggested by self-reports or parental reports, there is a lack of consistent results from objective studies for any significant sleep problems other than a higher number of sleep movements and night-to-night variability. The present study aimed to assess nocturnal sleep disturbances in patients with ADHD using actigraphy as an objective measure. Methods: The study included 24 patients with ADHD and 12 control children (7-12 year-old boys). We tested neuro-cognitive function to ascertain comparability between the two groups and applied actigraphy to acquire sleep variables and compare sleep disturbances for 72 hours. In addition, we assessed the correlation factors between sleep variables and neuro-cognitive functions. Results: (1) In MFFT (Matching Familiar Figures Test), the ADHD patients had significantly increased response error (58.71(plus or minus)28.16 percentile vs. 35.20(plus or minus)26.49 percentile) ($p = 0.038$) and response latency (69.71(plus or minus)23.57 percentile vs. 49.70(plus or minus)24.58 percentile) ($p = 0.042$) compared with control children. Also, the ADHD patients needed more time for TMT-B (Trail Making Test B) than controls; the difference was statistically significant (164.2(plus or minus)90.88 s vs. 79.0(plus or minus)55.08 s) ($p = 0.043$). (2) In sleep variables by actigraphy, the sleep latency (21.57 (plus or minus)24.28 min vs. 5.81(plus or minus)4.69 min, $p=0.005$), WASO (wake after sleep onset) (62.01(plus or minus)18.56 min vs. 47.00(plus or minus)15.08 min, $p= 0.039$) and fragmentation index (17.28(plus or minus)5.41% vs. 12.45(plus or minus)4.88%, $p=0.048$) were significantly increased in ADHD patients compared with controls. There were no significant differences in total sleep time and sleep efficiency. (3) In ADHD patients there was a negative correlation between the time for TMT-A (Trail Making Test A) and verbal IQ (intelligence quotient) ($\rho = -0.653$, $p = 0.029$). Also, two sleep variables, WASO ($\rho= 0.525$, $p=0.012$) and fragmentation index ($\rho = 0.470$, $p = 0.027$) showed significant positive correlation with the response error in MFFT. Conclusion: The ADHD patients had more sleep problems than controls; the results of this study suggest that they have significantly increased sleep latency, WASO and fragmentation index compared with controls. Also, in ADHD patients, some sleep problems including WASO and fragmentation index showed a positive correlation with the results of the neuro-cognitive MMFT function test. However, further studies, improved by large sample sizes, addition of polysomnography and consideration of ADHD subtypes, are necessary to confirm these results for sleep problems in children with ADHD.

Eur Neuropsychopharmacol. 2011;21:S228.

NEW MOLECULAR PATHWAYS IN ADHD: BASIC, TRANSLATIONAL AND CLINICAL IMPLICATIONS.

Franke B.

ADHD is among the most common neuropsychiatric disorders in children and adults. It is highly heritable and has a multifactorial etiology, with many genetic factors of small individual effect as well as environmental factors contributing. While candidate gene studies have identified a number of risk genes for ADHD, the vast majority of the genetic contribution is still unexplained. Several hypothesis-generating,

genome-wide association studies of single nucleotide polymorphisms (SNPs) have been performed in the last few years. While being individually underpowered despite including several thousand individuals, we have recently shown using bioinformatics that they do provide new insights into pathways involved in ADHD etiology [1]. A recent finding in ADHD genetics is also the fact that not all patients may suffer from multifactorial forms of ADHD; in a percentage of cases, fewer genetic factors of larger effect size seem to be involved, as was shown by studies of copy number variants (CNVs) [2]. The implications of ADHD genetics research for the clinic are not yet very straightforward. Rather, by understanding the etiology of ADHD better, we hope to identify new targets for (curative) treatments. An important issue in the clinic is the prognosis of children with ADHD. As some remit and others persist, identifying markers for the persistent forms of the disorder is also a clear goal of genetic research. We have recently shown that differences in the genetic profile of children and adults with ADHD exist [3], which form a first indication that genetics could support prediction of prognosis.

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Eur Neuropsychopharmacol. 2011 Aug;21:584-99.

TO STOP OR NOT TO STOP? HOW LONG SHOULD MEDICATION TREATMENT OF ATTENTION-DEFICIT HYPERACTIVITY DISORDER BE EXTENDED?

van de Loo-Neus G, Rommelse N, Buitelaar JK.

ADHD is a common neuropsychiatric disorder with a strong persistence over time. Medication is frequently used in the clinical management of ADHD. After response, medication is typically prescribed for months to years. It is unclear whether extended medication treatment provides long-term benefits and how long it should be continued. Furthermore, there is concern about the long-term safety of ADHD medication. The aim of this systematic review is to address these issues and provide recommendations about the decision to stop or not to stop ADHD medication. We performed a search in PubMed and focused on medication studies with a treatment longer than 12 weeks in subjects 6–18 years old. Extended placebo-controlled double-blind parallel studies are not available. Placebo-controlled discontinuation studies and prospective long-term observational treatment studies provide evidence that medication management leads to a substantial reduction of ADHD symptoms and less impairment of functioning for a period of about 2 years. There is limited and inconsistent evidence for long-term advantage of medication treatment beyond symptom control, such as improved social functioning, academic achievement, employment status and less adverse psychiatric outcome. In terms of safety, long-term effects of medication on growth, blood pressure and heart rate are limited and the occurrence of suicidal, psychotic and manic symptoms is rare. Animal data about neurotoxic effects of psycho stimulants cannot be directly extrapolated to humans. Therefore, clinical decisions about starting, continuing, and stopping of ADHD medication should be made on an individual basis. Medication free periods should be implemented at regular times to investigate the need for an ongoing benefit of medication. Unfounded assumptions about continuing benefit of medication use should be abandoned. Careful monitoring of side effects is necessary and must be able to detect early alarming signals.

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Eur Neuropsychopharmacol. 2011;21:S600.

IMPACT OF PHARMACOLOGICAL VERSUS NON-PHARMACOLOGICAL TREATMENT ON COGNITIVE SHIFT IN ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Khachapuridze N, Bakhtadze S, Geladze N, et al.

Attention deficit hyperactivity disorder (ADHD) is one of the most widely spread conditions in the school-aged population, affecting approximately 5-8% of children of this age. The main clinical sign of ADHD is a disorder of executive functioning including problems of attention shift. Methods: We prospectively evaluated 64 children (42 boys, 22 girls) presenting with ADHD of combined subtype (ADHD-com) and aged 9-12 years. The children were divided into two groups. The first group (ADHDcom-1, 31 children - 19 boys, 12 girls) was treated with methylphenidate. In the second group (ADHDcom-2, 33 children - 17 boys, 16 girls) we conducted non-pharmacological treatment by EEG biofeedback (neurofeedback - NF), using the 30

sessions of NF mostly popular for the treatment of ADHD. IQ assessment was carried out in all children by means of Wechsler Intelligence Scale Children - Revised (WISC-R). Attention shift was assessed by the Trial Making Test-B (number-letter switching) which requires the examinee to connect circles alternately with numbers (1-13) and letters (12 letters) in their respective sequence, as quickly as possible [1]. It was adapted and validated in a normal population of Georgian school-aged children. The results of the tests were scores representing the range of reaction times (RT) needed for performing the task. The number of errors (ER) was also recorded. Statistical analysis was done by the Wilcoxon matched-pairs and Kruskal-Wallis Test. Post-hoc comparisons were determined by the Bonferroni test. Results: For the mean RT after treatment, the Kruskal-Wallis Test showed significant differences among study groups ($X^2(4) = 18.616$, $p < 0.001$). Post-hoc analysis (Bonferroni) showed a significant difference between the ADHDcom-1 and ADHDcom-2 groups ($p < 0.0001$). The Kruskal-Wallis Test revealed significant differences between study groups for mean ER after treatment ($X^2(4) = 31.211$, $p < 0.0001$). Post-hoc analysis (Bonferroni) revealed a significant difference between the ADHDcom-1 and ADHDcom-2 groups ($p < 0.0001$). The Wilcoxon matched-pairs signed-rank test for ADHDcom-1 revealed a significant difference between median RT before treatment ($M = 4.08$, $SD = 1.67$) and after treatment ($M = 7.12$, $SD = 1.75$). This difference was significant beyond the 0.001 level ($Z = -4.451$, $p < 0.0001$). The difference between the median ER before treatment ($M = 12.128$, $SD = 3.34$) and after treatment ($M = 7.54$, $SD = 3.4$) was significant beyond the 0.001 level ($Z = -4.438$, $p < 0.0001$). The Wilcoxon matched-pairs signed-rank test for the group of children with ADHDcom-2 revealed a significant difference between median RT before treatment ($M = 2.57$, $SD = 1.9$) and after treatment ($M = 3.43$, $SD = 1.9$). This difference was significant beyond the 0.001 level ($Z = -2.121$, $p < 0.034$). The difference between the median ER before treatment ($M = 16.86$, $SD = 3.34$) and after treatment ($M = 16.43$, $SD = 2.99$) was not significant. Conclusion: Pharmacological treatment with methylphenidate is effective for the improvement of cognitive flexibility problems in ADHDcom children as it reduces the level of RT as well as the rate of ER. A non-pharmacological treatment like NF is also effective for the improvement of attention shift as it also reduces the level of RT, but does not achieve a decrease in ER. Thus treatment with drugs (methylphenidate) has more impact on the cognitive profile of ADHDcom children than NF, which is also considered for the treatment of this very important childhood disorder.

Eur Psychiatry. 2011.

THE EFFECT OF PHOSPHATIDYL SERINE CONTAINING OMEGA3 FATTY-ACIDS ON ATTENTION-DEFICIT HYPERACTIVITY DISORDER SYMPTOMS IN CHILDREN: A DOUBLE-BLIND PLACEBO-CONTROLLED TRIAL, FOLLOWED BY AN OPEN-LABEL EXTENSION.

Manor I, Magen A, Keidar D, et al.

Objective: To study the efficacy and safety of phosphatidylserine (PS) containing Omega3 long-chain polyunsaturated fatty acids attached to its backbone (PS-Omega3) in reducing attention-deficit/hyperactivity disorder (ADHD) symptoms in children.

Method: A 15-week, double-blind, placebo-controlled phase followed by an open-label extension of additional 15 weeks. Two hundred ADHD children were randomized to receive either PS-Omega3 or placebo, out of them, 150 children continued into the extension. Efficacy was assessed using Conners' parent and teacher rating scales (CRS-P,T), Strengths and Difficulties Questionnaire (SDQ), and Child Health Questionnaire (CHQ). Safety evaluation included adverse events monitoring.

Results: The key finding of the double-blind phase was the significant reduction in the Global: Restless/impulsive subscale of CRS-P and the significant improvement in Parent impact-emotional (PE) subscale of the CHQ, both in the PS-Omega3 group. Exploratory subgroup analysis of children with a more pronounced hyperactive/impulsive behavior, as well as mood and behavior-dysregulation, revealed a significant reduction in the ADHD-Index and hyperactive components. Data from the open-label extension indicated sustained efficacy for children who continued to receive PS-Omega3. Children that switched to PS-Omega3 treatment from placebo showed a significant reduction in subscales scores of both CRS-P and the CRS-T, as compare to baseline scores. The treatment was well tolerated.

Conclusions: The results of this 30-week study suggest that PS-Omega3 may reduce ADHD symptoms in children. Preliminary analysis suggests that this treatment may be especially effective in a subgroup of hyperactive-impulsive, emotionally and behaviorally-dysregulated ADHD children.

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Focus Altern Complement Ther. 2011;16:227-28.

IS ELECTRO-ACUPUNCTURE, IN COMBINATION WITH BEHAVIOUR THERAPY, EFFECTIVE IN PRESCHOOL CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER?

Liu J.

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Hum Brain Mapp. 2011;32:1511-18.

FUNCTIONAL CONNECTIVITY BETWEEN COGNITIVE CONTROL REGIONS IS SENSITIVE TO FAMILIAL RISK FOR ADHD.

Mulder MJ, Van Belle J, Van Engeland H, et al.

Familial risk for attention-deficit hyperactivity disorder (ADHD) has been associated with changes in brain activity related to cognitive control. However, it is not clear whether changes in activation are the primary deficit or whether they are related to impaired communication between regions involved in this ability. We investigated whether (1) functional connectivity between regions involved in cognitive control was affected by familial risk and (2) changes were specific to these regions. Correlational seed analyses were used to investigate temporal covariance between cognitive control and motor regions in two independent samples of typically developing controls, subjects with ADHD and their unaffected siblings. In both samples, correlation coefficients between cognitive control regions were greater for typically developing controls than for subjects with ADHD, with intermediate values for unaffected siblings. Within the motor network, unaffected siblings showed correlations similar to typically developing children. There were no differences in activity between the brain regions involved. These data show that functional connectivity between cognitive control regions is sensitive to familial risk for ADHD. Results suggest that changes in connectivity associated with cognitive control may be suitable as an intermediate phenotype for future studies.

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Hum Mov Sci. 2011.

MOTOR TIMING DEFICITS IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Zelaznik HN, Vaughn AJ, Green JT, et al.

Children with Attention-Deficit/Hyperactivity Disorder (ADHD) are thought to have fundamental deficits in the allocation of attention for information processing. Furthermore, it is believed that these children possess a fundamental difficulty in motoric timing, an assertion that has been explored recently in adults and children. In the present study we extend this recent work by fully exploring the classic analysis of timing with typically developing children (n = 24) and children with ADHD (n = 27). We provide clear evidence that not only do children with ADHD have an overall timing deficit, they also time less consistently when using a similar strategy to typically developing children. The use of the Wing and Kristofferson approach to timing, we argue, will result in the discovery of robust ADHD-related timing differences across a variety of situations.

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Int J Psychophysiol. 2011.

DYNAMIC CHANGES IN QUANTITATIVE ELECTROENCEPHALOGRAM DURING CONTINUOUS PERFORMANCE TEST IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Nazari MA, Wallois F, Aarabi A, et al.

To establish whether dynamic EEG changes in children with attention-deficit/hyperactivity disorder (ADHD) differ from those observed in controls, the authors investigated the effect of the continuous performance test (CPT) on delta, theta, alpha and beta frequency bands. High-resolution electroencephalography (EEG) was recorded during eyes-open resting and CPT performance in 16 right-handed children meeting the DSM-IV criteria for ADHD and 16 age-matched controls. Significant CPT vs. eyes-open differences in EEG activities was observed in children with ADHD. In particular, switching to CPT induced an alpha power increase in children with ADHD and an alpha power decrease in controls. This may reflect a primary deficit associated with cortical hypoarousal in ADHD. These EEG results agree with behavioral findings leading the authors to suggest that dynamic changes in neural network activities are impaired in children with ADHD.

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Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2011 Aug;39:819-28.

ATTENTIONAL PERFORMANCE IN CHILDREN AND ADOLESCENTS WITH TIC DISORDER AND CO-OCCURRING ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: NEW INSIGHTS FROM A 2 × 2 FACTORIAL DESIGN STUDY.

Greimel E, Wanderer S, Rothenberger A, et al.

The aim of the present study was to investigate the effect of both tic disorder (TD) and attention-deficit/hyperactivity disorder (ADHD) on attentional functions. N = 96 children and adolescents participated in the study, including n = 21 subjects with TD, n = 23 subjects with ADHD, n = 25 subjects with TD + ADHD, and n = 27 controls. Attentional performance was tested based on four computerized attention tasks (sustained attention, divided attention, go/nogo and set shifting). The effect of TD as well as ADHD on attentional performance was tested using a 2 × 2 factorial approach. A diagnosis of TD had no negative impact on attentional functions but was associated with improved performance in the set shifting task. By contrast, regardless of a diagnosis of TD, subjects with ADHD were found to perform worse in the sustained attention, divided attention and go/nogo task. No interaction effect between the factors TD and ADHD was revealed for any of the attention measures. Our results add to findings from other areas of research, showing that in subjects with TD and ADHD, ADHD psychopathology is often the main source of impairment, whereas a diagnosis of TD has little or no impact on neuropsychological performance in most cases and even seems to be associated with adaptive mechanisms.

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Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2011 Aug;39:853-64.

RELATION BETWEEN OUTCOMES ON A CONTINUOUS PERFORMANCE TEST AND ADHD SYMPTOMS OVER TIME.

Vaughn AJ, Epstein JN, Rausch J, et al.

This study examined the relationship between the developmental trajectories of neuropsychological functioning and ADHD symptomatology in a longitudinal sample of children ages 9 to 14. Participants and measures were derived from the Multimodal Treatment Study for ADHD including 534MTA participants and 254 normal controls. Despite improvement over time, MTA participants continued to receive higher ratings of ADHD symptomatology and exhibit greater difficulties across the majority of neuropsychological outcomes. No relations were found between improvements in neuropsychological functioning and ADHD symptomatology over time. Findings provide support for the persistence of neuropsychological functioning and ADHD symptomatology. Findings did not support the hypothesized relation between improvements in frontally-mediated neuropsychological functioning and ADHD symptomatology possibly due to the brief 1-year lag and limited assessment battery. Findings are discussed in relation to neuropsychological development including recommendations for future research.

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Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2011 Aug;39:841-52.

EMOTION REGULATION VIA THE AUTONOMIC NERVOUS SYSTEM IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD).

Musser ED, Backs RW, Schmitt CF, et al.

Despite growing interest in conceptualizing ADHD as involving disrupted emotion regulation, few studies have examined the physiological mechanisms related to emotion regulation in children with this disorder. This study examined parasympathetic and sympathetic nervous system reactivity via measures of respiratory sinus arrhythmia (RSA) and cardiac pre-ejection period (PEP) in children with ADHD (n = 32) and typically developing controls (n = 34), using a novel emotion task with four conditions: negative induction, negative suppression, positive induction, and positive suppression of affect. Both groups showed strong task-response effects in RSA. However, typically developing children showed systematic variation in parasympathetic activity (RSA) depending on both emotion valence (more activation for negative emotion, reduced activation for positive emotion) and task demand (more activation for suppression than induction). In contrast, children with ADHD displayed a stable pattern of elevated parasympathetic activity (RSA) across all task conditions compared to baseline. No group differences in sympathetic activity (PEP) were observed. It is concluded ADHD in childhood is associated with abnormal parasympathetic mechanisms involved in emotion regulation.

Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2011 Aug;39:829-40.

ASSESSMENT OF SOCIAL COMPETENCE OF BOYS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: PROBLEMATIC PEER ENTRY, HOST RESPONSES, AND EVALUATIONS.

Ronk MJ, Hund AM, Landau S.

Anecdotal and empirically, there is clear evidence that children with the Combined subtype of Attention-deficit/Hyperactivity Disorder (ADHD) experience disturbed peer relations, yet the field has not clearly established the origin of these difficulties. This is the first known investigation to examine the role of peer entry as a means to determine the social competence of boys with ADHD as they joined lab-based games played by age-mates who were good friends but unfamiliar with entry boys. Observational data of entry boys and their hosts, plus coders' ratings, indicate that 7- to 12-year-old boys with and without ADHD did not differ in the use of competent entry strategies known to lead to acceptance by peers. However, boys with ADHD relied more heavily on incompetent entry strategies (e.g., disruptive attention-getting) known to exacerbate negative peer reputation. In addition, they failed to apply a frame-of-reference that was relevant to host boys' ongoing activity. As such, host boys considered boys with ADHD less likeable as they spent more time with them. This pattern of findings has theoretical implications and informs the foci of social skills interventions for children with ADHD.

Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2011 Aug;39:805-17.

WORKING MEMORY DEFICITS AND SOCIAL PROBLEMS IN CHILDREN WITH ADHD.

Kofler MJ, Rapport MD, Bolden J, et al.

Social problems are a prevalent feature of ADHD and reflect a major source of functional impairment for these children. The current study examined the impact of working memory deficits on parent- and teacher-reported social problems in a sample of children with ADHD and typically developing boys (N = 39). Bootstrapped, bias-corrected mediation analyses revealed that the impact of working memory deficits on social problems is primarily indirect. That is, impaired social interactions in children with ADHD reflect, to a significant extent, the behavioral outcome of being unable to maintain a focus of attention on information within working memory while simultaneously dividing attention among multiple, on-going events and social cues occurring within the environment. Central executive deficits impacted social problems through both

inattentive and impulsive-hyperactive symptoms, whereas the subsidiary phonological and visuospatial storage/rehearsal systems demonstrated a more limited yet distinct relationship with children's social problems.

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J Abnorm Psychol. 2011;120:528-42.

DO EXECUTIVE AND REACTIVE DISINHIBITION MEDIATE THE EFFECTS OF FAMILIAL SUBSTANCE USE DISORDERS ON ADOLESCENT EXTERNALIZING OUTCOMES?

Handley ED, Chassin L, Haller MM, et al.

The present study examined the potential mediating roles of executive and reactive disinhibition in predicting conduct problems, attention-deficit/hyperactivity disorder (ADHD) symptoms, and substance use among adolescents with and without a family history of substance use disorders. Using data from 247 high-risk adolescents, parents, and grandparents, structural equation modeling indicated that reactive disinhibition, as measured by sensation seeking, mediated the effect of familial drug use disorders on all facets of the adolescent externalizing spectrum. Executive disinhibition, as measured by response disinhibition, spatial short term memory, and "trait" impulsivity, was associated with ADHD symptoms. Moreover, although executive functioning weakness were unrelated to familial substance use disorders, adolescents with familial alcohol use disorders were at risk for "trait" impulsivity marked by a lack of planning. These results illustrate the importance of "unpacking" the broad temperament style of disinhibition and of studying the processes that underlie the commonality among facets of the externalizing spectrum and processes that predict specific externalizing outcomes.

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J Adolesc Health. 2011 Jul;49:7-14.

RECEIVING TREATMENT FOR ATTENTION-DEFICIT HYPERACTIVITY DISORDER: DO THE PERSPECTIVES OF ADOLESCENTS MATTER?

Bussing R, Zima BT, Mason DM, et al.

Purpose: This study describes the perspectives of parents and adolescents regarding clinical need for and attitudes toward care for attention-deficit hyperactivity disorder (ADHD). In addition, it explores as to how these views relate to past year usage of mental health services.

Methods: Parents and adolescents were interviewed 6 years after the school district was screened for ADHD. Using standardized measures, mental health service usage, adolescent and parent perceived clinical needs (ADHD symptoms, disruptive behavior disorders, anxiety and/or depression, functioning), and enabling attitudes (treatment receptivity, ADHD stigma), as well as parent factors (caregiver strain, distress, instrumental social support) were assessed. Nested logistic regression modeling was used to determine the hierarchical contribution of parent and adolescent perspectives on past year service usage, after adjusting for previous usage of mental health services. Stepwise regression was conducted to identify the variables that were most predictive of service usage.

Results: Among the adolescents who were at a high risk for ADHD, 79% had a history of lifetime mental health service usage, but only 42% had received any kind of mental health services in the past year. In hierarchical modeling, only parent inattention ratings and medication receptivity and adolescent ADHD stigma perceptions contributed significantly toward improved model fit. Stepwise regression confirmed these three variables to be predictors (OR: 1.2, 3.8, and .2, respectively) and identified adolescents-reported functioning as an additional predictor of service usage (OR: 1.1).

Conclusion: Perceptions of adolescents regarding the stigma related to ADHD are influential in treatment receipt. Quality improvement interventions for adolescents with ADHD should include psychoeducational interventions for adolescents and their parents that target medication receptivity and the stigma related to ADHD.

J Behav Ther Exp Psychiatry. 2011;42:488-96.

CONTEXTUAL INFLUENCE OF HIGHLY VALUED REWARDS AND PENALTIES ON DELAY DECISIONS IN CHILDREN WITH ADHD.

Marx I, Pieper J, Berger C, et al.

In this study, we examined the influence of both reward and penalty on delay decisions in subjects with ADHD. Eighteen 6- to 13-year-old boys with ADHD (combined or hyperactive-impulsive subtype) along with age- and IQ-matched control participants performed a memory game. If the children were successful at the game, they could choose between a small immediate reward (one white chip in exchange for 5 s of waiting) or a large delayed reward (two white chips in exchange for 60 s of waiting). If they failed, they could choose between a large immediate penalty (two black chips in exchange for 5 s of waiting) or a small delayed penalty (one black chip in exchange for 60 s of waiting). Subsequent to task completion, white chips were exchanged for video time and black chips were exchanged with completion of a written task. All of the participants, regardless of ADHD diagnosis, were motivated to complete the task and chose the delayed alternative most often. We conclude that under highly motivating conditions, children with ADHD are not more delay averse than children from the control group with respect to anticipation of reward and penalty.

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J Child Adolesc Psychopharmacol. 2011 Jun;21:295-97.

IDIOSYNCRATIC LIVER FAILURE PROBABLY ASSOCIATED WITH ATOMOXETINE: A CASE REPORT.

Erdogan A, Ozcay F, Piskin E, et al.

In this case report, we present a case of serious liver injury that needed liver transplantation after 5 days of atomoxetine treatment. The patient was a 10-year-old boy who was first seen at age 9 at a child and adolescent psychiatry outpatient clinic in Zonguldak, Turkey. He was brought in by his mother with complaints of hyperactivity, attention difficulties, and forgetfulness since infancy and school failure since beginning of the school period. After detailed psychiatric evaluation, he was diagnosed with ADHD. As the patient showed minimal improvement of ADHD symptoms with the methylphenidate IR treatment, methylphenidate IR was discontinued and he was started on atomoxetine after 1 week of methylphenidate discontinuation. This patient's clinical features, laboratory and radiologic findings, and the histology of liver explants indicated a probable positive relationship between atomoxetine exposure and ALF (acute liver failure). Consistent with the present case and other reported cases, monitoring of liver function tests should be made at the onset of atomoxetine therapy.

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Journal of Clinical Child and Adolescent Psychology. 2011 Jul;40:519-31.

PATTERNS AND PREDICTORS OF ADOLESCENT ACADEMIC ACHIEVEMENT AND PERFORMANCE IN A SAMPLE OF CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Langberg JM, Molina BSG, Arnold LE, et al.

The current study examined predictors of academic achievement, measured by standardized test scores, and performance, measured by school grades, in adolescents (Mn age = 16.8) who met diagnostic criteria for Attention-Deficit/Hyperactivity Disorder (ADHD)—Combined type in early childhood (Mn age = 8.5; N = 579). Several mediation models were also tested to determine whether ADHD medication use, receipt of special education services, classroom performance, homework completion, or homework management mediated the relationship between symptoms of ADHD and academic outcomes. Childhood predictors of adolescent achievement differed from those for performance. Classroom performance and homework management mediated the relationship between symptoms of inattention and academic outcomes.

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Journal of Clinical Child and Adolescent Psychology. 2011 Jul;40:532-45.

THE IMPACT OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER ON PREADOLESCENT ADJUSTMENT MAY BE GREATER FOR GIRLS THAN FOR BOYS.

Elkins IJ, Malone S, Keyes M, et al.

Whether gender differences exist in the impairment associated with attention-deficit/hyperactivity disorder (ADHD) is still largely unknown, because most samples have few affected girls or include only one sex. The current study evaluated whether ADHD affects adjustment differently for girls than boys in a population-based cohort of 11-year-olds (520 girls, 478 boys). Those with a DSM-IV diagnosis of ADHD (predominantly inattentive, hyperactive-impulsive, or combined) were compared to those without ADHD on teacher, parent, and child reports of academics, peer relationships, self-concept, clinical symptoms, and treatment. Although boys and girls with ADHD experienced difficulties in all areas, girls with ADHD, especially the inattentive subtype, were more negatively affected in academics and peer relationships. Inattentive girls were less popular and more likely to be bullied than girls without ADHD, whereas inattentive boys were not. The social isolation experienced by many girls with ADHD deserves greater attention.

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J Dev Behav Pediatr. 2011 Jul;32:439-46.

COMORBID ADHD AND ANXIETY AFFECT SOCIAL SKILLS GROUP INTERVENTION TREATMENT EFFICACY IN CHILDREN WITH AUTISM SPECTRUM DISORDERS.

Antshel KM, Polacek C, McMahon M, et al.

Objective: To assess the influence of psychiatric comorbidity on social skill treatment outcomes for children with autism spectrum disorders (ASDs).

Methods: A community sample of 83 children (74 males, 9 females) with an ASD (mean age = 9.5 yr; SD = 1.2) and common comorbid disorders participated in 10-week social skills training groups. The first 5 weeks of the group focused on conversation skills and the second 5 weeks focused on social problem solving skills. A concurrent parent group was also included in the treatment. Social skills were assessed using the Social Skills Rating System. Ratings were completed by parents at pre- and posttreatment time periods.

Results: Children with ASD and children with an ASD and comorbid anxiety disorder improved in their parent reported social skills. Children with ASD and comorbid attention deficit/hyperactivity disorder failed to improve.

Conclusion: Psychiatric comorbidity affects social skill treatment gains in the ASD population.

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J Neurochem. 2011;118:222.

THE ASSOCIATION BETWEEN CATECHOL-OMETHYLTRANSFERASE GENE VARIANTS AND CHILDHOOD ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Nikolac M, Hercigonja Novkovic V, Curkovic M, et al.

Attention deficit hyperactivity disorder (ADHD) is a multifactorial, highly heritable developmental disorder characterized by behavioral symptoms of impulsivity, hyperactivity and/or inattention. The enzyme catechol-O-methyltransferase (COMT), which is responsible for the degradation of catecholamines, could have an important role in genetic susceptibility to ADHD. COMT could play a significant role in modulating dopamine levels in the prefrontal cortex which was implicated in ADHD etiology. We aimed to analyze the association of COMT Val108/158Met (rs4680) polymorphism which affects COMT activity with ADHD features since genetic Studies of the functional Val158Met polymorphism in ADHD have been inconsistent. The study included 113 medication free children with ADHD diagnosed according to the DSM-IV criteria and 187 children without psychiatric diagnoses and free of medication that served as control group. Genotyping was done using the TaqMan SNP Genotyping Assay. We found an association between Val108/158Met polymorphism and the symptoms of ADHD in male, but not in female children. Lack of association in female children is probably due to a small number of female patients with ADHD, which represents the limitation of this study. We also found an association with ADHD features when comparing

Val carriers to Met/Met homozygotes in male children. These differences were especially significant when comparing male patients with combined type of ADHD with healthy control subjects. Our results confirmed the association between COMT variants and ADHD in male children, which was due to the higher frequency of Met/Met homozygotes in children with ADHD compared to healthy controls. These results suggest that carriers of the high activity COMT variant are less prone to develop ADHD. This study also suggests that COMT Val108/158Met polymorphism is associated with the ADHD combined subtype.

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J Neurother. 2010;14:367-68.

NEUROFEEDBACK TRAINING TO IMPROVE ATTENTION AND CONTROL ALERTNESS IN ADHD.

Sokhadze E, Sokhadze G, Sears L.

Introduction Neurofeedback-based treatment of ADHD has received substantial empirical support in recent years (Arns et al., 2009). Neurofeedback effects were manifested not only in clinical improvements but also in normalizations of qEEG patterns (Gevensleben et al., 2009) and ERP (Kropotov et al., 2005). Positive effects of neurofeedback in ADHD were achieved with several different protocols (e.g., SMR=theta=beta, slow beta=theta, slow cortical potential, etc.); however, in most studies it was outlined that number and lengths of neurofeedback sessions, location of EEG electrodes, and motivation of participants are important factors determining success of treatment in children with ADHD. In this exploratory study we investigated effects of 12 sessions of prefrontal neurofeedback on behavioral performance in IVA+Plus test in 8 patients with ADD=ADHD. One of the aims was to investigate whether using EEG measures to control size and brightness of a DVD is effective for maintaining motivational engagement of children with ADHD during training. Method All 8 patients with ADHD diagnosis were evaluated and referred to the lab from the Weisskopf Child Evaluation Center. Neurofeedback training was conducted on weekly basis with 30-min-long sessions using 12 different fragments of documentary films depicting nature scenes (BBC Planet Earth series). EEG was recorded from the prefrontal site (FPz) referenced to the left earlobe. To enhance focus, participants were trained to suppress wide band spectrum, whereas alertness parameter was a wideband measure of the upward shift of the frequencies in the EEG. Visual feedback was arranged in a form of control of brightness, size, and continuation of the documentary by the nullfocus and alertnessnull measures. Auditory feedback was used to inform the participant when these two measures were under the threshold level. The IVA+Plus test was administered before and after neurofeedback course in each participant. Another clinical behavioral outcome included measures from the Aberrant Behavior Checklist (ABC). The ABC (Aman & Singh, 1994) is a clinician-administered rating scale assessing five problem areas: Irritability, Lethargy=Social Withdrawal, Stereotypy, Hyperactivity, and Inappropriate Speech, and is based on caregiver reports. Results and Conclusion Neurofeedback training aimed at enhancement of focus and alertness measures was accompanied by improved performance on IVA+Plus test and lowered Hyperactivity and Irritability scores of the ABC. Self-regulation of prefrontal EEG measures of focus and alertness using protocol with DVD-control as a visual feedback was effective in maintaining interest and motivational engagement of children with ADHD. Twelve 30-min-long sessions of neurofeedback were sufficient to achieve ability to control EEG parameters of interest in most of ADHD participants.

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J Neurother. 2010;14:337-38.

CLASSIFICATION OF ADHD PATIENTS ON THE BASIS OF INDEPENDENT ERP COMPONENTS USING A MACHINE LEARNING SYSTEM-CROSSVALIDATION WITH NEW DATA.

Mueller A.

Background In the context of sensory and cognitive processing deficits in ADHD patients, there is considerable evidence of altered event related potentials (ERP). Most of the studies, however, were done on ADHD children. Using the independent component analysis (ICA) method, ERPs can be decomposed into functionally different components. Using the classification method of support vector machine, this study

investigated whether features of independent ERP components can be used for discrimination of ADHD adults from healthy participants.

Methods Two groups of age- and sex-matched adults (74 ADHD, 74 controls) performed a visual two stimulus GO=NOGO task. ERP responses were decomposed into independent components by means of ICA. A feature selection algorithm defined a set of independent component features, which was entered into a support vector machine.

Results The feature set consisted of five latency measures in specific time windows, which were collected from four different independent components. The independent components involved were a novelty component, a sensory related and two executive function related components. Using a 10-fold cross-validation approach, classification accuracy was 92%.

Conclusions A crossvalidation study by means of support vector machine with new data of Norwegian research group to classify ADHD adults which indicates that classification by means of linear and nonlinear methods is feasible in the context of clinical groups. Further, independent ERP components have been shown to provide features that can be used for characterizing clinical populations. The transformation from research into clinical praxis will be shown.

J Neurother. 2010;14:330-31.

ADULT ADHD: PHYSIOLOGICAL AROUSAL DURING RESTING STATE AND TASK CONDITIONS.

Gonzales M, Wyckoff S, Strehl U.

Objective Recent research on Attention-Deficit= Hyperactivity Disorder (ADHD) has focused on central nervous system (CNS) arousal, QEEG Phenotypes, and EEG vigilance models. Distinct and stable patterns of EEG activity have emerged using these models and various subtypes of ADHD identified. However, the assessment and profile of peripheral physiological measures of arousal in ADHD has been less consistent and requires further investigation. Mangina and Beuzeron-Mangina (1992) reported that children and adolescents with learning disabilities=ADHD have an impaired regulation and asymmetries in electrodermal response during cognitive tasks compared to controls subjects. In a recent study Barry, Clarke, Johnstone, McCarthy, and Selikowitz (2009) reported no significant correlation between theta=beta ratios and skin conductance level (SCL) in an adolescent ADHD population. However, reduced SCL, alpha, and beta power was observed in the ADHD group compared with control subjects. Finally, analysis of EEG Vigilance in a childhood ADHD population indicated that individuals with ADHD have more frequent vigilance state shifts and tend to spend more time in lower vigilance stages (Sander, Arns, Olbrich, & Hegerl, in press). EEG Vigilance and heart rate was accessed in a control population and the average heart rate decreased as participants entered the lower arousal=vigilance stages (Olbrich et al., 2009). Additional research is needed to identify the baseline and task specific physiological response in an adult ADHD population. We hypothesize that adults ADHD will exhibit reduced physiological arousal (reduced heart rate and parasympathetic dominance of HRV and EDR variables) compared to controls during resting state and cognitive=vigilance tasks.

Methods Heart rate, heart rate variability (HRV), respiration rate, and electrodermal response (EDR) activity was investigated as a function of CNS arousal=vigilance during resting state, CNV task, and auditory oddball task in two groups of adults (18+ years old), with and without ADHD. Adult ADHD participants met DSM-IV criteria for combined, hyperactive, or attention type ADHD. Participants in both groups reported no additional serious physical, neurological, or psychiatric disorders, had a Full-Scale IQ greater than 80, and were right hand dominant. Arousal was defined in terms sympathetic and parasympathetic dominance in relation to heart rate, respiration, HRV, and GSR. Analysis of physiological measures was conducted for both groups and conditions.

Results This investigation is part of a long-term treatment study currently in progress. The most current results in relation to the pretreatment physiological measure of clinical and control participants will be presented at the time of the presentation.

Conclusion Specific findings will be discussed and implication in the current treatment study and future research will be explored.

J Neurother. 2010;14:331-32.

THETA=BETA AND SCP TRAINING IN CHILDREN WITH ATTENTION-DEFICIT=HYPERACTIVITY DISORDER: BEHAVIORAL AND NEUROPHYSIOLOGICAL RESULTS FROM A RANDOMIZED CONTROLLED TRIAL.

Heinrich H.

Neurofeedback (NF) could help to improve attentional and self-management capabilities in children with ADHD. In a randomized controlled trial, we evaluated the clinical efficacy of neurofeedback training using an attention skills training as control condition. We also compared slow cortical potential (SCP) training, which addresses phasic regulation of cortical excitability, to theta=beta training both at the behavioral and the neurophysiological level. Ninety-four children with ADHD, aged 8 to 12 years, either completed 36 sessions of NF training (n=59) or a computerized attention skills training (n=35). NF training consisted of one block of theta=beta training and one block of SCP training, each block comprising 18 units of 50 min (balanced order). At the behavioral level, NF was superior to the control training concerning core ADHD symptomatology as well as associated domains. For the primary outcome measure (improvement in the FBB-HKS total score, parent ratings), the effect size was .60. For theta=beta and SCP training, comparable improvements were observed. At the neurophysiological level (resting EEG, event-related potentials during the attention network test), specific effects for the two NF protocols could be demonstrated. For theta=beta training, for example, decrease of theta activity in the EEG was associated with a reduction of ADHD symptomatology. SCP training was accompanied, for example, by an increase of the contingent negative variation in the attention network test, that is, children were able to allocate more resources for preparation. EEG-and ERP-based predictors were found. Future studies should address inter alia how to optimize (individualize) neurofeedback training, that is, which training protocol (or combination of protocols) should be used for a particular child.

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J Paediatr Child Health. 2011;47:512-17.

TREATMENT EXPERIENCES OF CHILDREN AND ADOLESCENTS WITH ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER.

Leggett C, Hotham E.

Aim: To gain insight into the treatment experiences of children and adolescents diagnosed with attention-deficit/hyperactivity disorder (ADHD).

Methods: Convenience sampling was used to recruit eligible parents and carers at paediatric clinics of the Children's, Youth and Women's Health Service to participate in an interview to discuss experiences, using a semi-structured questionnaire.

Results: Thirty-five interviews were conducted. Twenty-five subjects had trialled an average of 1.5 interventions prior to receiving an ADHD diagnosis, namely, dietary modifications (46%), behavioural therapy (24%), learning assistance (8%) and natural remedies (8%). Following an ADHD diagnosis, 25 subjects tried an average of 2.8 interventions, most commonly behavioural therapies (48%), expressive therapies (48%) and fish oil (36%). All subjects started psychostimulant medication after receiving an ADHD diagnosis. Despite 52% of parents expressing initial reluctance towards psychostimulants, 97% reported positive experiences with use in terms of schooling, social interaction and family life. Of those being treated with psychostimulants, 22 (73%) were concurrently using other treatments at the time of interview.

Conclusions: Few patients use psychostimulant medication in isolation, with the majority of parents using multiple approaches to manage their child's behaviour. Parents tried a variety of therapies before commencing psychostimulant medication, often because of fears regarding psychostimulant safety. Parents were generally happy with the results gained; however adolescents interviewed were less convinced of the benefits of psychostimulants.

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Journal of Positive Behavior Interventions. 2011 Jul;13:168-77.

THE EFFECTS OF THE FIRST STEP TO SUCCESS PROGRAM ON ACADEMIC ENGAGEMENT BEHAVIORS OF TURKISH STUDENTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Ozdemir S.

The present study evaluated the effectiveness of the First Step to Success (FSS) early intervention program with Turkish children identified with attention-deficit/hyperactivity disorder (ADHD). Intervention effectiveness on target children's academic engagement behaviors was studied. Participants were four 7-year-old first-grade students in Ankara, the capital city of Turkey. The design was a single-subject, multiple-baseline, across-groups design. Findings from the study revealed that all target children displayed increased levels of academic engagement behaviors with the introduction of the FSS program and at 3 months' follow-up. However, follow-up data at 2 years indicated that although three students continued to display high levels of academic engagement behavior, one student did not catch up to these levels of performance. Limitations are discussed and implications for future research are presented.

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J Psychopathol Behav Assess. 2011;1-11.

THE EFFECTS OF STIMULANT MEDICATION ON FREE RECALL OF STORY EVENTS AMONG CHILDREN WITH ADHD.

Bailey UL, Derefinko KJ, Milich R, et al.

This study investigated group differences in the recalls of stories by children with attention-deficit/hyperactivity disorder (ADHD) and comparison peers, and whether stimulant medication improved the story recall of those children with ADHD relative to a placebo condition. Children (N = 42) were asked to recall both televised and audio taped stories. Children's free recall scripts were assessed whether information recalled was coherent, part of the causal chain, and important to the story. Relative to comparison peers, children with ADHD showed less sensitivity to events central to the stories and causal chain status of story events in recall, and produced less coherent recall of the audio taped stories. Upon establishing group differences in performance, additional analyses were performed for children with ADHD. Among those children with ADHD, stimulant medication had only limited beneficial effects on the story recall. Although stimulant medication was associated with increases in the percent of events recalled, it did not increase these children's recall of events central to the stories, and had no effect on the coherence of recalls. Implications of these results for guiding future academic interventions are discussed.

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J Psychopathol Behav Assess. 2011;33:299-307.

RISK TAKING AND SENSITIVITY TO PUNISHMENT IN CHILDREN WITH ADHD, ODD, ADHD+ODD, AND CONTROLS.

Humphreys KL, Lee SS.

We used the Balloon Analog Risk Task (BART) to examine risk taking and sensitivity to punishment, two relevant aspects of behavioral inhibition, in 203 school-age children with attention-deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), ADHD+ODD, and controls. Participants earned points on the BART by pumping 30 separate balloons that exploded at variable intervals. No points were earned on a trial when a balloon exploded. The number of pumps across all balloons estimated risk taking and the reduction in pumps following balloon explosions was interpreted as an indicator of sensitivity to negative punishment. We found that all groups significantly differed from one another on risk taking. The ADHD+ODD group pumped the most, followed by the ODD, ADHD, and the control group, respectively. For sensitivity to negative punishment, all groups performed differently, with the ODD group showing the least sensitivity to an exploded balloon, followed by the ADHD, control, and ADHD+ODD groups, respectively. Children with ADHD+ODD demonstrated significantly different patterns of risk taking and sensitivity to negative punishment than children with either ADHD-only or ODD-only. ADHD youth with comorbid ODD had the greatest levels of risk taking, but they were also the most sensitive to negative

punishment. The relationship between ADHD and ODD, as well as the nature of comorbidity in constructs related to risk taking and related behaviors, are discussed.

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Journal of Social and Clinical Psychology. 2011 Jun;30:616-46.

IF-THEN PLANS BENEFIT EXECUTIVE FUNCTIONS IN CHILDREN WITH ADHD.

Gawrilow C, Gollwitzer PM, Oettingen G.

Children with ADHD encounter multiple academic and interpersonal problems presumably due to insufficient executive functions. In two studies we measured executive functions (i.e., shifting, resistance to distraction) and assessed whether children with ADHD can empower these functions by forming implementation intentions (i.e., if-then plans; Gollwitzer, 1999). Children with ADHD made fewer perseverative errors on a shifting task (Study 1) when instructed to make if-then plans. They also benefited from if-then plans in solving math problems that required both working memory and the inhibition of distractions (Study 2). Results concerning implications for research on if-then planning in children with ADHD are discussed.

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Journal of the American Academy of Child & Adolescent Psychiatry. 2011 Jun;50:533-35.

PROSPECTIVE FOLLOW-UP STUDIES OF ADHD: HELPING ESTABLISH A VALID DIAGNOSIS IN ADULTS.

Hechtman L.

The Journal of the American Academy of Child and Adolescent Psychiatry has long been recognized and valued as a leading publication in the field. The Journal has also played a role in publishing many of the controlled prospective follow-up studies of children with ADHD into adolescence and adulthood. As this editorial will outline, these studies helped establish the fact that ADHD often persists into adolescence and adulthood, and thus laid the groundwork for the validity of the ADHD diagnosis in adulthood, which is now generally accepted. The long-term controlled prospective follow-up studies of children with ADHD, many of which were first published in the Journal and discussed in this editorial, helped establish the validity of this condition in adults and promoted the diagnosis and treatment of patients who had previously gone undiagnosed and untreated.

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Journal of the American Academy of Child & Adolescent Psychiatry. 2011 Jun;50:554-62.

SHORT-TERM PERSISTENCE OF DSM-IV ADHD DIAGNOSES: INFLUENCE OF CONTEXT, AGE, AND GENDER.

Bauermeister JJ, Bird HR, Shrout PE, et al.

Little is known about the effect of social context and gender on persistence of attention-deficit/hyperactivity disorder (ADHD) in children of early and middle school years. The study compared persistence of DSM-IV ADHD and ADHD not otherwise specified (NOS) over 2 years in two groups of Puerto Rican children. Method: A three-wave study obtained data on Puerto Rican children 5 through 13 years of age at baseline. Samples were drawn in the South Bronx in New York (n = 1,138) and two metropolitan areas in Puerto Rico (n = 1,353). The Diagnostic Interview Schedule for Children Version IV was used to diagnose ADHD and ADHD-NOS. Results: ADHD or ADHD-NOS diagnosis at wave 1 strongly predicted disorder at waves 2 and 3. ADHD had a significantly stronger predictive effect than ADHD-NOS consistently across site and gender. There was a significant interaction with baseline age. For those younger at baseline, the strength of the prediction of ADHD-NOS was relatively weak; for older children, the presence of ADHD-NOS at baseline predicted risk of subsequent ADHD or ADHD-NOS. Conclusions: Persistence of ADHD in children of similar ethnicity does not manifest differently across context and gender. Results suggest that age-specific symptom criteria and modification of age-of-onset criteria should be considered for the diagnosis.

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J Am Acad Child Adolesc Psychiatry. 2011;50:828-37.

ABNORMAL AMYGDALAR ACTIVATION AND CONNECTIVITY IN ADOLESCENTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Posner J, Nagel BJ, Maia TV, et al.

Objective: Emotional reactivity is one of the most disabling symptoms associated with attention-deficit/hyperactivity disorder (ADHD). We aimed to identify neural substrates associated with emotional reactivity and to assess the effects of stimulants on those substrates.

Method: We used functional magnetic resonance imaging (fMRI) to assess neural activity in adolescents with (n = 15) and without (n = 15) ADHD while they performed a task involving the subliminal presentation of fearful faces. Using dynamic causal modeling, we also examined the effective connectivity of two regions associated with emotional reactivity, i.e., the amygdala and the lateral prefrontal cortex (LPFC). The participants with ADHD underwent scanning both on and off stimulant medication in a counterbalanced fashion.

Results: During the task, we found that activity in the right amygdala was greater in adolescents with ADHD than in control subjects. In addition, in adolescents with ADHD, greater connectivity was detected between the amygdala and LPFC. Stimulants had a normalizing effect on both the activity in the right amygdala and the connectivity between the amygdala and LPFC.

Conclusions: Our findings demonstrate that in adolescents with ADHD, a neural substrate of fear processing is atypical, as is the connectivity between the amygdala and LPFC. These findings suggest possible neural substrates for the emotional reactivity that is often present in youths with ADHD, and provide putative neural targets for the development of novel therapeutic interventions for this condition.

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J Am Acad Child Adolesc Psychiatry. 2011.

DISENTANGLING CHILD AND FAMILY INFLUENCES ON MATERNAL EXPRESSED EMOTION TOWARD CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Cartwright KL, Bitsakou P, Daley D, et al.

Objective: We used multi-level modelling of sibling-pair data to disentangle the influence of proband-specific and more general family influences on maternal expressed emotion (MEE) toward children and adolescents with attention-deficit/hyperactivity disorder (ADHD).

Method: MEE was measured using the Five Minute Speech Sample (FMSS) for 60 sibling pairs (aged 5 through 17 years) each comprising one proband with ADHD and one child without ADHD. Questionnaire measures were used to assess child and adolescent conduct and emotional problems and maternal depression and ADHD. Multi-level models partitioned the effects of five MEE components (initial statement [IS], relationship [REL], warmth [WAR], critical comments [CC], and positive comments [PC]) into proband-specific and general family effects.

Results: Significant proband-specific effects were confirmed for all MEE components, with higher levels of MEE expressed toward probands with ADHD than siblings without ADHD. For REL, PC, and CC, this effect was explained by comorbid child conduct problems rather than ADHD. Only low WAR was associated with child ADHD itself. Furthermore, only low WAR was related to variations in more general family characteristics, especially levels of maternal depression.

Conclusions: MEE toward children with ADHD was influenced by proband-specific factors. For most components, these were driven by comorbid symptoms of conduct problems rather than ADHD itself. WAR was different; it was influenced by both child-specific and more general characteristics of the family. Further studies utilising a longitudinal design are required to establish the direction of causation and extend our understanding of the relationship between EE components and ADHD.

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J Am Acad Child Adolesc Psychiatry. 2011.

OMEGA-3 FATTY ACID SUPPLEMENTATION FOR THE TREATMENT OF CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER SYMPTOMATOLOGY: SYSTEMATIC REVIEW AND META-ANALYSIS.

Bloch MH, Qawasmi A.

Objective: Several studies have demonstrated differences in omega-3 fatty acid composition in plasma and in erythrocyte membranes in patients with attention-deficit/hyperactivity disorder (ADHD) compared with unaffected controls. Omega-3 fatty acids have anti-inflammatory properties and can alter central nervous system cell membrane fluidity and phospholipid composition. Cell membrane fluidity can alter serotonin and dopamine neurotransmission. The goal of this meta-analysis was to examine the efficacy of omega-3 fatty acid supplementation in children with ADHD.

Method: PubMed was searched for randomized placebo-controlled trials examining omega-3 fatty acid supplementation in children with ADHD symptomatology. The primary outcome measurement was standardized mean difference in rating scales of ADHD severity. Secondary analyses were conducted to determine the effects of dosing of different omega-3 fatty acids in supplements.

Results: Ten trials involving 699 children were included in this meta-analysis. Omega-3 fatty acid supplementation demonstrated a small but significant effect in improving ADHD symptoms. Eicosapentaenoic acid dose within supplements was significantly correlated with supplement efficacy. No evidence of publication bias or heterogeneity between trials was found.

Conclusion: Omega-3 fatty acid supplementation, particularly with higher doses of eicosapentaenoic acid, was modestly effective in the treatment of ADHD. The relative efficacy of omega-3 fatty acid supplementation was modest compared with currently available pharmacotherapies for ADHD such as psychostimulants, atomoxetine, or (alpha)2 agonists. However, given its relatively benign side-effect profile and evidence of modest efficacy, it may be reasonable to use omega-3 fatty acid supplementation to augment traditional pharmacologic interventions or for families who decline other psychopharmacologic options.

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J Am Acad Child Adolesc Psychiatry. 2011.

RANDOMIZED CONTROLLED TRIAL OF OSMOTIC-RELEASE METHYLPHENIDATE WITH COGNITIVE-BEHAVIORAL THERAPY IN ADOLESCENTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND SUBSTANCE USE DISORDERS.

Riggs PD, Winhusen T, Davies RD, et al.

Objective: To evaluate the efficacy and safety of osmotic-release methylphenidate (OROS-MPH) compared with placebo for attention-deficit/hyperactivity disorder (ADHD), and the impact on substance treatment outcomes in adolescents concurrently receiving cognitive-behavioral therapy (CBT) for substance use disorders (SUD).

Method: This was a 16-week, randomized, controlled, multi-site trial of OROS-MPH + CBT versus placebo + CBT in 303 adolescents (aged 13 through 18 years) meeting DSM-IV diagnostic criteria for ADHD and SUD. Primary outcome measures included the following: for ADHD, clinician-administered ADHD Rating Scale (ADHD-RS), adolescent informant; for substance use, adolescent-reported days of use in the past 28 days. Secondary outcome measures included parent ADHD-RS and weekly urine drug screens (UDS).

Results: There were no group differences on reduction in ADHD-RS scores (OROS-MPH: -19.2, 95% confidence interval [CI], -17.1 to -21.2; placebo, -21.2, 95% CI, -19.1 to -23.2) or reduction in days of substance use (OROS-MPH: -5.7 days, 95% CI, 4.0-7.4; placebo: -5.2 days, 95% CI, 3.5-7.0). Some secondary outcomes favored OROS-MPH, including lower parent ADHD-RS scores at 8 (mean difference = 4.4, 95% CI, 0.8-7.9) and 16 weeks (mean difference = 6.9; 95% CI, 2.9-10.9) and more negative UDS in OROS-MPH (mean = 3.8) compared with placebo (mean = 2.8; $p = .04$).

Conclusions: OROS-MPH did not show greater efficacy than placebo for ADHD or on reduction in substance use in adolescents concurrently receiving individual CBT for co-occurring SUD. However, OROS-MPH was relatively well tolerated and was associated with modestly greater clinical improvement

on some secondary ADHD and substance outcome measures. Clinical Trial Registration Information- Attention Deficit Hyperactivity Disorder (ADHD) in Adolescents with Substance Use Disorders (SUD); <http://clinicaltrials.gov; NCT00264797>.

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J Am Acad Child Adolesc Psychiatry. 2011;50:807-17.

GENOME-WIDE ASSOCIATION STUDY OF THE CHILD BEHAVIOR CHECKLIST DYSREGULATION PROFILE.

Mick E, McGough J, Loo S, et al.

Objective: A potentially useful tool for understanding the distribution and determinants of emotional dysregulation in children is a Child Behavior Checklist profile, comprising the Attention Problems, Anxious/Depressed, and Aggressive Behavior clinical subscales (CBCL-DP). The CBCL-DP indexes a heritable trait that increases susceptibility for later psychopathology, including severe mood problems and aggressive behavior. We have conducted a genome-wide association study of the CBCL-DP in children with attention-deficit/hyperactivity disorder (ADHD).

Method: Families were ascertained at Massachusetts General Hospital and University of California, Los Angeles. Genotyping was conducted with the Illumina Human1M or Human1M-Duo BeadChip platforms. Genome-wide association analyses were conducted with the MQFAM multivariate extension of PLINK.

Results: CBCL data were available for 341 ADHD offspring from 339 ADHD affected trio families from the UCLA (N = 128) and the MGH (N = 213) sites. We found no genome-wide statistically significant associations but identified several plausible candidate genes among findings at $p < 5E-05$: TMEM132D, LRRC7, SEMA3A, ALK, and STIP1.

Conclusions: We found suggestive evidence for developmentally expressed genes operant in hippocampal dependent memory and learning with the CBCL-DP.

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Neurosci Lett. 2011;502:89-93.

ABNORMAL SPONTANEOUS BRAIN ACTIVITY IN MEDICATION-NAIVE ADHD CHILDREN: A RESTING STATE FMRI STUDY.

Yang H, Wu QZ, Guo LT, et al.

Abnormal baseline brain functional connectivity in attention-deficit/hyperactivity disorder (ADHD) has been revealed in a number of studies by using resting-state functional MRI (rfMRI). The aim of this study was to investigate the spontaneous frontal activities in medication-naive ADHD boys using the rfMRI derived index, amplitude of low-frequency fluctuation (ALFF). In total 17 ADHD boys and 17 matched controls were recruited to undergo rfMRI scan on a 3.0 T MRI system. For each subject, six oblique slices covering the frontal areas were acquired with a rapid sampling rate (TR = 400. ms). Functional images were processed in AFNI for calculation of ALFF and then group comparison was performed using voxel-based t-test. With a corrected threshold of $p < 0.05$ determined by AlphaSim, we found that in comparison with controls, ADHD patients demonstrated higher ALFF values in the left superior frontal gyrus and sensorimotor cortex (SMC), and lower ALFF values in the bilateral anterior, middle cingulate and the right middle frontal gyrus (MFG). Significant correlations were found between patients' WSCT measures and the peak ALFF located in the right MFG ($r = 0.69$, $p = 0.02$), and the left SMC ($r = 0.65$, $p = 0.03$). Our results revealed abnormal frontal activities at resting state associated with underlying physiopathology of ADHD, and suggested the ALFF analysis to be a potential approach in further exploration of this disorder.

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Neurotoxic Res. 2011;1-15.

PHYSICAL EXERCISE ALLEVIATES ADHD SYMPTOMS: REGIONAL DEFICITS AND DEVELOPMENT TRAJECTORY.

Archer T, Kostrzewa RM.

The heterogeneous, chronic, and proliferating aspect of attention deficit hyperactivity disorder (ADHD) and comorbidities covers heritability, cognitive, emotional, motor, and everyday behavioral domains that place individuals presenting the condition at some considerable disadvantage. Disruption of "typical developmental trajectories" in the manifestation of gene-environment interactive predispositions implies that ADHD children and adolescents may continue to perform at defective levels as adults with regard to academic achievement, occupational enterprises, and interpersonal relationships, despite the promise of pharmacotherapeutic treatments. Physical exercise provides a plethora of beneficial effects against stress, anxiety, depression, negative affect and behavior, poor impulse control, and compulsive behavior concomitant with improved executive functioning, working memory and positive affect, as well as improved conditions for relatives and care-givers. Brain-derived neurotrophic factor, an essential element in normal brain development that promotes health-associated behaviors and quality-of-life, though reduced in ADHD, is increased markedly by the intervention of regular physical exercise. Functional, regional, and biomarker deficits, as well as hypothalamic-pituitary-adrenal disruptions, have been improved through regular and carefully applied exercise programs. In view of the complications involving ADHD with co-morbidities, such as obesity, the influence of regular physical exercise has not been found negligible. Physical exercise bestows a propensity for eventual manifestation of "redifferentiated" developmental trajectories that may equip ADHD adults with a prognosis that is more adaptive functionally, independent of the applications of other therapeutic agents and treatments.

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Noropsikiyatr Ars. 2011;48:125-28.

ASSOCIATION BETWEEN SYMPTOM PROFILES AND IRON AND FERRITINE SERUM LEVELS IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Karakurt MN, Karabekiroglu MK, Akbas S, et al.

Objective: Symptoms of attention deficit hyperactivity disorder (ADHD) have been previously shown to be related with dopamine and noradrenaline dysfunction. Iron is the main cofactor of the tyrosine hydroxylase enzyme, the rate-limiting protein in dopamine synthesis. We aimed to investigate the association between iron/ferritin serum levels/subtypes and behavioral symptoms of ADHD.

Methods: Fifty-eight children diagnosed with ADHD according to DSM-IV criteria in Samsun Ondokuz Mayıs University Medical Faculty, Child Psychiatry outpatient clinic, were included in this study. Serum iron and ferritin levels in the participants were measured. The parents of the participants completed the Disruptive Behaviors Rating Scale-Parent Version (DBRS-PV).

Results: There was no significant difference in serum iron and ferritin levels between the ADHD subtypes ($p < 0.05$). We found a statistically significant negative correlation between the scores of DBRS-PV conduct problems and ferritin levels ($r = -0.38$, $p < 0.05$). In further analysis, when participants age, gender, parental education level, ferritin and iron levels were taken into consideration, ferritin level was found the most powerful predictor of conduct score.

Conclusion: This study revealed that serum ferritin level is significantly correlated with severity of conduct problems in children with ADHD. Especially in children with ADHD with low serum iron and ferritin levels, iron treatment would have beneficial effects on conduct problems comorbid with ADHD.

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Nutrition. 2011.

DIETARY PATTERNS AND ATTENTION DEFICIT HYPERACTIVITY DISORDER AMONG IRANIAN CHILDREN.

Azadbakht L, Esmailzadeh A.

Objective: This study was conducted to assess the relation of major dietary patterns identified by factor analysis to attention-deficit/hyperactivity disorder (ADHD) in a group of Iranian school-age children.

Methods: This cross-sectional study was conducted in 375 school-age children in Tehran, Iran. We assessed usual dietary intakes by a semiquantitative food-frequency questionnaire. The presence of ADHD was diagnosed using the questionnaire of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. Major dietary patterns were identified by factor analysis.

Results: The prevalence of ADHD was 9.7% in this population. We identified four major dietary patterns: "healthy," "Western," "sweet," and "fast food." After controlling for potential confounders, children in the top quintile of the sweet dietary pattern score had greater odds for having ADHD compared with those in the lowest quintile (odds ratio 3.95, 95% confidence interval 1.16-15.31, P for trend = 0.03). Greater adherence to the fast-food dietary pattern was significantly associated with a higher risk of having ADHD (odds ratio 3.21, 95% confidence interval 1.05-10.90, P for trend = 0.03). No overall significant associations were seen between the healthy or Western dietary pattern and ADHD.

Conclusion: We found significant independent associations between the sweet and fast-food dietary patterns and the prevalence of ADHD. Prospective studies are required to confirm these findings.

Occup Environ Med. 2011 Aug;68:557-61.

URINARY TRICHLOROPHENOL LEVELS AND INCREASED RISK OF ATTENTION DEFICIT HYPERACTIVITY DISORDER AMONG US SCHOOL-AGED CHILDREN.

Xu X, Nembhard WN, Kan H, et al.

BACKGROUND: Trichlorophenols (TCPs) are organochlorine compounds which are ubiquitous in the environment and well known for their carcinogenic effects. However, little is known about their neurotoxicity in humans.

OBJECTIVES: Our goal was to examine the association between body burden of TCPs (ie, 2,4,5-TCP and 2,4,6-TCP) and attention deficit hyperactivity disorder (ADHD).

METHODS: We calculated ORs and 95% CIs from logistic regression analyses using data from the 1999-2004 National Health and Nutrition Examination Survey (NHANES) to evaluate the association between urinary TCPs and parent-reported ADHD among 2546 children aged 6-15 years.

RESULTS: Children with low levels (<3.58 mug/g) and high levels (\geq 3.58 mug/g) of urinary 2,4,6-TCP had a higher risk of parent-reported ADHD compared to children with levels below the limit of detection (OR 1.54, 95% CI 0.97 to 2.43 and OR 1.77, 95% CI 1.18 to 2.66, respectively; p for trend=0.006) after adjusting for covariates. No association was found between urinary 2,4,5-TCP and parent-reported ADHD.

CONCLUSION: Exposure to TCP may increase the risk of behavioural impairment in children. The potential neurotoxicity of these chemicals should be considered in public health efforts to reduce environmental exposures/contamination, especially in countries where organochlorine pesticides are still commonly used.

Pediatrics. 2011;128:296-302.

MEDIATING FACTORS ASSOCIATED WITH PEDESTRIAN INJURY IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Stavrinou D, Biasini FJ, Fine PR, et al.

OBJECTIVE: Unintentional injury is the leading cause of pediatric mortality. One leading cause of unintentional injury is pedestrian injury. Children with developmental disabilities, particularly those with attention-deficit/hyperactivity disorder-combined type (ADHD-C) seem to have increased pedestrian injury risk. This study examined (1) the differences in pedestrian behavior between children with ADHD-C and normally developing comparison children and (2) the mediating factors that might link ADHD-C with pedestrian injury risk.

PATIENTS AND METHODS: A total of 78 children aged 7 to 10 years (39 children with ADHD-C diagnoses and 39 age- and gender-matched typically developing children) participated. The main outcome measure was pedestrian behavior, as measured in a semi-immersive, interactive, virtual pedestrian environment. Key pedestrian variables related to different aspects of the crossing process were identified: (1) before the

cross (ie, evaluating aspects of the crossing environment); (2) making the cross (ie, deciding to cross and initiating movement); and (3) safety of the cross (ie, safety within the pedestrian environment after the decision to cross was made).

RESULTS: Children with ADHD-C chose riskier pedestrian environments to cross within ($F_{1,72} = 4.83$; $P < .05$). No significant differences emerged in other aspects of the crossing process. Executive function played a mediating role in the relationship between ADHD-C and the safety of the cross.

CONCLUSIONS: Children with ADHD-C seem to display appropriate curbside pedestrian behavior but fail to process perceived information adequately to permit crossing safely.

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Pediatrics. 2011;128:263-70.

SECONDHAND SMOKE EXPOSURE AND NEUROBEHAVIORAL DISORDERS AMONG CHILDREN IN THE UNITED STATES.

Kabir Z, Connolly GN, Alpert HR.

OBJECTIVES: The association between parent-reported postnatal secondhand tobacco smoke exposure in the home and neurobehavioral disorders (attention-deficit/hyperactivity disorder, learning disabilities, and conduct disorders) among children younger than 12 years in the United States was examined using the 2007 National Survey on Children's Health. Excess neurobehavioral disorders attributable to secondhand smoke (SHS) exposure in the home in 2007 were further investigated.

METHODS: The methods used in this study were multivariable logistic regression models that accounted for potential confounders and complex survey designs to evaluate associations.

RESULTS: A total of 6% of 55 358 children (aged < 12 years), corresponding to a weighted total of 4.8 million children across the United States, were exposed to SHS in the home. The weighted prevalence and 95% confidence intervals of each of the children's neurobehavioral outcomes were 8.2% (7.5-8.8) with learning disabilities, 5.9% (5.5-6.4) with attention-deficit/hyperactivity disorder, and 3.6% (3.1-4.0) with behavioral and conduct disorders. Children exposed to SHS at home had a 50% increased odds of having (greater-than or equal to) 2 childhood neurobehavioral disorders compared with children who were not exposed to SHS. Boys had a significantly higher risk. Older children, especially those aged 9 to 11 years, and those living in households with the highest poverty levels were at greater risk. In absolute terms, 274 100 excess cases in total of these 3 disorders could have been prevented if children had not been exposed to SHS in their homes.

CONCLUSIONS: The findings of the study, which are associational and not necessarily causal, underscore the health burden of childhood neurobehavioral disorders that may be attributable to SHS exposure in homes in the United States.

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Psychiatr Invest. 2011;8:89-94.

SENSORY PROCESSING PROBLEMS IN CHILDREN WITH ADHD, A SYSTEMATIC REVIEW.

Ghanizadeh A.

One of the most common psychiatric disorders in children is attention deficit hyperactivity disorder (ADHD). Its course and outcome are heterogeneous. Sensory processing problems impact the nature of response to daily events. ADHD and sensory problems may occur together and interact. No published review article about sensory processing problems in children with ADHD were found. A systematic search, conducted on Pub-Med (up to January 2010), and Google Scholar, yielded 255 abstracts on sensory processing problems in children including 11 studies about sensory problems in children with ADHD. Sensory processing problems in children with ADHD is not a well studied area. Sensory processing problems in children with ADHD are more common than in typically developing children. Findings do not support that ADHD subtypes are distinct disorders with regard to sensory processing problems. However, co-morbidity with oppositional defiant disorder and anxiety are predictors of more severe sensory processing problems in children with ADHD.

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Psychiatr Invest. 2011;8:141-48.

A RANDOMIZED, OPEN-LABEL ASSESSMENT OF RESPONSE TO VARIOUS DOSES OF ATOMOXETINE IN KOREAN PEDIATRIC OUTPATIENTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Cho S, Lee SI, Yoo H, et al.

Objective: This multicenter, randomized, open-label, parallel trial aimed to provide a detailed dose-response profile for atomoxetine in Korean pediatric outpatients with attention-deficit/hyperactivity disorder (ADHD).

Methods: Male and female outpatients aged 6-18 years with ADHD meeting symptom severity criteria of 1.5 standard deviations above age and gender norms on the ADHD Rating Scale-IV-Parent: Investigator-Administered and Scored (ADHDRS-IV-Parent: Inv), and a Clinical Global Impression-ADHD-Severity score (greater-than or equal to)4 were randomized to atomoxetine (mg/kg/day) 0.2 fixed, 0.5 fixed or 0.5 (7 days), 0.8 (7 days) then 1.2 for 28 days. The primary efficacy measure was change in ADHDRS-IV-Parent: Inv total score after 6 weeks of atomoxetine treatment.

Results: Of 153 randomized patients, 83.7% were male and mean age was 9.8 (SD(plus or minus)2.4) years. The completion rate was 86.9%. A graded dose response was apparent with mean change in ADHDRS-IV-Parent: Inv total scores of -9.6, -12.3 and -14.5 with atomoxetine 0.2, 0.5 and 1.2 mg/kg/day, respectively ($p=0.024$ - F-test). Moreover, a greater reduction in ADHD symptoms, as assessed by mean change from baseline to endpoint CGI-S and mean CGI-ADHD-Improvement at endpoint, was also observed with increasing atomoxetine dose. More patients receiving atomoxetine 1.2 mg/kg/day reported (greater-than or equal to)1 treatment-emergent adverse event/s (58.3%) compared with 0.5 (40.7%; $p=0.11$) or 0.2 mg/kg/day (29.4%; $p=0.005$). These were generally mild to moderate.

Conclusion: Atomoxetine was found to be safe and well tolerated at all doses administered in Korean pediatric ADHD patients, and 1.2 mg/kg/day was an efficacious dose in this population.

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Psychiatr Invest. 2011;8:113-22.

RELIABILITY AND VALIDITY OF THE CHILD AND ADOLESCENT FUNCTIONING IMPAIRMENT SCALE IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Park JH, Lee SI, Schachar RJ.

Objective: The purpose of the present study was to develop reliable and valid parent and teacher scales for measurement of functional impairment in children and adolescents in order to assist the diagnosis of attention-deficit/hyperactivity disorder (ADHD).

Methods: Seventy-two children with ADHD fulfilling the Diagnostic and Statistical Manual of Mental Disorder, 4th Edition criteria and forty-two normal controls were enrolled in this study. Parents and teachers of the subjects completed the parent and teacher form of the preliminary items of Child and Adolescent Functioning Impairment Scale (CAFIS) made up by the authors. Based on the reliability and factor analysis, the final parent (CAFIS-parent form) and teacher version (CAFIS-teacher form) were constructed. Scales were analyzed for reliability and validity. Relative operating characteristics curve was drawn to calculate the cutoff scores of these scales for children with ADHD.

Results: The CAFIS-parent and CAFIS-teacher forms consist of four and three factors, respectively. Internal consistency and test-retest correlation of the scales were satisfactory. The CAFIS and Children's Global Assessment Scale were significantly correlated. All scores of subscales of CAFIS in ADHD group were significantly higher than those of control group. The sensitivity and specificity of the subscales were mostly at an appropriate level.

Conclusion: The CAFIS is a brief layperson-administered scale to assess functional impairment of children and adolescents. It can be a useful tool for parents and teachers to objectively measure the functions of children at home and in school. This scale was found to be reliable and valid, and it appears to be a valuable instrument in Korean language.

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Psychiatr Invest. 2011;8:95-101.

A COMPARISON OF COMORBIDITY AND PSYCHOLOGICAL OUTCOMES IN CHILDREN AND ADOLESCENTS WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Huh Y, Choi I, Song M, et al.

Objective: The purpose of this study was to compare psychiatric comorbid disorders and psychological outcomes in children and adolescents with Attention-deficit/hyperactivity disorder (ADHD).

Methods: Subjects were divided into a child group (aged under 12 years) and an adolescent group (aged 12 years and above). All subjects were diagnosed with ADHD based on the DSM IV diagnostic criteria using the Kiddie-Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Korean Version (K-SADS-PL-K). The K-SADS-PL-K was also used to evaluate those psychiatric disorders comorbid with ADHD. And the Korean version of the Child Behavior Checklist (K-CBCL) was used to examine the subjects' psychological outcomes.

Results: The rate of comorbidity in adolescent group was significantly higher than that in the child group. In particular, the adolescent group had a significantly higher ratio of comorbid conduct disorder and mood disorder than the child group. With respect to the predominantly inattentive type and Not Otherwise Specified, the school subscale scores on the K-CBCL for the children were significantly higher than those for the adolescents.

Conclusion: These results suggest that the psychiatric comorbidity may differ between adolescents and children with ADHD. Therefore when treating adolescents with ADHD, more careful assessment and treatment targeting a range of comorbidities are needed.

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Psychiatry Res. 2011;188:402-05.

CHARACTERISTICS OF NORWEGIAN CHILDREN SUFFERING FROM ADHD SYMPTOMS: ADHD AND PRIMARY HEALTH CARE.

Duric NS, Elgen I.

This study describes the characteristics of children suffering from attention deficit/hyperactivity disorder (ADHD) symptoms and evaluates the ability of primary health care to assess ADHD. A population of 494 children was referred during one year to the outpatient clinic Child and Adolescent Mental Health in Norway. Forty percent of those referred had ADHD symptoms. A clinical assessment regarding ADHD as well as general health was employed and socio-economic status was recorded. Half of the ADHD-referred children met criteria for ADHD, and among the non-ADHD children one fifth did not receive any diagnosis. Mean referral age was 10.5. years; 82% were boys. The ADHD families were less educated and in more need of support from Child Welfare (CW) in the referral period (OR: 3.9; 95% CI 0.1 to 5.1). More ADHD children were not living with their families compared to the non-ADHD children. The sensitivity was 51% (96/187) regarding primary health care's ability to recognize ADHD. Further screening programs for evaluation of ADHD are needed.

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Psychiatry Res. 2011;188:411-21.

THE STRUCTURE OF DSM-IV ADHD, ODD, AND CD CRITERIA IN ADOLESCENT BOYS: A HIERARCHICAL APPROACH.

Bezdjian S, Krueger RF, Derringer J, et al.

Numerous studies have examined the structure of the childhood externalizing disorder symptoms of Attention Deficit Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder (ODD), and Conduct Disorder (CD), both separately as well as simultaneously. The present study expanded on previous findings by implementing a multi-level hierarchical approach to investigating the component structure of ADHD, ODD, and CD criteria in 487 14-year-old boys from the Minnesota Twin Family Study (MTFS). We found support for a hierarchical conceptualization of externalizing behavior criteria in early adolescent boys by specifying how one-, two-, three-, four-, five- and six-factor models of externalizing criteria can be integrated. These results suggest that it may be more beneficial to conceptualize different levels of this

hierarchy as relevant to different issues in case conceptualization and research design, from the broad level of an overall externalizing spectrum, to the level of finer-grained subtypes within specific disorders.

Psychiatry Res. 2011 May;187:437-40.

IDENTIFICATION OF ATTENTION-DEFICIT-HYPERACTIVITY DISORDER AND CONDUCT DISORDER IN MEXICAN CHILDREN BY THE SCALE FOR EVALUATION OF DEFICIT OF ATTENTION AND HYPERACTIVITY.

Zambrano-Sánchez E, Martínez-Cortés JA, del Río-Carlos Y, et al.

The objective was weighing the usefulness of a Spanish-language Scale for the evaluation of deficit of attention and hyperactivity (EDAH) to identify children with attention deficit-hyperactivity disorder (AD-HD) and conduct disorder (CD) in a sample of school-aged children. We studied 132 children from a government-run public elementary school previously selected by teachers as having learning and attention disorders. We screened children of the sample with parents' and teachers' EDAH and Diagnostic and Statistical Manual of Mental Disorders-IV edition Text Revision (DSM-IV-TR) questionnaires, and performed an interdisciplinary clinical examination for the final diagnosis. We found 81 children with AD-HD and 51 children without AD-HD. AD-HD was classified as follows: AD-HD-combined (-C), n=32; AD-HD-inattentive (-I), n=17 and AD-HD-hyperactive (-H), n=32. Cronbach's alpha calculation for the EDAH parents' questionnaire was 0.76, and for teachers, 0.80. Sensitivity of the teachers' EDAH questionnaire was 0.94, and specificity, 0.91. Sensitivity of the parents' EDAH questionnaire was 0.91, while specificity was 0.87. The data of EDAH parents' and teachers' questionnaires have a concordance of 93.1% and 80%, respectively. The correlation of scores among parents' and teachers' EDAH scales was significant. The correlation between results from parents' and teachers' DSM-IV-TR and EDAH questionnaires was also significant. Our results partially support the use of EDAH questionnaires for AD-HD and CD screening in Spanish-speaking populations.

Psychoneuroendocrinology. 2011;36:1209-16.

ASSOCIATION OF SALIVARY DEHYDROEPIANDROSTERONE LEVELS AND SYMPTOMS IN PATIENTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER DURING SIX MONTHS OF TREATMENT WITH METHYLPHENIDATE.

Wang LJ, Hsiao CC, Huang YS, et al.

This prospective study aimed to determine whether salivary levels of dehydroepiandrosterone (DHEA) in patients with attention deficit hyperactivity disorder (ADHD) change significantly during 6 months of treatment with methylphenidate (MPH), and to investigate long-term relationship between these levels and ADHD symptoms. Fifty ADHD patients aged between 6 and 12 years, and 50 age- and gender-matched healthy subjects were recruited. ADHD patients were prescribed oral MPH with a dose range of 5-15 mg/day at the discretion of the psychiatrist. DHEA levels were determined from saliva samples collected from both ADHD patients and healthy subjects at pretreatment and 1, 3, and 6 months from pretreatment visit. ADHD symptoms were evaluated with the Swanson, Nolan, and Pelham, Version IV Scale for ADHD and the ADHD Rating Scale, and computerized Continuous Performance Test (CPT). The results showed that salivary DHEA levels significantly increased in ADHD patients during the 6-month course of methylphenidate treatment, but the DHEA levels did not significantly change in the untreated healthy group during the 6-month period of natural observation. For the longitudinal observation, among ADHD patients, the salivary DHEA levels were independently correlated with distraction and impulsivity performance in the CPT, but not correlated with inattention and hyperactivity in the clinical ADHD symptoms. Whether DHEA exerts effects on neurocognitive functions as mediators or independently of MPH warrants further investigation.

Psychopharmacology. 2011;216:501-09.

NINGDONG GRANULE: A COMPLEMENTARY AND ALTERNATIVE THERAPY IN THE TREATMENT OF ATTENTION DEFICIT/HYPERACTIVITY DISORDER.

Li JJ, Li ZW, Wang SZ, et al.

Background: Attention deficit/hyperactivity disorder (ADHD) is a common neurobehavioral and neuropsychiatric disorder in school-age children, and recent studies provide evidence implicating the metabolic abnormalities of dopamine (DA) for its pathophysiology. Methylphenidate, a kind of psychostimulant, is widely used in the treatment of ADHD, but some patients do not respond to it or cannot bear its side effects. As a traditional Chinese medicine preparation, Ningdong granule (NDG) has been used in the treatment of ADHD for several years in China. However, a systematical pharmacological study on its safety and mechanism still remains obscure.

Objective: This paper aims to evaluate the efficiency, safety, and possible mechanism of NDG on ADHD children compared to methylphenidate. **Methods:** Seventy-two ADHD children were recruited to perform an 8-week, randomized, methylphenidate-controlled, doubled-blinded trial. The subjects were equally assigned to two groups receiving either NDG 5 mg/kg/day or methylphenidate 1 mg/kg/day for 8 weeks. The efficiency was assessed by the Teacher and Parent ADHD Rating Scales every 2 weeks for a total of 8 weeks. The side effects were recorded during the study. Blood, urine, and stool routine samples, liver and renal function test, and DA and homovanillic acid (HVA) concentration in sera were tested at the beginning and end of the trial.

Results: NDG ameliorated ADHD symptoms after an 8-week medication with fewer side effects compared to methylphenidate ($P < 0.05$). The result also showed NDG to be safe and tolerable for ADHD children as monitored by the blood, urine, and stool analysis and liver and renal function for 8 weeks ($P < 0.05$). Moreover, the level of HVA in sera increased in NDG-treated group ($P < 0.05$), while the content of DA had no significant change during the study. An analysis of Pearson correlation coefficients also showed that the increased content of HVA in sera was associated with the improved scores of Teacher and Parent ADHD Rating Scales.

Conclusions: Compared to methylphenidate, NDG is effective and safe for ADHD children in the short term, increases the HVA concentration in sera to regulate DA metabolism, and promises to be an alternative medication, safely and effectively.

Res Autism Spectr Disord. 2011.

SLEEP PROBLEMS IN CHILDREN WITH AUTISM, ATTENTION-DEFICIT HYPERACTIVITY DISORDER, AND EPILEPSY.

Tsai FJ, Chiang HL, Lee CM, et al.

This study aimed to examine sleep problems in children with autism spectrum disorders (ASD), attention-deficit/hyperactivity disorder (ADHD), and epilepsy in clinical settings. We assessed 64 children with ASD, 64 with ADHD, 64 with epilepsy, and 64 typically developing children without any neuropsychiatric disorders by using a sex-and age-matched case-control study design. The parents reported their children's sleep problems. Parents of children with ASD and ADHD reported more current and lifetime sleep problems of their children than parents of children with epilepsy, especially in snoring and restless legs syndrome. Current or lifetime sleep problems did not differ between children with ASD and children with ADHD, or between children with epilepsy and typically developing children. Demographic characteristics and medication status could not fully explain the increased risk of sleep problems in children with ASD and ADHD. Our findings lend evidence to support more sleep problems in children with ASD and ADHD than typically developing children. Our study adds that children with epilepsy do not. These findings emphasize the importance to assess sleep problems in children with neurodevelopmental disorders highly comorbid with ASD or ADHD in clinical practice.

Res Dev Disabil. 2011.

SLEEP RESTORES DAYTIME DEFICITS IN PROCEDURAL MEMORY IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Prehn-Kristensen A, Molzow I, Munz M, et al.

Sleep supports the consolidation of declarative and procedural memory. While prefrontal cortex (PFC) activity supports the consolidation of declarative memory during sleep, opposite effects of PFC activity are reported with respect to the consolidation of procedural memory during sleep. Patients with attention-deficit/hyperactivity disorder (ADHD) are characterised by a prefrontal hypoactivity. Therefore, we hypothesised that children with ADHD benefit from sleep with respect to procedural memory more than healthy children. Sixteen children with ADHD and 16 healthy controls (aged 9-12) participated in this study. A modification of the serial-reaction-time task was conducted. In the sleep condition, learning took place in the evening and retrieval after a night of sleep, whereas in the wake condition learning took place in the morning and retrieval in the evening without sleep. Children with ADHD showed an improvement in motor skills after sleep compared to the wake condition. Sleep-associated gain in reaction times was positively correlated with the amount of sleep stage 4 and REM-density in ADHD. As expected, sleep did not benefit motor performance in the group of healthy children. These data suggest that sleep in ADHD normalizes deficits in procedural memory observed during daytime. It is discussed whether in patients with ADHD attenuated prefrontal control enables sleep-dependent gains in motor skills by reducing the competitive interference between explicit and implicit components within a motor task.

Sci J Kurdistan Univ Med Sci. 2011;16:45-54.

COMPARISON OF ADHD (ATTENTION DEFICIT HYPERACTIVITY DISORDER) PREVALENCE BETWEEN FEMALE AND MALE STUDENTS OF PRIMARY SCHOOLS IN ARAK CITY IN ACADEMIC YEAR OF 2009-2010.

Salehi B, Moradi S, Ebrahimi S, et al.

Background and Aim: The aim of this study was to compare the prevalence of ADHD (Attention Deficit Hyperactivity Disorder) between female and male students of primary schools in Arak City.

Materials and Methods: This study was a descriptive-analytical, cross-sectional study which included 2000 female and male students of primary schools in Arak City between 2009 and 2010. The method of sampling was stratification. We used Intelligence-Matrix of Raven Scale to study students' intelligence, Canners questionnaire (parents and teachers) to study ADHD, the demographic checklist for recording students' demographic data, and K-SADS-E questionnaire to document diagnosis of ADHD. Data were introduced into SPSS software and analyzed by chi-square test to determine the relationship between qualitative variables and also logistic regression model to determine odds ratio.

Results: In this study among 2000 students, 168 were suffering from one type of ADHD. Also this study showed that the prevalence of attention deficit was 2.3 percent (%1.6 in boys and %2.9 in girls), prevalence of hyperactivity-impulsivity disorder was 3.5 percent (%3.9 in boys and %2.9 in girls) and prevalence of the combined type of disorder was 2.7 percent (%3 in boys and %1.3 in girls). There were a significant relationship between prevalence of ADHD and each of the following variables including: gender ($p < 0.001$), educational level ($p < 0.027$), and monthly family income of the students who were suffering from ADHD ($p < 0.019$), but there was no significant relationship between the parents' educational level, the parents' occupation, living in areas polluted with heavy metals, living style and ADHD.

Conclusion: According to the results of this study we recommend that the educational departments in every city provide training programs for the teachers and parents about the identification of signs and symptoms of ADHD to prevent deterioration of ADHD and educational problems in the children.

Sleep Med. 2011;12:672-79.

REDUCED SLEEP-ASSOCIATED CONSOLIDATION OF DECLARATIVE MEMORY IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Prehn-Kristensen A, Goder R, Fischer J, et al.

Objective: Sleep supports the consolidation of declarative memory. Patients with attention-deficit/hyperactivity disorder (ADHD) are not only characterized by sleep problems but also by declarative memory deficits. Given that the consolidation of declarative memory during sleep is supported by slow oscillations, which are predominantly generated by the prefrontal cortex, and that ADHD patients display low prefrontal brain activity, we assumed that ADHD patients show reduced sleep-associated consolidation of declarative memory.

Methods: The impact of sleep on the consolidation of declarative memory was examined with a picture recognition task. Twelve ADHD patients (10-16. years) and 12 healthy controls participated in two experimental conditions: in the sleep condition, learning was performed in the evening and picture recognition was tested after nocturnal sleep; in the wake condition, learning was conducted in the morning while retrieval took place after a day of wakefulness.

Results: Analyses of recognition accuracy revealed reduced sleep-associated enhancement of recognition accuracy in ADHD. While sleep-associated enhancement of recognition accuracy was correlated with slow oscillation power during non-REM sleep in healthy controls, no such correlations were observed in ADHD.

Conclusions: These data indicate a deficit in sleep-associated consolidation of declarative memory in ADHD. Moreover, our results suggest reduced functionality of slow oscillations in sleep-associated consolidation of declarative memory in ADHD.

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Sleep Med. 2011 May;12:471-77.

[SUB]L[/SUB]-DOPA IMPROVES RESTLESS LEGS SYNDROME AND PERIODIC LIMB MOVEMENTS IN SLEEP BUT NOT ATTENTION-DEFICIT-HYPERACTIVITY DISORDER IN A DOUBLE-BLIND TRIAL IN CHILDREN.

England SJ, Picchietti DL, Couvadedli BV, et al.

Background: In a previous open-label study, dopaminergic agents improved Restless Legs Syndrome (RLS) and Periodic Limb Movements in Sleep (PLMS), as well as Attention-Deficit-Hyperactivity Disorder (ADHD) in children with both disorders. We therefore conducted a double-blind placebo-controlled trial of L-DOPA in ADHD children with and without RLS/PLMS.

Methods: Two groups of patients (total n = 29), those with ADHD only or those with ADHD and RLS/PLMS, were randomized to L-DOPA or placebo therapy. At baseline and after therapy patients were assessed with Conners' parent and teacher rating scales; polysomnography; RLS rating scale; and neuropsychometric measures of memory, learning, attention, and vigilance.

Results: L-DOPA improved RLS/PLMS symptoms in all patients with those disorders compared with placebo (p = .007). When assessed by the Conners' Scales before therapy, ADHD was more severe in children without RLS/PLMS than in children with RLS/PLMS (p = 0.006). L-DOPA had no effect on Conners' scales, sleep, or neuropsychometric tests when all patients treated with the drug were compared to those on placebo or when patients with ADHD only were compared to those with ADHD and RLS/PLMS.

Conclusions: In this first double-blind study of a dopaminergic therapy in children with RLS/PLMS, L-Dopa significantly improved RLS/PLMS but not ADHD. These results, however, should be interpreted carefully since they may have been influenced by the relatively small sample size and the baseline differences in severity of ADHD symptoms. Further work needs to be done to elucidate the relationship between dopamine, ADHD and RLS/PLMS.

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The Journal of Pediatrics. 2011 May;158:775-79.

LOW APGAR SCORES AND RISK OF CHILDHOOD ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Li J, Olsen J, Vestergaard M, et al.

Objective: To examine whether low Apgar scores at 5 minutes are associated with increased risks of attention deficit hyperactivity disorder (ADHD).

Study design: We conducted a nationwide population-based cohort study of all 980 902 singletons born in Denmark from 1988 to 2001. All children were monitored from 3 years of age until a first International Classification of Diseases diagnosis of hyperkinetic disorder, a first medication for ADHD, migration, death, or the end of 2006, whichever came first. We used Cox regression models to examine the association between Apgar scores at 5 minutes and ADHD.

Results: Apgar scores were inversely associated with risk of ADHD (hazard ratio 0.92; 95% CI: 0.88-0.96, P trend < .001). Compared with children with Apgar scores of 9 or 10 at 5 minutes, the risk for ADHD was 75% higher in children with Apgar scores of 1 to 4 (hazard ratio 1.75; 95% CI: 1.15 to 2.11) and 63% higher for those with Apgar scores of 5 to 6 (95% CI: 1.25 to 2.11).

Conclusions: A low Apgar score was associated with an increased risk of ADHD in childhood. Low Apgar scores and ADHD may share common causes or a low Apgar score reflects at least one causal pathway leading to ADHD.

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The Spanish Journal of Psychology. 2011 May;14:63-72.

EVALUATING READING AND METACOGNITIVE DEFICITS IN CHILDREN AND ADOLESCENTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Alvarado JM, Puente A, Jimenez V, et al.

The reading achievement of children and adolescents with Attention Deficit Hyperactivity Disorder (ADHD) has scarcely been explored in research conducted in the Spanish language and when it has, the results have been contradictory. The focus of the present research is to analyze participants' reading competency and metacognitive strategies as they carry out reading comprehension tasks. The sample was comprised of 187 Argentine schoolchildren aged 9 to 13 years old. 94 constituted the control group and the clinical group consisted of 93 schoolchildren diagnosed with ADHD. The metacognitive assessment was made up of two metacognitive tests, the Reading Awareness Scale (ESCOLA; acronym in Spanish) and a Spanish adaptation of Metacognitive Awareness of Reading Strategies Inventory (MARS), and one test of reading comprehension, the Evaluation of Reading Processes for Secondary Education Students (PROLEC-SE; acronym in Spanish). Students with ADHD had lower achievement on tests of reading comprehension compared to the control group. Nevertheless, our results suggest their difficulties did not stem from reading comprehension problems, but rather from alterations in their Executive Functions, because when subjects' reading comprehension was equalized, students with ADHD still exhibited a lower level of Metacognition, particularly when it came to planning.

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Trials. 2011;12.

ACUPUNCTURE FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD): STUDY PROTOCOL FOR A RANDOMISED CONTROLLED TRIAL.

Hong SS, Cho SH.

Background: Attention-deficit/hyperactivity disorder (ADHD) is a common neuro-psychiatric problem, affecting 7-9% of children. Pharmacological interventions are widely used with behavioral treatments in ADHD. Still, the origin of ADHD is unclear, limiting pharmacological effectiveness and making adverse effects common. The use of complementary and alternative medicine (CAM) has increased, especially for developmental and behavioral disorders, such as ADHD. CAM is used by 60-65% of parents of children with ADHD to relieve ADHD-associated symptoms and to avoid the side effects of conventional medication. Acupuncture has been widely used to treat patients with ADHD, but the available evidence of its effectiveness is insufficient. Our aim was to evaluate the effectiveness and safety of acupuncture in

patients (both and each treatment naive and conventional therapy children) with ADHD (any subtype) compared to the waitlist control.

Methods/Design: This study is a waitlist controlled open trial. We used a computer generated randomization scheme. This randomised, controlled trial had two parallel arms (acupuncture, and waitlist group). Each arm consisted of 40 participants. The acupuncture group received acupuncture treatment two times per week for a total of 12 sessions over 6 weeks. Post-treatment follow-up was performed 3 weeks later to complement the 12 acupuncture sessions. Participants in the waitlist group did not receive acupuncture treatments during the first six weeks but were only required to be assessed. After 6 weeks, the same treatments given to the acupuncture group were provided to the waitlist group. The primary outcome of this trial included differences in Korean version of ADHD-Rating Scale (K-ADHD-RS) before randomization, 3 weeks and 6 weeks after randomization, and 3 weeks after completing the treatment.

Discussion: Subjective measurements, like K-ADHD-RS, are commonly used in ADHD. Although these measurements have adequate reliability and validity, lack of objective assessment in ADHD may lead to some disputes, like parental placebo effects. More objective measurements, like Computerized Neurocognitive function Test (CNT) in this study, are needed in ADHD trials. Furthermore, this trial will provide evidence for the effectiveness of acupuncture as a treatment for ADHD.

Trial Registration: Clinical Research Information Service (CRiS) KCT0000019.

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Value Health. 2010;13:A458.

EFFECTIVENESS OF PHARMACEUTICAL THERAPY OF ADHD (ATTENTION-DEFICIT/HYPERACTIVITY DISORDER) IN ADULTS-A HEALTH TECHNOLOGY ASSESSMENT.

Benkert D, Krause KH, Wasem J, et al.

OBJECTIVES: Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurobehavioral developmental disorder, that is characterized by hyperactivity and impulse control disorder. In Germany pharmaceutical therapy is approved for children and adolescents solely. Therefore, treating adult patients with ADHD complies with off-label use of stimulants. Aim of this Health Technology Assessment is to examine the clinical effectiveness, cost-effectiveness, ethical-social and legal aspects of pharmacotherapy (stimulants, antidepressants, norepinephrine reuptake inhibitors) of adult ADHD patients.

METHODS: A systematic literature research is conducted in relevant electronic literature databases. Studies matching the ex ante defined inclusion criteria are assessed systematically and qualitatively according to methodical standards by two reviewers. Due to heterogeneity of included studies no meta-analysis is performed.

RESULTS: Nine randomised controlled trials (RCT), five systematic reviews, three economic and two studies concerning legal aspects are included. All RCT show improvement regarding ADHD symptoms (hyperactivity, impulsivity). Response rates vary between 7 % and 42 % in the control group and 17 % to 59,6 % in the intervention group. The studies use primarily investigator and self-rated questionnaires such as the ADHD Rating Scale, the Conners Scales and the Clinical Global Impression as outcome parameters for the core symptoms of ADHD. Some studies show a larger improvement of the ADHD symptoms by a flexible dose approach. The systematic reviews demonstrate statistically significant improvement in symptoms of ADHD compared to placebo and other medications. The effect sizes for stimulants are somewhat higher than for non-stimulants. Adult ADHD patients cause higher annual direct and indirect costs than matched controls. The average medical costs are reported with 1.262 US-Dollar in 1998 and 1.673 US-Dollar in 2001.

CONCLUSIONS: Methodological limitations of the RCT are the short study duration and the high drop-out rates. Further research is needed to determine the cost-effectiveness of medical treatment of adult ADHD patients

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Value Health. 2011;14:A200.

PSYCHOTROPIC POLYPHARMACY IN CHILDREN AND ADOLESCENTS WITH ATTENTION-DEFICIT / HYPERACTIVITY DISORDER.

Palli SR, Aparasu RR, Chen H, et al.

OBJECTIVES: To examine the prevalence and time to psychotropic polypharmacy in children with Attention-Deficit Hyperactivity Disorder (ADHD).

METHODS: This retrospective longitudinal database analysis of medical, pharmacy and eligibility data was performed on Medicaid enrollees from four states - Texas, New York, California, and Illinois - during a 3-year period (January 2003 and December 2005). ADHD patients were identified on the basis of one or more ADHD diagnosis and stimulant (short-acting [SAS], intermediate-acting [IAS] or long-acting [LAS]) pre- prescription(s). New stimulant users were selected if the index stimulant prescription was filed between July 1, 2003 and June 30, 2005 with no previous stimulant drug prescription in the preceding 6 months. Additional eligibility criteria included continuous Medicaid eligibility 180 days pre- and post- index date and no multiple index stimulant type claims. Psychotropic polypharmacy episode was defined as >30 consecutive days of non-stimulant therapy overlapping with the index stimulant therapy. The time to psychotropic polypharmacy was assessed by calculating the time from the index stimulant date to the first day of polypharmacy treatment episode using the Cox proportional Hazards model.

RESULTS: Among the 63,362 ADHD patients, 19.95% of SAS users, 24.26% of IAS users and 29.56% of LAS users received combination pharmacotherapy involving their index stimulant. Median survival time to psychotropic polypharmacy was found to be 299, 232, and 330 days in the SAS, IAS and LAS treatment groups respectively. Recent inpatient psychiatric visit(s) and younger age emerged as the common risk factors predicting index stimulant and a psychotropic co-prescription. In addition, race/ethnicity and a comorbidity of tics were also identified as predictors for LAS-related psychotropic polypharmacy.

CONCLUSIONS: Over one in five new stimulant users with ADHD received a concomitant non-index stimulant prescription within a year of commencing stimulant therapy. Demographic and clinical characteristics seem to play a key role in psychotropic polypharmacy in children with ADHD

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Value Health. 2011;14:A200.

PERSISTENCE OF STIMULANT TREATMENT IN CHILDREN AND ADOLESCENTS WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER.

Palli SR, Aparasu RR, Chen H, et al.

OBJECTIVES: To compare and identify the factors associated with persistence of stimulant classes in children and adolescents with Attention-Deficit Hyperactivity Disorder (ADHD).

METHODS: A retrospective longitudinal cohort analysis was conducted using the Medicaid Analytic extract data from 4 states - New York, Illinois, Texas and California. ADHD patients, aged 6-18 years with at least one stimulant prescription claim for a short-acting(SAS), intermediate-acting(IAS) or long-acting stimulant (LAS) and one or more inpatient or outpatient claim involving a ADHD diagnosis (ICD-9-CM code 314.xx) during the study period (January 2003 to December 2005) were selected. New stimulant users were defined as those with no previous stimulant drug prescription in the preceding 6 months. Additional criteria for inclusion included 180 days of pre- and post-index continuous Medicaid eligibility and no multiple index stimulant type claims. Persistence for the index stimulant was measured by summing the number of days the patient remained on the index stimulant therapy from the index prescription date with a maximum refill gap between two consecutive index stimulant claims of 30 days. Stratified linear regression modeling was used to determine the factors associated with persistence for the three stimulant classes.

RESULTS: Among the 63,362 ADHD patients (10,033 SAS, 5,061 IAS and 48,268 LAS users), LAS group had significantly longer mean and median persistence (176 & 94 days), than the patients in SAS (102 & 60 days) or IAS groups (57 & 95 days). Regression models revealed that race/ethnicity and recent inpatient psychiatric treatment were negatively associated with stimulant persistence in the three stimulant classes. Age (<13 years) and addition of another psychotropic medication, however, improved persistence significantly in all three stimulant classes.

CONCLUSIONS: Long acting stimulants had comparatively longer persistence than other stimulant classes. An understanding of demographic and clinical characteristics that influence treatment continuation can help to improve persistence rates in ADHD.

Enti Organizzatori



AIRIPA
Associazione Italiana
Ricerca e Intervento
in Psicopatologia
dell'Apprendimento

Con il Patrocinio di

LIONS
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Provincia di Chieti
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Ufficio Scolastico Regionale per l'Abruzzo
Ordine degli Psicologi dell'Abruzzo
Fondazione Padre Alberto Mileno
Ex I.R.R.E. Abruzzo

VIII CONGRESSO NAZIONALE

Disturbo da Deficit di Attenzione/Iperattività

Pescara, 16-17 Settembre 2011

Oasi dello Spirito (Via G. La Pira, 65015 Montesilvano, Pescara)

Venerdì 16 settembre

- Ore 8.00 Apertura e registrazione partecipanti
- Ore 9.00 Aula Magna
Saluto alle autorità
- Ore 9.30-11.00 Aula Magna
Letture Magistrali: The Neurobiological Development of ADHD: Significance for assessment and treatment
Sergeant J. (Dipartimento di Psicologia Clinica Università di Amsterdam)
Moderatore: Cornoldi C. (Università di Padova)
- Ore 11.00-13.00 Aula Magna
Simposio: La comorbilità
Coordinatore: Sechi E. (Università degli Studi dell'Aquila)
Relatori: Panesi P., Maniampietri A.E., Sechi E., Penge R., Donfrancesco R., Torioli M.G., Craig F.
- Ore 11.00-13.00 Aula 1
Sessione Tematica A: L'attenzione: dal costruito all'intervento in classe
Presiede: Scheriani C. (AIDAI FVG)
Pausa Pranzo
- Ore 14.30-18.30 Aula Magna
Workshop: Intervento a scuola: trattamento cognitivo-comportamentale e gestione delle emozioni
Coordinatori: Di Pietro M. (ASL di Monselice, Padova); Menazza C. (AIDAI Veneto)
- Ore 14.30-16.30 Aula 1
Workshop: I trattamenti farmacologici
Coordinatore: Zuddas A. (Università di Cagliari)
- Ore 14.30-16.30 Aula 2
Sessione tematica B: La complessità del quadro clinico e il problema della valutazione
Presiede: Margheriti M. (AIDAI Umbria)
- Ore 16.30-18.30 Aula 1
ADHD and state regulation
Van Der Meere J.J. (Dipartimento di Psicologia e dello Sviluppo, Università di Groningen)
Moderatore: Pezzica S. (AIDAI Toscana)
- Ore 19.00 Aula Magna
Assemblea Soci AIDAI

Sabato 17 settembre

- Ore 9.00-10.30 Aula Magna
Letture Magistrali: The role of executive function in ADHD
Miranda A. (University of Valencia)
Moderatore: Re A. (Università di Padova)
- Ore 10.30-12.30 Aula Magna
Workshop: L'intreccio tra umore e condotta: il ruolo dell'ADHD
Coordinatore: Masi G. (IRCCS Stella Maris-Pisa)
- Ore 10.30-12.30 Aula 1
Simposio: Nuove evidenze dalla Neurobiologia
Coordinatore: Curatolo P. (Università degli Studi "Tor Vergata", Roma)
Relatori: Curatolo P., Galasso C., Porfirio C., Rizzo R.
- Ore 10.30-12.30 Aula 2
Sessione tematica C: Interventi individuali e di Gruppo per l'ADHD
Presiede: Giammaria R. (AIDAI Abruzzo)
Pausa Pranzo
- Ore 14.30-16.30 Aula Magna
Simposio: Piccoli ADHD crescono: dalla prima infanzia all'età adulta.
Coordinatore: Luccherino L. (UOC NPI ASL 8, Arezzo, AIDAI Toscana)
Relatori: Fedeli D., Vicari S., Luccherino L., Milone A., Rossi A.
- Ore 14.00-16.30 Aula 1
Simposio: L'alunno ADHD a scuola: lo stato dell'arte
Coordinatore: Ponziano A. (MIUR, Roma)
Relatori: Ponziano A., Cialè L., Modanese L.
- Ore 14.00-16.30 Aula 2
Simposio: Il parent training: nuovi modelli
Coordinatore: Benedetto L. (Università degli Studi di Messina)
Moderatore: Ingrassia M. (Università degli Studi di Messina)
Relatori: Paiano A., Pezzica S., Ilardo G., Spagnoletti M.S., Benetti D., Ingrassia M.
- Ore 16.30-17.00 Aula Magna
Compilazione questionari ECM

Sessione Poster

Verranno esposti dal 16 mattina al 17 pomeriggio
Dimensioni cm 100 x 70



COME RAGGIUNGERE LA SEDE DEL CONGRESSO
Oasi dello Spirito
Via G. La Pira – 65015 Montesilvano (Pescara)

IN TRENO: Scendere alla Stazione di PESCARA CENTRALE, acquistare un biglietto della Gestione Trasporti (bus urbani), salire sul bus n. 4 (e non 4/barrato) e scendere alla fermata COLLE SCORRANO. A circa 300 mt. c'è l'OASI.

IN AUTO: Per chi proviene da nord: Uscita Pescara Nord-Città Sant'Angelo: direzione Pescara: S.S. 16 direzione Foggia (circonvallazione Montesilvano – Francavilla); uscita Pescara Colli direzione Via Prati; dopo circa km 1.5, svoltare a destra e percorrere tutta la salita.

Per chi proviene da sud: Uscita Pescara Ovest – Chieti; direzione Pescara Centro – Porto; S.S. 16 direzione Ancona (circonvallazione Francavilla – Montesilvano); uscita Pescara Colli direzione Via Prati; dopo circa km 1.5, svoltare a destra e percorrere tutta la salita.

Per chi proviene da Roma: Uscita Chieti – Pescara, direzione Pescara (asse attrezzato); S.S. 16 direzione Ancona (circonvallazione Francavilla – Montesilvano); uscita Pescara Colli direzione Via Prati; dopo circa km 1.5, svoltare a destra e percorrere tutta la salita.

Per chi proviene da Pescara-centro: Santuario – Basilica Madonna dei Sette Dolori; Via di Sotto; dopo circa km 2.5 svoltare a sinistra Via Giorgio La Pira (già Valle Furci).

SEGRETERIA ORGANIZZATIVA:

AIDAI
Via Fratelli Cairoli, 24 – 06125 Perugia
Tel. 0753722518 – Fax 0755899147
E-mail: aidai.segreteria@libero.it

**Materiali
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le difficoltà di
apprendimento**

Erickson

Trento

LOCATION:

ISEOLAGOHOTEL

Via Colombara, 2 - 25049 Iseo (Bs)



L'incontro è rivolto a Responsabile e referenti di ogni centro di riferimento ADHD.

SEGRETERIA ORGANIZZATIVA:

Silvia Bodei
Servizio Territoriale Npi

Tel. 0303704433/25
Fax 0303704436

Dott. Gianluca Daffi

daffi.gianluca@gmail.com



U.O. Neurologica dell'Università e dell'Aspider
Ospedale dei Bambini
AO Sped. CHIR. Brescia

ISEO (BS)

22/23 SETTEMBRE 2011

LAVORARE INSIEME NELLA ADHD

NEI CENTRI DI RIFERIMENTO
DELLA LOMBARDIA

Giornate di studio
e approfondimento



Giovedì 22**ORE 10 -** Apertura dei lavori

DOCT. C. SCARCELLA
DOCT. R. SPIAZZI
DOCT. S.S.A. A. TIBERTI

Discussant: PIETRO PANEI

Prof. A. Zuddas : L'ADHD nella regione Sardegna

Il Progetto Europeo

Dott. G. Masi : L'ADHD nella regione Toscana

Dott. ssa F. Ragazzo : L'ADHD nella regione Piemonte

DIBATTITO

ORE 13 : A TAVOLA INSIEME**ORE 15-18**

Discussant: Prof. A. Zuddas

Prof. Giannarelli : Suscettibilità genetica e ADHD.
Risultati e proposte.Dott. ssa Milone : Il Copy Power Program di Lochman
Esperienza riguardante il trattamento di
disturbi internalizzanti e externalizzanti

Dott. G. Marzocchi : Interventi psicoeducativi nell' ADHD

Dott. M. Bonati : Il nuovo registro lombardo per l'ADHD

DIBATTITO : RIFLESSIONI E PROPOSTE**Venerdì 23****ORE 9.30 – 12.30**

DISCUSSANT : Dott. A. Tiberti

Workshop e spazio discussione progetti

La figura dello psicomotricista all'interno del centro
ADHD: Il bambino in età prescolare.
Esperienza e proposta di lavoroLa figura dello psicopedagogo all'interno del centro
ADHD: esperienza e proposta di lavoro.

Esperienza di riabilitazione equestre con bambini ADHD

Esperienza e proposta di lavoro con pet-therapy.

Parent training: esperienza e proposta di lavoro con
messa a punto di uno strumento che valuta l'efficacia
dell'intervento.**DIBATTITO****INSIEME A TAVOLA****ORE 14.00 -**

Discussant: Dott. M. Bonati

Interventi preordinati:
Esperienze personali
Esperienze condivise di percorsi diagnostico/
terapeutici
Proposte di lavoro trasversali nei centri della Lombardia

CHIUSURA DEI LAVORI

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

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"Condivisione dei percorsi diagnostico-terapeutici per l'ADHD in Lombardia".

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