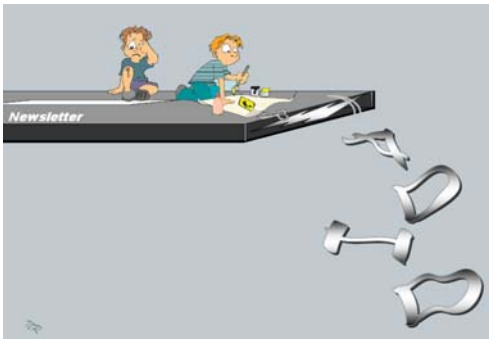

ADHD
ATTENTION DEFICIT HYPERACTIVITY DISORDER

Laboratorio per la Salute Materno Infantile

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ISTITUTO DI RICERCHE FARMACOLOGICHE

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Europ J Spec Needs Educ. 2009;24:371-91.
Comorbid LD and ADHD in childhood: Socioemotional and behavioural adjustment and parents' positive and negative affect.
Al-Yagon M.
The present study examined how vulnerability and protective factors at the individual level (child's disabilities; patterns of attachment), and at the family level (fathers'/mothers' affect), help explain differences in socioemotional and behavioural adjustment among children aged 8-12 years with comorbid learning disability (LD) and attention deficit hyperactivity disorder (ADHD) or with typical development. Participants were 118 father-mother-child triads: 59 couples and children with comorbid LD/ADHD and 59 couples with typically developing children. Preliminary analyses indicated significant group differences on all children's measures and on fathers' and mothers' affect measures. As hypothesised, findings showed the contribution of parents' positive and negative affect to children's adjustment, with differences for fathers' versus mothers' affect. Discussion focuses on understanding the unique value of fathers' and mothers' affect on children's well-adjusted functioning.

J Aggression Maltreat Trauma. 2008;17:133-40.
A preliminary study of adhd symptoms and correlates: Do abused children differ from nonabused children?
Becker-Blease KA, Freyd JJ.
In this pilot study, differences in inattention, impulsivity, and hyperactivity as well as demographic factors were investigated in a community sample of 8- through 11-year-olds, approximately half of whom had experienced child abuse or neglect. Parents completed the Attention Deficit Hyperactivity Disorder Test, the SNAP-IV, the Brief Betrayal Trauma Survey - Parent version, and additional questions. Abused children had more severe impulsivity and inattention, but not hyperactivity, symptoms. Abused boys and girls had a similar age of onset of symptoms, whereas nonabused girls had a much later age of onset than nonabused boys. ADHD is a significant problem among maltreated children. These data support large scale studies investigating possible differences in etiology, presentation, and treatment.

Psychol Assess. 2009 Dec;21:635-41.
A multitrait (ADHD-IN, ADHD-HI, ODD toward adults, academic and social competence) by multisource (mothers and fathers) evaluation of the invariance and convergent/discriminant validity of the Child and Adolescent Disruptive Behavior Inventory with Thai adolescents.
Burns GL, Desmul C, Walsh JA, et al.
Confirmatory factor analysis was used with a multitrait (attention-deficit/hyperactivity disorder-inattention, attention-deficit/hyperactivity disorder-hyperactivity/impulsivity, oppositional defiant disorder toward adults,

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.

academic competence, and social competence) by multisource (mothers and fathers) matrix to test the invariance and convergent/discriminant validity of the 5-factor model between mothers' and fathers' ratings of Thai adolescents (Year 1: n = 872; Year 2: n = 903; Year 3: n = 700; Year 4: n = 984) with the Child and Adolescent Disruptive Behavior Inventory (G. L. Burns, T. Taylor, & J. Rusby, 2001). The results showed equality of like-item loadings, intercepts, and residuals, as well as like-factor variances, covariances, and means between mothers' and fathers' ratings within each of the 4 yearly samples. In addition, the between-parent factor correlations showed convergent and discriminant validity with the within-parent factor correlations, showing discriminant validity for each year as well. These results for Thai adolescents and similar results (G. L. Burns et al., 2008) for mothers' and fathers' ratings of Brazilian, Thai, and American children provide broader support for the construct validity of the scale. The confirmatory factor analysis invariance and convergent/discriminant validity procedure with multiple sources is considered to provide a much more sophisticated procedure to evaluate the construct validity of attention-deficit/hyperactivity disorder and oppositional defiant disorder rating scales than a single-source approach.

J Child Adolesc Psychopharmacol. 2009;19:511-17.

Effects of clonidine and methylphenidate on family quality of life in attention-deficit/hyperactivity disorder.

Cannon M, Pelham WH, Sallee FR, et al.

Objective: The aim of this study was to determine the effect on family quality of life (QOL) of clonidine (CLON) and methylphenidate (MPH), used alone and in combination, in treating attention-deficit/hyperactivity disorder (ADHD).

Methods: Two proxy QOL measures were used in a multicenter, double-blind, placebo-controlled 16-week trial of 122 children, ages 7-12 years, with ADHD. Children were randomized to one of four groups in which they received MPH, CLON, a combination of drugs, or placebo. QOL was measured with the Daily Hassles Scale and the Impact on Family Scale at baseline and at 16 weeks.

Results: In a general linear model repeated measures analysis, treatment groups improved over a 16-week period compared to placebo for Daily Hassles and Impact on Family, as well as in symptoms measured by the ADHD Rating Scale. QOL measures correlated moderately with efficacy and symptom measures.

Conclusion: This study provides evidence that measures of QOL for the family are sensitive to pharmacological treatment of ADHD. The correlation pattern of the QOL measures with symptom and efficacy variables supported family QOL as a related but separate construct. Clonidine for Attention-Deficit/Hyperactivity Disorder Treatment Study (CAT) Trial Registry Name: Clinicaltrials.gov; ID Number, NCT00031395; URL, http://clinicaltrials.gov/ct/show/NCT00031395?order=8/.

J Child Adolesc Psychopharmacol. 2009;19:547-51.

Atomoxetine as an adjunct therapy in the treatment of co-morbid attention-deficit/hyperactivity disorder in children and adolescents with bipolar i or II disorder.

Chang K, Nayar D, Howe M, et al.

Introduction: Atomoxetine has been proposed to be effective for treating co-morbid attention-deficit/hyperactivity disorder (ADHD) in children with bipolar disorder (BPD) without destabilizing mood. We conducted an 8-week, open label study to study the efficacy and tolerability of adjunct atomoxetine in euthymic children and adolescents with BPD and ADHD.

Methods: We evaluated 12 youth aged 6-17 years (mean? =11.3 years; 7 males) with a diagnosis of BPD I or II and ADHD. Subjects were euthymic at baseline and taking at least one mood stabilizer or antipsychotic. Primary outcome measure was the ADHD Rating Scale-IV (ADHD-RS-IV) (response? = 25% decrease; remission? = 40% decrease). Secondary outcome measures were change in Young Mania Rating Scale (YMRS) and Children's Depression Rating Scale (CDRS).

Results: In primary outcome criteria, 8 (67%) were responders and 6 (50%) were remitters by ADHD-RS criteria. There was a significant decrease in ADHD-RS scores over the study ($p< 0.0001$; Cohen d? =? 2.18, effect size?=?0.73). YMRS and CDRS scores did not change significantly from baseline to week 8. No subjects experienced a manic or mixed episode during the study, but 2 subjects were discontinued early due to worsening of mood symptoms.

Conclusions: We found atomoxetine to be efficacious in treating symptoms of ADHD in children and adolescents with BPD taking mood stabilizers or antipsychotics. It is unclear whether symptomatic worsening

of 2 subjects was due to atomoxetine or the natural course of illness. Placebo-controlled studies are needed to clarify the role of atomoxetine in this population.

Biomarkers. 2009;14:513-22.

Reduced platelet monoamine oxidase type B activity and lymphocyte muscarinic receptor binding in unmedicated children with attention deficit hyperactivity disorder.

Coccini T, Crevani A, Rossi G, et al.

Several lines of evidence support the role of monoaminergic and cholinergic dysregulation in attention deficit hyperactivity disorder (ADHD) and the concept that peripheral blood neurotransmission indices may represent valuable surrogate CNS markers. We determined platelet MAO-B activity (p-MAO-B) and lymphocyte muscarinic cholinergic receptor binding (l-MR) in 44 unmedicated ADHD children (aged 9.1(plus or minus)2.87 years) and in 26 age-matched controls for comparison. Lower levels of p-MAO-B (~35%) and l-MR (~55%) in ADHD were observed compared with controls. Differences were gender-dependent: p-MAO-B was reduced in males only (5.20(plus or minus)2.99 vs 8.46(plus or minus)5.1 nmol mg-1 protein h-1 in ADHD and controls, respectively) and l-MR in females only (ADHD vs control: 6.63(plus or minus)1.75 and 15.30(plus or minus)8.35fmol 10 -6 cells). The clinical significance was corroborated by the correlation between these markers and severity of specific symptoms: lower p-MAO-B associated with increased inattention scores (Conners' teacher-rating scale); lower l-MR associated with increased score for oppositional-defiant disorder (ODD) (SNAP-IV); and trend towards correlation between increased inattention (SNAP-IV) and lower l-MR.

J Am Acad Child Adolesc Psychiatry. 2009;48:1094-101.

Genetic Overlap Between Measures of Hyperactivity/Inattention and Mood in Children and Adolescents.

Cole J, Ball HA, Martin NC, et al.

Objective: Evidence suggests that there is substantial comorbidity between attention-deficit/hyperactivity disorder (ADHD) and major depressive disorder in childhood and adolescence. This study aims to investigate the degree to which etiological factors are shared between the symptoms of these significantly heritable disorders.

Method: A twin study design was used to determine to what extent the covariation between the traits of ADHD and depression is genetically or environmentally mediated, based on parental reports. A general community sample of 645 twin pairs aged 5 to 17 years from the Cardiff Study of All Wales and North England Twins project took part in the study. Parent-rated measures of hyperactivity/inattention (Abbreviated Conners Hyperactivity subscale) and depression (Short Mood and Feelings Questionnaire).

Results: Phenotypes derived from the scales were significantly correlated in both boys and girls. Bivariate structural equation modeling revealed a large overlap in underlying genetic factors (boys, rA = 0.77; girls, rA = 0.67) along with a smaller influence of nonshared environment.

Conclusions: These findings suggest that there are common genes conferring liability to both hyperactive/inattentive and depressive traits in children and adolescents. This has implications for future molecular genetic research into ADHD and major depressive disorder. Additionally, it indicates that the comorbid clinical presentation of these disorders may reflect a common genetic pathway. J. Am. Acad. Child Adolesc. Psychiatry, 2009;48(11):1094-1101.

Alcohol Clin Exp Res. 2009;33:2015-23.

Comparison of adaptive behavior in children with heavy prenatal alcohol exposure or attention-deficit/hyperactivity disorder.

Crocker N, Vaurio L, Riley EP, et al.

Background: Adaptive behavior, the ability to respond successfully to everyday demands, may be especially sensitive to the effects of heavy prenatal alcohol exposure. Similar adaptive dysfunction is common in other developmental disorders including attention-deficit/hyperactivity disorder (ADHD). ADHD is frequently present in alcohol-exposed children and this overlap in clinical presentation makes identification of alcohol-exposed children difficult. Direct comparison of children with prenatal alcohol exposure and ADHD may yield

distinct patterns of cognitive and behavioral performance and add to growing knowledge of the neuropsychological and behavioral profile of prenatal alcohol exposure. Therefore, the aim of the current study was to compare adaptive behavior in children with histories of heavy prenatal alcohol exposure (ALC), nonexposed children with ADHD (ADHD), and typically developing controls (CON).
Methods: Sixty-five children (ALC = 22, ADHD = 23, CON = 20) were selected from a larger ongoing study of the behavioral teratogenicity of alcohol. Alcohol-exposed and control participants were selected to match the ADHD subjects on age, sex, socioeconomic status, and race/ethnicity. Caregivers were administered the Vineland Adaptive Behavior Scales, a semi-structured interview, and were asked to rate their child's behavior on 3 domains of adaptive function. Data were analyzed using regression techniques.
Results: Relative to controls, children in both the ALC and ADHD groups showed adaptive behavior deficits on all 3 domains and children in the ALC group were significantly more impaired than the ADHD group on the daily living skills domain. Within the ALC group, socialization standard scores were lower at older ages. This negative relationship between age and standard scores in the ALC group was also observed on the communication domain, a finding not previously reported.
Conclusions: This study suggests that both children with prenatal alcohol exposure and children with ADHD show impairments in adaptive function relative to controls, but that the pattern of impairment differs between these clinical groups. Adaptive ability in children with prenatal alcohol exposure is characterized by an arrest in development, as evidenced by a lack of improvement with age in socialization and communication scores. In contrast, children with ADHD exhibit a developmental delay in adaptive ability as their scores continued to improve with age, albeit not to the level of control children. Continued research focused on elucidating the patterns of deficits that exist in alcohol-exposed children ultimately will lead to improved differential diagnosis and effective interventions.

Child Care Health Dev. 2009;35:754-66.
Attention deficit hyperactivity disorder in pre-school children: Current findings, recommended interventions and future directions.
Daley D, Jones K, Hutchings J, et al.
This paper outlines the presentation, aetiology and treatment of attention deficit hyperactivity disorder (ADHD) in pre-school children. A review of current parenting training interventions demonstrates that there is good evidence for their efficacy in reducing symptoms of ADHD in pre-school children, and three interventions are evaluated: The new forest parent training programme (NFPP); the triple P - positive parenting programme and the incredible years parent training programme (IY). The evaluation of the NFPP provides strong evidence demonstrating its effectiveness for pre-school children with ADHD, while the efficacy of the Triple - P and the IY programme have, to date, only been demonstrated on children with conduct problems and co-morbid ADHD. It is suggested that parent training should be the first choice treatment for pre-school children presenting signs of ADHD, and medication introduced only for those children where parent training is not effective. Few moderators of outcome have been identified for these interventions, with the exception of parental ADHD. Barriers to intervention and implementation fidelity will need to be addressed to achieve high levels of attendance, completion and efficacy. The IY programme is a good model for addressing fidelity issues and for overcoming barriers to intervention. The future directions for parent training are also discussed.

Psychiatr Genet. 2009;19:312-19.
Psychopathy trait scores in adolescents with childhood ADHD: The contribution of genotypes affecting MAOA, 5HTT and COMT activity.
Fowler T, Langley K, Rice F, et al.
Objectives: Psychopathy-related traits, especially those tapping the 'emotional dysfunction' aspect of psychopathy that is characterized by lack of emotional responsiveness, are thought to be of genetic origin, but molecular genetic studies are yet to be undertaken. Gene variants that affect COMT, MAOA and 5HTT activity have previously been linked to antisocial behaviour. The aims of this study were to test whether these gene variants are linked to psychopathy traits in attention-deficit hyperactivity disorder (ADHD).
Methods: Adolescents were followed up 5 years after an initial diagnosis of ADHD. Psychopathy trait scores were assessed [total scores and 'emotional dysfunction' (also referred to as 'affective') scores] and the MAOA 30-bp variable number of tandem repeats, SLC6A4 44-bp insertion/deletion and COMT Val158Met variants were genotyped.

Results: All three gene variants were associated with 'emotional dysfunction' scores. MAOA and 5HTT variants were associated with total psychopathy scores. The results were not explained by associated conduct disorder.
Conclusion The results suggest that specific gene variants influence psychopathy traits in ADHD.

Psychol Med. 2009;39:1895-906.
Childhood and adolescent hyperactivity-inattention symptoms and academic achievement 8 years later: The GAZEL Youth study.
Galera C, Melchior M, Chastang JF, et al.
Background Children with attention deficit/hyperactivity disorder (ADHD) are at risk of negative academic outcomes. However, relatively few studies in this area have been based on long-term longitudinal designs and community-based settings. This study examined the link between childhood hyperactivity- inattention symptoms (HI-s) and subsequent academic achievement in a community setting, controlling for other behavioural symptoms, socio-economic status (SES) and environmental factors at baseline.
Method The sample consisted of 1264 subjects (aged 12 to 26 years at follow-up) recruited from the longitudinal GAZEL Youth study. Psychopathology, environmental variables and academic outcomes were measured through self-reports. Multivariate modelling was performed to evaluate the effects of childhood HI-s and other risk factors on academic achievement 8 years later.
Results HI-s independently predicted grade retention [adjusted odds ratio (OR) 3.58, 95% confidence interval (CI) 2.385.39], failure to graduate from secondary school (adjusted OR 2.41, 95% CI 1.434.05), obtaining a lower-level diploma (adjusted OR 3.00, 95% CI 1.844.89), and lower academic performance. These results remained significant even after accounting for school difficulties at baseline. Negative academic outcomes were also significantly associated with childhood symptoms of conduct disorder (CD), even after accounting for adjustment variables.
Conclusions This longitudinal survey replicates, in a general population-based setting, the finding of a link between HI-s and negative academic outcomes.

Child Care Health Dev. 2009;35:767-72.
Recognition and referral of girls with Attention Deficit Hyperactivity Disorder: Case vignette study.
Groenewald C, Emond A, Sayal K.
Background: Compared with boys, girls with Attention Deficit Hyperactivity Disorder (ADHD) are under-recognized. Parents commonly discuss concerns with teachers, who play an important role in the recognition and referral of children with ADHD. We investigated whether the predominating subtype of symptomatology influences teacher recognition of affected girls.
Methods: A total of 212 teachers from 40 randomly selected primary schools in England participated in a postal questionnaire study. The questionnaire consisted of a case vignette (based on DSM-IV criteria) describing a girl with either combined or predominantly inattentive subtype ADHD. Each school received an equal number of each type of vignette for distribution. Further questions elicited teachers' conceptualization of the girl's difficulties and need for specialist referral, their views on treatment modalities and demographic data.
Results: Most (98%) teachers recognized the presence of a problem but mainly conceptualized the girl's behaviour as reflecting attentional (89%) or emotional (62%) difficulties. Teachers were less likely to correctly identify a girl with inattentive than combined subtype ADHD (14% vs. 43%) or recommend clinical referral (50% vs. 59%) for her. Few (15%) teachers thought that medication might be helpful for a girl meeting diagnostic criteria for ADHD.
Conclusions: Teachers are able to recognize ADHD-related behaviours and impairments but conceptualize these as reflecting attentional or emotional difficulties rather than as relating to a disorder (ADHD). Teachers' conceptualization of ADHD and views about medication are important factors that could affect accurate recognition and referral. Improving teachers' knowledge about ADHD, especially the inattentive subtype, could assist in tackling gender-related barriers to care.

J Child Psychol Psychiatry Allied Discip. 2010;51:66-76.
Electrophysiological indices of abnormal error-processing in adolescents with attention deficit hyperactivity disorder (ADHD).
Groom MJ, Cahill JD, Bates AT, et al.
Background: Impaired cognitive control has been frequently observed in children and young people with attention deficit hyperactivity disorder (ADHD) and might underlie the excessive hyperactivity and impulsivity in this population. We investigated behavioural and electrophysiological indices relevant to one domain of cognitive control; namely error processing.
Methods: Adolescents aged 14 to 17 with ADHD (n = 23) and a typically developing control group (HC; n = 19) performed a visual go/no-go task. Electro-encephalography (EEG) data were collected simultaneously and response-locked error trials were averaged to derive two event-related potentials, the error-related negativity (ERN) and error positivity (Pe). Evoked theta power and inter-trial phase coherence (ITC) were measured in two time windows ('early' and 'late') equivalent to those used for detection of the ERN and Pe.
Results: Analysis revealed normal ERN amplitude and a statistical trend for smaller Pe amplitude at a fronto-central electrode site in the ADHD group. The group also showed significant reductions in late evoked theta power and early and late theta ITC. Relationships between behavioural measures and ITC were different between groups, particularly for post-error slowing, a measure of strategic response adjustment on trials immediately following an error.
Conclusions: The results reveal abnormalities in behavioural and electrophysiological indices of error processing in adolescents with ADHD and suggest that ITC is more sensitive than traditional ERP measures to error-processing abnormalities.

Child Adolesc Psychiatr Clin North Am. 2009;18:863-76.
Sleep Characteristics of Children and Adolescents with Attention Deficit-Hyperactivity Disorder.
Gruber R.
This article reviews sleep characteristics of children and adolescents who have attention-deficit/hyperactivity disorder (ADHD). Research on sleep disturbances in individuals who have ADHD without comorbid conditions, measured both objectively and subjectively, is first presented. The impact of primary sleep disorders associated with ADHD is then discussed. The effects of psychiatric comorbidities on the sleep patterns of children and adolescents who have ADHD are then reviewed, and sleep alterations associated with medications used to treat ADHD and comorbid conditions are addressed.

Dev Neuropsychol. 2009;34:422-34.
Age-dependent differences in attentional processes in ADHD and disruptive behavior disorder.
Gunther T, Jolles J, Herpertz-Dahlmann B, et al.
The aim of this study was to analyze age-dependent differences in attentional performance in subjects aged 8-16 years with attention deficit/hyperactivity disorder (ADHD) with or without disruptive behavior disorders (DBD). Age effects were investigated in three different groups (ADHD [N = 118], ADHD + DBD [N = 105], and controls [N = 105]) on a sustained attention and a Go-No-Go paradigm. Attentional competencies increased with age and children in the two clinical groups performed worse than control children on both tasks. However, these group differences between ADHD, ADHD + DBD, and controls decreased with increasing age. Thus, age-related differences must be considered in neuropsychological studies.

Res Dev Disabil. 2010;31:1-8.
Clinic attenders with autism or attention-deficit/hyperactivity disorder: cognitive profile at school age and its relationship to preschool indicators of language delay.
Hagberg BS, Miniscalco C, Gillberg C.
Many studies have shown that children with autism spectrum disorders (ASD) and attention-deficit/hyperactivity disorder (ADHD) have had early indicators of language delay. The aim of the present study was to examine the cognitive profile of school age children referred to a specialist clinic for ASD, ADHD, or both, and relate this profile specifically to the age at which these children were first flagged up (or not) as suspected from language delay during the preschool years. Forty clinic children with ASD, ADHD, or

the combination of the two (without clinical suspicion of learning disability) were assessed cognitively and as regards language development and language function at a mean age of 7.3 years. They were contrasted with a group of 21 children from the community who had been flagged at 2.5 years as suspected of language delay, and who had been followed up neuropsyhiatrically/neuropsychologically and in respect of language at a mean age of 7.9 years. Mean WISC-III full scale IQ was lower than population norms (in spite of the exclusion in both samples of cases with obvious learning disability) and similar across diagnostic groups (ASD and ADHD), and across settings (clinic and community). WISC-III Kaufman factor profiles separated the diagnostic groups as regards Perceptual Organisation. Early concern about language delay was a strong predictor of lower IQ and of distinguishing between "pure" cases of ASD and ADHD. School age clinic children who present with ASD and ADHD have a similar cognitive and early language development profile as do those children from the community, followed prospectively, who present with a suspicion of early preschool language delay and are shown at school age to suffer from ASD or ADHD. Concern about early language delay in the preschool age should prompt assessments (psychiatric and cognitively) for ASD and ADHD in a multidisciplinary setting much more often than is currently the case. In many cases early language delay, even in the absence of clear learning disability should be taken as a signal that - regardless of specific diagnosis - intellectual functioning might be in the low average range.

J Child Adolesc Psychopharmacol. 2009;19:493-99.

An open study of adjunct OROS-methylphenidate in children who are atomoxetine partial responders: II. tolerability and pharmacokinetics.

Hammerness P, Georgiopoulos A, Doyle RL, et al.

Objective: The aim of this study was to evaluate the tolerability of adding OROS methylphenidate (MPH) to children who are partial responders to atomoxetine (ATMX) in the treatment of attention-deficit/hyperactivity disorder (ADHD).

Methods: This was a two-phase, 7-week, open study in children aged 6-17 years. Phase 1 initiated ATMX for a minimum of 4 weeks. Phase 2 entered partial responders to ATMX and added OROS MPH to their regimen. Safety was assessed using blood pressure and heart rate measurements, electrocardiogram readings, AEs, laboratories, and ATMX levels.

Results: Fifty subjects who were partial responders to ATMX received the combination therapy, with 41 subjects completing the entire protocol. As reported elsewhere (Wilens et al., 2009), OROS MPH added to partial responders of ATMX was accompanied by a 40% reduction in the ADHD rating scale score and improvements in executive functioning. However, the combination of ATMX plus OROS MPH was associated with greater rates of insomnia, irritability, and loss of appetite compared to ATMX alone. A small significant increase in diastolic blood pressure was observed during adjunctive OROS MPH, with no clinically meaningful changes in electrocardiogram (ECG) parameters during the study. ATMX levels and liver function tests did not significantly change during the combination treatment.

Conclusion: Adjunct OROS MPH in ATMX partial responders yielded an additive adverse effect burden in this short-term study. Further controlled research with larger samples of children is warranted.

Psychiatry Clin Neurosci. 2009;63:762-68.

Impact of behavioral/developmental disorders comorbid with conduct disorder: Regular Article.

Harada Y, Hayashida A, Hikita S, et al.

Aims: The aim of the present study was to verify the comorbidity of conduct disorder (CD) and behavioral/developmental disorders in children and adolescents, and to examine the traits of CD comorbid with them.

Methods: Subjects were 64 children (60 boys, four girls) who were resident at three institutions for delinquent children or who were conduct-disordered outpatients of a university hospital aged under 18 years. A diagnostic interview was carried out by experienced child psychiatrists and the intelligence score and the Adverse Childhood Experiences score were measured by a licensed psychologist.

Results: A total of 57 children were diagnosed as having CD, of whom 26 (45.6%) were diagnosed with comorbid attention-deficit-hyperactivity disorder (ADHD), 12 were diagnosed with comorbid pervasive developmental disorder (PDD, 21,1%), and 19 (33.3%) had no comorbidity of either disorder. Six children (18.8% of CD comorbid with ADHD) met the criteria for both ADHD and PDD. The group with comorbid PDD was significantly younger at onset (F = 6.51, P = 0.003) and included unsocialized type more frequently ((chi)2 = 6.66, P = 0.036) compared with the other two groups.

Conclusions: Clinicians should be aware that not only ADHD but also PDD may be comorbid with CD. Establishment of the correct diagnosis is important because recognizing the presence of PDD will enable us to provide appropriate treatment and guidance, which may improve prognosis.

Ann Saudi Med. 2009;29:294-98.

A screening tool for attention deficit hyperactivity disorder in children in Saudi Arabia.

Hassan AM, Al-Haidar F, Al-Alim F, et al.

BACKGROUND AND OBJECTIVES: A clinically validated attention deficit hyperactivity disorder (ADHD) scale in Arabic for evaluating children in Saudi Arabia who might be suspected of having ADHD is lacking. Thus, we studied the validity of an Arabic version of the ADHD Rating Scale in discriminating children with an ADHD diagnosis from normal children or from those with non-ADHD psychiatric diagnoses, including mental retardation.

METHODS: The guardians of 119 children provided demographic data and completed the standardized Arabic version of the ADHD Rating Scale on their children, who were either normal, had a diagnosis of ADHD, or had a non-ADHD psychiatric diagnosis. The mean rating scores of the groups were compared, and the cutoff points were calculated for both sexes.

RESULTS: The scores discriminated children with ADHD diagnosis (mean and [SD], 28 [6.288]) from normal children (10.93 [8.009]), and those with a non-ADHD psychiatric diagnosis (16.63 [8.865]). ADHD cutoff points were obtained for male (23.5) and female (22.5) children. Psychosocial characteristics associated with children having ADHD were not associated with the diagnosis of ADHD.

CONCLUSION: The ADHD Rating Scale (Arabic version), in terms of either the grand total score or the total score of each of its two subscales, demonstrated concurrent and discriminant validity by discriminating children with ADHD from other clinical and non-clinical children groups. The study obtained cutoff points for both sexes based only on the grand total score of the scale because of the relatively small sample size. Replication of the study, utilizing a larger sample and eliciting ratings from both parents and teachers, is recommended

Psychol Med. 2009;39:1745-51.

Duration discrimination in the range of milliseconds and seconds in children with ADHD and their unaffected siblings.

Himpel S, Banaschewski T, Gruttner A, et al.

Background Detecting genetic factors involved in attention deficit hyperactivity disorder (ADHD) is complicated because of their small effect sizes and complex interactions. The endophenotype approach eases this by coming closer to the relevant genes. Different aspects of temporal information processing are known to be affected in ADHD. Thus, some of these aspects could represent candidate endophenotypes for ADHD.

Method Fifty-four sib-pairs with at least one child with ADHD and 40 control children aged 618 years were recruited and asked to perform two duration discrimination tasks, one with a base duration of 50 ms on automatic timing and one with a base duration of 1000 ms on cognitively controlled timing.

Results Whereas children with ADHD, but not their unaffected siblings, were impaired in discrimination of longer intervals, both groups were impaired in discriminating brief intervals. Furthermore, a significant within-family correlation was found for discrimination of brief intervals. Task performances of subjects of the control group correlated with individual levels of hyperactivity/impulsivity for discrimination of brief intervals, but not of longer intervals.

Conclusions Cognitively controlled and also automatic processes of temporal information processing are impaired in children with ADHD. Discrimination of longer intervals appears as a typical disease marker whereas discrimination of brief intervals shows up as a vulnerability marker. Discrimination of brief intervals was found to be familial and linked to levels of hyperactivity/impulsivity. Taken together, discrimination of brief intervals represents a candidate endophenotype of ADHD.

The Journal of Behavioral Health Services & Research. 2009 Oct;36:436-49.
Service use patterns for adolescents with ADHD and comorbid conduct disorder.
Jones DE, Foster EM.
Service use patterns and costs of youth diagnosed with attention-deficit/hyperactivity disorder (ADHD) and comorbid conduct disorder (CD) were assessed across adolescence (ages 12 through 17). Featured service sectors include mental health, school services, and the juvenile justice system. Data are provided by three cohorts from the Fast Track evaluation and are based on parent report. Diagnostic groups are identified through a structured assessment. Results show that public costs for youth with ADHD exceed $40,000 per child on average over a 6-year period, more than doubling service expenditures for a non-ADHD group. Public costs for children with comorbid ADHD and CD double the costs of those with ADHD alone. Varying patterns by service sector, diagnosis, and across time indicate different needs for youth with different conditions and at different ages and can provide important information for prevention and treatment researchers.

J Child Adolesc Psychopharmacol. 2009;19:519-27.
Treatment response in depressed adolescents with and without co-morbid attention-deficit/hyperactivity disorder in the treatment for adolescents with depression study.
Kratochvil CJ, May DE, Silva SG, et al.
Objective: In the Treatment for Adolescents with Depression Study (TADS), fluoxetine (FLX) and the combination of fluoxetine with cognitive-behavioral therapy (COMB) had superior improvement trajectories compared to pill placebo (PBO), whereas cognitive-behavioral therapy (CBT) was not significantly different from PBO. Because attention-deficit/hyperactivity disorder (ADHD) and major depressive disorder (MDD) frequently co-exist, we examined whether ADHD moderated these outcomes in TADS.
Method: A total of 439 adolescents with MDD, 12-17 years old, were randomized to FLX, CBT, COMB, or PBO. Random coefficients regression models examined depression improvement in 377 depressed youths without ADHD and 62 with ADHD, including 20 who were treated with a psychostimulant.
Results: Within the ADHD group, the improvement trajectories of the three active treatments were similar, all with rates of improvement greater than PBO. For those without ADHD, only COMB had a rate of improvement that was superior to PBO.
Conclusions: Co-morbid ADHD moderated treatment of MDD. CBT alone or FLX alone may offer benefits similar to COMB in the treatment of MDD in youths with co-morbid MDD and ADHD, whereas monotherapy may not match the benefits of COMB for those without ADHD. The ADHD subgroup analysis presented in this paper is exploratory in nature because of the small number of youths with ADHD in the sample. Clinical Trial Registry: www.clinicaltrials.gov Identifier: NCT00006286. The TADS protocol and all of the TADS manuals are available on the Internet at https://trialweb.dcri.duke.edu/tads/index.html.

J Am Acad Child Adolesc Psychiatry. 2009;48:1085-93.
Maternal Ratings of Attention Problems in ADHD: Evidence for the Existence of a Continuum.
Lubke GH, Hudziak JJ, Derks EM, et al.
Objective: To investigate whether items assessing attention problems provide evidence of quantitative differences or categorically distinct subtypes of attention problems (APs) and to investigate the relation of empirically derived latent classes to DSM-IV diagnoses of subtypes of attention-deficit/hyperactivity disorder (ADHD), for example, combined subtype, predominantly inattentive type, and predominantly hyperactive/impulsive type.
Method: Data on attention problems were obtained from maternal ratings on the Child Behavior Check List (CBCL). Latent class models, which assume categorically different subtypes, and factor mixture models, which permit severity differences, are fitted to data obtained from Dutch boys at age 7 (N = 8,079), 10 (N = 5,278), and 12 years (N = 3,139). The fit of the different models to the data is compared to decide which model, and hence, which corresponding interpretation of AP, is most appropriate. Next, ADHD diagnoses are regressed on latent class membership in a subsample of children.
Results: At all the three ages, models that distinguish between three mainly quantitatively different classes (e.g., mild, moderate, and severe attention problems) provide the best fit to the data. Within each class, the CBCL items measure three correlated continuous factors that can be interpreted in terms of hyperactivity/impulsivity, inattentiveness/dreaminess, and nervous behavior. The AP severe class contains

all of the subjects diagnosed with ADHD-combined subtype. Some subjects diagnosed with ADHD-predominantly inattentive type are in the moderate AP class.
Conclusions: Factor mixture analyses provide evidence that the CBCL AP syndrome varies along a severity continuum of mild to moderate to severe attention problems. Children affected with ADHD are at the extreme of the continuum. These data are important for clinicians, research scholars, and the framers of the DSM-V as they provide evidence that ADHD diagnoses exist on a continuum rather than as discrete categories. J. Am. Acad. Child Adolesc. Psychiatry, 2009;48(11):1085-1093.

Dev Neuropsychol. 2009;34:461-75.
Tower of london performance in healthy adolescents: The development of planning skills and associations with self-reported inattention and impulsivity.
Luciana M, Collins PF, Olson EA, et al.
Studies have investigated planning skill development using the Tower of London (TOL). Reports conflict regarding maturational trajectories and associations with IQ, other executive functions, and impulsivity. A convenience sample of 9- to 20-year-olds completed the TOL and other measures. TOL accuracy improved until ages 15-17. Digit span backwards (DSB), response inhibition, and IQ were correlated with TOL performance. DSB contributed to TOL accuracy above and beyond age and IQ. Inhibitory control and DSB both contributed to the modulation of planning times across problems. Self-reported inattention and hyperactivity were associated with low performance. Task approaches reflecting planning and psychometric issues are discussed.

Neurosci Biobehav Rev.
Identifying the neurobiology of altered reinforcement sensitivity in ADHD: A review and research agenda.
Luman M, Tripp G, Scheres A.
ADHD is associated with altered reinforcement sensitivity, despite a number of inconsistent findings. This review focuses on the overlap and differences between seven neurobiologically valid models and lists 15 predictions assessing reinforcement sensitivity in ADHD. When comparing the models it becomes clear that there are great differences in the level of explanation. For example, some models try to explain a single core deficit in terms lower-level reinforcement systems, such as the dopamine transfer to reward back in time. Other models explain multiple deficits, by describing higher-level systems, such as impaired bottom-up prefrontal activation. When reviewing the available experimental evidence in support of the predictions, most experimental studies have been focusing on behavioral changes in the face of reward and response cost over no-reward, and on delay discounting. There is currently a lack in studies that focus on explaining underlying cognitive or neural mechanisms of altered reinforcement sensitivity in ADHD. Additionally, there is a lack in studies that try to understand what subgroup of children with ADHD shows alterations in reinforcement sensitivity. The scarcity in studies testing the neurobiological predictions is explained partly by a lack in knowledge how to test some of these predictions in humans. Nevertheless, we believe that these predictions can serve as a useful guide to the systematic evaluation of altered reinforcement sensitivity in ADHD.

Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2009 Nov;37:1123-35.
Inhibition, reinforcement sensitivity and temporal information processing in ADHD and ADHD+ODD: Evidence of a separate entity?
Luman M, van Noesel SJP, Papanikolau A, et al.
This study compared children with ADHD-only, ADHD+ODD and normal controls (age 8â€“12) on three key neurocognitive functions: response inhibition, reinforcement sensitivity, and temporal information processing. The goal was twofold: (a) to investigate neurocognitive impairments in children with ADHD-only and children with ADHD+ODD, and (b) to test whether ADHD+ODD is a more severe from of ADHD in terms of neurocognitive performance. In Experiment 1, inhibition abilities were measured using the Stop Task. In Experiment 2, reinforcement sensitivity and temporal information processing abilities were measured using a

Timing Task with both a reward and penalty condition. Compared to controls, children with ADHD-only demonstrated impaired inhibitory control, showed more time underestimations, and showed performance deterioration in the face of reward and penalty. Children with ADHD+ODD performed in-between children with ADHD-only and controls in terms of inhibitory controls and the tendency to underestimate time, but were more impaired than controls and children with ADHD-only in terms of timing variability. In the face of reward and penalty children with ADHD+ODD improved their performance compared to a neutral condition, in contrast to children with ADHD-only. In the face of reward, the performance improvement in the ADHD+ODD group was disproportionally larger than that of controls. Taken together the findings suggest that, in terms of neurocognitive functioning, comorbid ADHD+ODD is a substantial different entity than ADHD-only.

J Autism Dev Disord. 2009;39:1682-93.

Comparison of scores on the Checklist for Autism Spectrum Disorder, Childhood Autism Rating Scale, and Gilliam Asperger's Disorder Scale for Children with Low Functioning Autism, High Functioning Autism, Asperger's Disorder, ADHD, and typical development.

Mayes SD, Calhoun SL, Murray MJ, et al.

Reliability and validity for three autism instruments were compared for 190 children with low functioning autism (LFA), 190 children with high functioning autism or Asperger's disorder (HFA), 76 children with attention deficit hyperactivity disorder (ADHD), and 64 typical children. The instruments were the Checklist for Autism Spectrum Disorder (designed for children with LFA and HFA), Childhood Autism Rating Scale (CARS) for children with LFA, and Gilliam Asperger's Disorder Scale (GADS). For children with LFA or ADHD, classification accuracy was 100% for the Checklist and 98% for the CARS clinician scores. For children with HFA or ADHD, classification accuracy was 99% for the Checklist and 93% for the GADS clinician scores. Clinician-parent diagnostic agreement was high (90% Checklist, 90% CARS, and 84% GADS).

Child Neuropsychol. 2009;15:321-42.

Interference control in children with and without ADHD: A systematic review of flanker and simon task performance.

Mullane JC, Corkum PV, Klein RM, et al.

The present review systematically summarizes the existing research that has examined two reaction-time-based interference control paradigms, known as the Eriksen Flanker task and the Simon task, in children with and without ADHD. Twelve studies are included, yielding a combined sample size of 272 children with ADHD (M age 9.28 yrs) and 280 typically developing children (M age 9.38 yrs). As predicted, specific disadvantages were found in the ADHD group in terms of reaction time, percentage of errors, and efficiency of performance on incongruent relative to congruent trials, providing evidence for weaker interference control in this group.

Cardiovas J Afri. 2009;20:296-99.

The effect of sympathomimetic medication on cardiovascular functioning of children with attention-deficit/hyperactivity disorder.

Negrao BL, Crafford D, Viljoen M.

Objective: The aim of this study was to investigate the effects of sympathomimetic medication on the cardiovascular system of children with attention-deficit/hyperactivity disorder (ADHD).

Methods: Cardiovascular functioning of children with ADHD (n = 19) was tested while the children were stimulant free and during a period in which they were on stimulant medication. Electrocardiograms (ECGs) were obtained by means of a Schiller CardioLaptop AT-110 ECG recorder using the standard 12-lead cable positioning for a resting ECG. Blood pressure was measured by means of a stethoscope and mercury sphygmomanometer.

Results: The main findings of this study were that methyl-phenidate usage is associated with increases in heart rate (HR) and blood pressure (BP), and that it does not adversely affect HR-corrected QT and JT intervals or cardiac dispersion values.

Conclusion: Methylphenidate causes an increase in HR as well as increases in both systolic and diastolic BP, but no change in cardiac depolarisation and repolarisation duration or homogeneity.

J Child Psychol Psychiatry Allied Discip. 2010;51:58-65.

Confirmation and extension of association of blood lead with attention-deficit/hyperactivity disorder (ADHD) and ADHD symptom domains at population-typical exposure levels.

Nigg JT, Nikolas M, Mark Knottnerus G, et al.

Background: Recent studies have suggested that child attention-deficit/ hyperactivity disorder (ADHD) and its symptom domains are related to blood lead level, even at background exposure levels typical in western countries. However, recent studies disagreed as to whether lead was related to inattention or hyperactivity-impulsivity within the ADHD domain. More definitive evaluation of these questions was sought.

Methods: Two hundred and thirty-six (236) children aged 6-17 years participated (61 ADHD-Combined type, 47 ADHD Predominantly Inattentive type, 99 non-ADHD control, 29 unclassified borderline, situational, or not otherwise specified (NOS) cases). Formal diagnosis was reliably established by a best estimate procedure based on a semi-structured clinical interview and parent and teacher ratings. Lead was assayed from whole blood using inductively coupled plasma mass spectrometry with a method detection limit of.3 (mu)g/dL.

Results: Blood lead levels were slightly below United States and Western Europe population exposure averages, with a mean of.73 and a maximum of 2.2 (mu)g/dL. This is the lowest level of blood lead ever studied in relation to ADHD. After statistical control for covariates including IQ and prenatal smoking exposure, blood lead was associated with ADHD-combined type but not inattentive type. Parent and teacher report indicated association of blood lead with Conners cognitive problems, but only teacher report showed effects on DSM-IV inattention symptoms. Blood lead was associated with hyperactivity- impulsivity in parent report regardless of measurement method, whereas teacher report effects depended on child treatment history.

Conclusions: These findings confirm that in children with typical US population lead exposure, careful identification of children with ADHD also identifies children with slightly elevated blood lead.

Res Dev Disabil. 2010;31:185-94.

The neuropsychology of 22q11 deletion syndrome. A neuropsychiatric study of 100 individuals.

Niklasson L, Gillberg C.

The primary objective of this study was to study the impact of ASD/ADHD on general intellectual ability and profile, executive functions and visuo-motor skills in children and adults with 22q11 deletion syndrome (22q11DS). A secondary aim was to study if gender, age, heart disease, ASD, ADHD or ASD in combination with ADHD had an impact on general intellectual ability and profile. One hundred consecutively referred individuals aged 1-35 years with 22q11DS were given in-depth neuropsychological assessments. Mean full scale IQ was 71 with a normal distribution around this mean. Higher IQ for females than males, and a negative trend for IQ with higher age were found. Intellectual impairment, as well as visuo-motor dysfunction, was found to be related to 22q11DS per se and not to ASD/ADHD. In the area of executive function, the presence of ASD/ADHD predicted poor planning ability in the children in the study.

Eur Child Adolesc Psychiatry. 2009;1-9.

COMT Val158Met polymorphism and socioeconomic status interact to predict attention deficit/hyperactivity problems in children aged 10-14.

Nobile M, Rusconi M, Bellina M, et al.

The functional Val158Met COMT polymorphism appears to affect a host of behaviours mediated by the pre-frontal cortex, and has been found associated to the risk for disruptive behaviours including ADHD. Parental socioeconomic status (SES) has also been reported as a predictor for the same childhood disorders. In a general population sample of 575 Italian pre-adolescents aged 10-14, we examined the association of the functional Val158Met COMT polymorphism and SES-both as linear and interactive effects-with oppositional defiant problems, conduct problems, and attention deficit/hyperactivity problems, as defined by the newly established Child Behaviour Check-List/6-18 DSM oriented scales. Multivariate- and subsequent univariate-analysis of covariance showed a significant association of COMT null SES interaction with CBCL 6/18 DOS

attention deficit/hyperactivity problems (p = 0.004), and revealed higher scores among those children with Val/Val COMT genotype who belonged to low-SES families. We also found a significant association of SES with attention deficit/hyperactivity problems and conduct problems DOS (p = 0.04 and 0.01, respectively). Our data are consistent with a bulk of recent literature suggesting a role of environmental factors in moderating the contribution of specific genetic polymorphisms to human variability in ADHD. While future investigations will refine and better clarify which specific environmental and genetic mechanisms are at work in influencing the individual risk to ADHD in pre-adolescence, these data may contribute to identify/prevent the risk for ADHD problems in childhood.

J Autism Dev Disord. 2009;39:1694-705.

Fundamental Movement skills in children diagnosed with autism spectrum disorders and attention deficit hyperactivity disorder.

Pan CY, Tsai CL, Chu CH.

The purpose of this study was to compare the movement skills of children with autism spectrum disorders (ASD), attention deficit hyperactivity disorder (ADHD), and those without disabilities. Ninety-one children (ASD, n = 28; ADHD, n = 29; control, n = 34), ages 6-10 years, were of average IQ participated. After controlling for age, both ASD and ADHD groups scored significantly lower than controls (p's < .05) on overall gross motor development as well as locomotor and object control subtests, and the ASD group performed more poorly than the ADHD group (p's < .01) on both subtests. Of the children with ASD and ADHD, only 16% had clinical levels of impairment. Potential underlying factors are discussed, with suggestions for future research.

Neuroendocrinol Lett. 2009;30:377-81.

Anthropometric changes in non-medicated ADHD boys.

Ptacek R, Kuzelova H, Paclt I, et al.

OBJECTIVES: The aim of the study is to compare complex anthropometric characteristics in non medicated boys with ADHD and normal population.

METHODS: Complex anthropometric examination of non-medicated ADHD boys (n=46, average age 11.03 years), statistical and clinical comparison to the actual population growth norm. In contrast to the most of the previous studies, which analyzed mostly only BMI or basic signs of growth as height and weight, the presented study operates with a complex anthropometrical measurement and comparison with actual population norm.

RESULTS: The results of the study show significant differences in the signs of nutrition (percentage of fat) and growth indicators (lower values of height) between ADHD and non ADHD children. Further anthropometrical parameters show other possible but in the studied sample statistically non-significant differences.

CONCLUSION: Many studies analyzed growth relation to medication of ADHD children, but did not consider that the changes could appear also in non-medicated children and thus they might not be only a side effect of the treatment but a manifestation of the disorder itself. Growth changes in non-medicated children are not described well enough, so the presented study was performed to compare anthropometrics characteristics in ADHD boys with norm of nonclinical population and specify the differences. The results points to hypothesis that the growth changes are primarily caused by the disorder itself.

Neuropharmacology. 2009;57:640-52.

Methylphenidate normalises activation and functional connectivity deficits in attention and motivation networks in medication-naive children with ADHD during a rewarded continuous performance task.

Rubia K, Halari R, Cubillo A, et al.

Background: Children with Attention Deficit Hyperactivity Disorder (ADHD) have deficits in motivation and attention that can be ameliorated with the indirect dopamine agonist Methylphenidate (MPH). We used functional magnetic resonance imaging (fMRI) to investigate the effects of MPH in medication-naive children

with ADHD on the activation and functional connectivity of "cool" attentional as well as "hot" motivation networks.
Methods: 13 medication-naive children with ADHD were scanned twice, under either an acute clinical dose of MPH or Placebo, in a randomised, double-blind design, while they performed a rewarded continuous performance task that measured vigilant selective attention and the effects of reward. Brain activation and functional connectivity was compared to that of 13 healthy age-matched controls to test for normalisation effects of MPH.
Results: MPH normalised performance deficits that were observed in children with ADHD compared to controls. Under placebo, children with ADHD showed reduced activation and functional inter-connectivity in bilateral fronto-striato-parieto-cerebellar networks during the attention condition, but enhanced activation in the orbitofrontal and superior temporal cortices for reward. MPH within children with ADHD enhanced the activation of fronto-striato-cerebellar and parieto-temporal regions. Compared to controls, MPH normalised differences during vigilant attention in parieto-temporal activation and fronto-striatal and fronto-cerebellar connectivity; MPH also normalised the enhanced orbitofrontal activation in children with ADHD in response to reward.
Conclusions: MPH normalised attention differences between children with ADHD and controls by both up-regulation of dysfunctional fronto-striato-thalamo-cerebellar and parieto-temporal attention networks and down-regulation of hyper-sensitive orbitofrontal activation for reward processing. MPH thus shows context-dependent dissociative modulation of both motivational and attentional neuro-functional networks in children with ADHD.

J Fam Psychother. 2008;19:358-78.
Systems in conflict: Labeling youth creativity as mental illness.
Sadre M, Brock LJ.
Highly creative children and adolescents often behave in ways that may appear to be symptoms of mental illness. Multiple systems, including family, school, and mental health professionals, may unknowingly fail to recognize and nurture the creative side of these young people. This article presents a review of literature about the characteristics of creative people that may overlap some symptoms of mental illness. Case studies introduce a new therapeutic approach that embraces youth creativity, invites a positive meaning for symptoms, removes the stigma of a mental illness diagnosis, and improves the young persons' self-esteem and behavior.

J Child Adolesc Psychopharmacol. 2009;19:585-88.
Executive function deficits, attention-deficit/hyperactivity disorder, tics, and obsessive-compulsive disorder in an adolescent.
Schwartz SJ, Sharma KC, Coffey BJ.

J Child Psychol Psychiatry Allied Discip. 2009;50:679-87.
Different neurocognitive functions regulating physical aggression and hyperactivity in early childhood.
Seguin JR, Parent S, Tremblay RE, et al.
Background: There are strong parallels between early childhood and adolescent behavior problems. However, we do not know if behavioral symptoms associate with neurocognitive processes in very young children as they do in older children.
Methods: We studied a population-based birth cohort of children (N= 1,950) whose developmental trajectories of physical aggression and hyperactivity were assessed between the ages of 17 and 41 months. We measured the following neurocognitive abilities at 41 months of age: Receptive vocabulary, visuospatial organization, and short-term memory.
Results: After controlling for other neurocognitive abilities, frequent physical aggression was related specifically to receptive vocabulary deficits ($p < .0001$) while frequent hyperactivity was related specifically to deficits of visuospatial organization ($p < .0001$). The pattern of associations was robust despite controls for socioeconomic and perinatal status.

Conclusions: The different neurocognitive correlates of physical aggression and hyperactivity problems observed during adolescence are apparent in earlv childhood. Whereas physical aggression problems are associated with language deficits, hyperactivity problems are related to non-verbal deficits.

Sleep Med. 2009;10:1132-38.

Sleep disorders in children with Attention-Deficit/Hyperactivity Disorder (ADHD) recorded overnight by video-polysomnography.

Silvestri R, Gagliano A, Arico I, et al.

Objective: To outline specific sleep disturbances in different clinical subsets of Attention Deficit/Hyperactivity Disorder (ADHD) and to confirm, by means of nocturnal video-polysomnography (video-PSG), a variety of sleep disorders in ADHD besides the classically described periodic leg movement disorder (PLMD), restless legs syndrome (RLS) and sleep related breathing disorder (SRBD).

Methods: Fifty-five ADHD children (47 M, 8F; mean age = 8.9y) were included: 16 had Inattentive and 39 Hyperactive/Impulsive or Combined ADHD subtype. Behavior assessment by Conners and SNAP-IV Scales, a structured sleep interview and a nocturnal video-PSG were administered.

Results: Most children/parents reported disturbed, fragmentary sleep at night; complaints were motor restlessness (50%), sleep walking (47.6%), night terrors (38%), confusional arousals (28.5%), snoring (21.4%), and leg discomfort at night associated with RLS (11.9%). There is a significant difference (p value <0.05 or <0.001) in almost all the studied sleep variables between ADHD children and controls. International RLS Rating Scale scoring, Periodic Limb Movements during Sleep (PLMS) and Wake (PLMW) indexes, hyperactivity and opposition scores and ADHD subtype appear related. Different sleep disorders seem to address specific ADHD phenotypes and correlate with severity of symptoms as in sleep related movement disorders occurring in Hyperactive/Impulsive and Combined ADHD subtypes. Besides, an abnormality of the arousal process in slow wave sleep with consequent abnormal prevalence of disorders of arousal possibly enhanced by SRBD has also been detected in 52% of our sample.

Conclusions: This study underlines the opportunity to propose and promote the inclusion of sleep studies, possibly by video-PSG, as part of the diagnostic screening for ADHD. This strategy could address the diagnosis and treatment of different specific ADHD phenotypic expressions that might be relevant to children's symptoms and contribute to ADHD severity.

Am J Med Genet Part A. 2009;149:2581-83.

Interstitial deletion 5q14.3-q21 associated with iris coloboma, hearing loss, dental anomaly, moderate intellectual disability, and attention deficit and hyperactivity disorder.

Sobreira N, Walsh MF, Batista D, et al.

J Child Adolesc Psychopharmacol. 2009;19:501-10.

Safety and effectiveness of coadministration of guanfacine extended release and psychostimulants in children and adolescents with attention-deficit/ hyperactivity disorder.

Spencer TJ, Greenbaum M, Ginsberg LD, et al.

OBJECTIVE: The aim of this study was to evaluate the safety and effectiveness of guanfacine extended release (GXR) administered concomitantly with psychostimulants in children and adolescents with attention-deficit/hyperactivity disorder (ADHD) and suboptimal response to a psychostimulant alone.

DESIGN AND METHODS: This was a multicenter, open-label, 9-week, dose-escalation study of 75 subjects with ADHD treated with methylphenidate (MPH) or amphetamine (AMP) alone for at least 1 month, yet with suboptimal control of ADHD symptoms. Sixty-three subjects (84.0%) completed the study. Patients received GXR in addition to their psychostimulant. Starting with 1 mg/day, GXR was increased weekly to the highest tolerated dose (1, 2, 3, or 4 mg/day), which was maintained through week 6. GXR was then titrated downward in 1-mg weekly decrements from week 7 through week 9. Psychostimulant treatment regimens were continued until at least week 7.

MAIN OUTCOME MEASURES: Safety assessments included adverse events (AEs), vital signs, physical examination, clinical laboratory tests, the Pediatric Daytime Sleepiness Scale, and the Pittsburgh Side Effects Rating Scale. Efficacy was assessed using the ADHD Rating Scale IV (ADHD-RS-IV), the Conners'

Parent Rating Scale-Revised Short Form, Clinical Global Impressions, Parent Global Assessment, and Child Health Questionnaire-Parent Form.
RESULTS: The most common treatment-related AEs were upper abdominal pain (25.3%), fatigue (24.0%), irritability (22.7%), headache (20.0%), and somnolence (18.7%). Most AEs were mild to moderate in severity. Investigator-rated AEs due to blood pressure decreases, heart rate, or electrocardiogram findings were infrequent. Mean changes from baseline (psychostimulant monotherapy just prior to receiving GXR) to end point in ADHD-RS-IV total score were statistically significant overall: -16.1 ($p < 0.0001$). Significant improvement in both subscales of the ADHD-RS-IV was observed. Improvement of symptoms was observed in a majority of subjects.
CONCLUSION: Coadministration of GXR and MPH or AMP was generally safe and associated with statistically significant and clinically meaningful ADHD symptom improvement in children and adolescents.

Am J Psychiatry. 2009 Dec;166:1315-17.
Integrated treatment of aggression in the context of ADHD in children refractory to stimulant monotherapy: a window into the future of child psychopharmacology.
Steiner H, Karnik NS.

Neuropharmacology. 2009;57:708-14.
Resting state electroencephalographic correlates with red cell long-chain fatty acids, memory performance and age in adolescent boys with attention deficit hyperactivity disorder.
Sumich A, Matsudaira T, Gow RV, et al.
Abnormal fatty acid status has been implicated in the aetiology of attention deficit hyperactivity disorder (ADHD). Delayed maturation in ADHD may result in raised frontal low frequency (theta) electroencephalographic activity (EEG) and a reduction in posterior high frequency (beta, alpha) activity. The current study used sequential linear regression to investigate the association between age, resting-state EEG and levels of long-chain polyunsaturated omega-3 and omega-6 fatty acids in red blood cells in 46 adolescent boys with ADHD symptoms. Docosahexaenoic acid (DHA) levels were positively associated with fast frequency activity: alpha during eyes-open and beta during eyes-closed conditions. Frontal theta activity during both eyes-open and eyes-closed conditions was inversely associated with age and positively associated with eicosapentaenoic acid (EPA) levels. Alpha activity correlated positively with performance on fluency for categories (semantic memory). Theta activity correlated inversely with performance on delayed (25 min) verbal memory (recall + recognition/2). No associations were observed between long-chain omega-6 and EEG measures. Results support differential associations for DHA and EPA with fast and slow EEG activity respectively. Results support EEG activity as an objective biomarker of neural function associated with long-chain omega-3 fatty acids in ADHD.

Eur Child Adolesc Psychiatry. 2009;18:725-35.
Atomoxetine improves patient and family coping in attention deficit/hyperactivity disorder: A randomized, double-blind, placebo-controlled study in Swedish children and adolescents.
Svanborg P, Thernlund G, Gustafsson PA, et al.
This 10-week study assessed the efficacy of atomoxetine in combination with psychoeducation compared to placebo and psychoeducation in the improvement of Quality of Life in Swedish stimulant-naive children and adolescents with attention deficit/hyperactivity disorder. A total of 99 patients were treated with atomoxetine (49 patients) or placebo (50 patients) for 10 weeks and assessed regarding broader areas of functioning using the Quality of Life measures Child Health and Illness Profile-Child Edition (CHIP-CE), Family Strain Index [FSI; equivalent to the Family Burden of Illness Module used in the study], Appraisal of Stress in Child-Rearing (ASCR), Five to fifteen (FTF), "I think I am" ("Jag tycker jag ar"), and Children's Depression Rating Scale-Revised (CDRS-R) before and after the active treatment phase. Simultaneously, the patients' parents participated in a 4-session psychoeducation program. A statistically significant difference in favor of atomoxetine was seen in the improvement from baseline to study endpoint for the CHIP-CE domains "Achievement" and "Risk avoidance", for the FSI total score, for the ASCR section (I) domain "Child as a burden", for all FTF domains except for "Language and Speech", and for the CDRS-R total score. No

difference between treatment groups was observed in the patient-assessed evaluation of self-esteem using the "I think I am" scale. Atomoxetine combined with psychoeducation had a positive effect on various everyday coping abilities of the patients as well as their families during 10 weeks of treatment, whereas the patients' self-image and the parents' image of the climate in the family were not significantly improved.

Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology. 2009 Nov;37:1137-50.

The unity and diversity of inattention and hyperactivity/impulsivity in ADHD: Evidence for a general factor with separable dimensions.

Toplak ME, Pitch A, Flora DB, et al.

To examine the unity and diversity of inattention and hyperactivity/impulsivity symptom domains of Attention-Deficit/Hyperactivity Disorder (ADHD) in a clinical sample of adolescents with ADHD. Parents and adolescents were administered a semi-structured diagnostic interview, the Schedule for Affective Disorders and Schizophrenia for School-Age Childrenâ€"Present and Lifetime Version (K-SADS-PL), to assess adolescent ADHD. Data from 201 parent interviews and 189 adolescent interviews were examined. Four potential factor structures for the 18 ADHD symptoms were tested using confirmatory factor analysis: two models with correlated factors and two bifactor models. A bifactor model with two specific factors best accounted for adolescent symptoms, according to both parent and adolescentsâ€™ reports. Replication of these findings from behavioral rating scales completed for this sample by parents and teachers indicates that the findings are not methodâ€“ or informant-specific. The results suggest that there is an important unitary component to ADHD symptoms and separable dimensional traits of Inattention and Hyperactivity/Impulsivity.

Int J Psychiatry Clin Pract. 2009;13:318-25.

The association between children's ADHD subtype and parenting stress and parental symptoms.

Tzang RF, Chang YC, Liu SI.

Objective. To investigate the association between two attention deficit/hyperactivity disorder (ADHD) subtypescombined and inattentive subtypesand parental stress in a Taiwanese population.

Method. One hundred and nine children with ADHD were interviewed using the MINI Kid questionnaire. The children were divided into combined and inattentive subtypes. The level of parenting stress was measured with the self-report Parenting Stress Index and Parental Symptom Scale (Symptom Check List, SCL-90). The data were used to identify child and parental risk factors.

Results. Combined subtype was highly associated with parental stress. Parents of children in this group were significantly younger, had a poorer understanding of ADHD, and had significantly higher levels of marital discord, parenting stress, parental symptoms, and life stress (all $P<0.05$). Multivariate analysis revealed that age of mother, child with comorbidity diagnosis, and parents with poor understanding of ADHD were significantly associated with the combined subtype relative to inattentive subtype (all $P<0.05$).

Conclusion. The combined subtype of ADHD is associated with more parental psychopathology and stress than the inattentive subtype and the presence of combined subtype may indicate that such a child is at greater risk than the inattentive subtype for comorbid conditions such as oppositional defiant disorder and conduct disorder.

Rev Med Brux. 2009;30:239-43.

Attention deficit disorder in childhood.

Van Bogaert P.

Attention deficit disorder, eventually associated with hyperactivity (ADD(plus or minus)H), is nowadays viewed as a syndrome often of unknown etiology but probably not unique, with important genetic influence and associated environmental factors. The cognitive model proposing ADHD as a result of impaired inhibitory control which makes the child less flexible to changing circumstances suffers from poor sensibility and specificity. As studies aimed to make genotype-phenotype correlations were disappointing, recent genetic researches tend to correlate the genotype to an endophenotype defined from neuro-imaging data with encouraging preliminary results. Treatment with methylphenidate has long been considered as a first choice for disabling forms of ADHD, but recent data do not show evidence for superiority of methylphenidate

compared to non pharmacological approach at long term. Evaluation and treatment of each suspected case of ADHD need to be tailored with special concern for associated conditions as psycho-affective troubles or learning difficulties.

Acta Paediatr Int J Paediatr. 2009;98:1805-08.

Can early intake of dietary omega-3 predict childhood externalizing behaviour?

Waylen A, Ford T, Goodman R, et al.

Aim: To determine whether maternal and child intake of dietary omega-3 (n-3) fatty acids (FA), together with the presence or absence of breast-feeding, predicted psychiatric diagnosis of externalizing disorders in childhood.

Methods: Data concerning childhood externalizing disorders were collected from 8242 children aged 7.9 years in a large British cohort. Intake of n-3 FA was measured for the study mother during pregnancy and for the child at 3 years. Duration of breast-feeding was examined to account for moderating effects. Adjustment was made for a variety of potential confounders.

Results: Maternal intake of n-3 and breast-feeding predicted oppositional/conduct disorder and comorbid externalizing disorder before adjustment for confounding factors. However, there was no association between intake of n-3 by mother or child and any type of externalizing disorder once socio-demographic factors were taken into account.

Conclusions: Any association between intake of n-3 and childhood externalizing disorders appears to be strongly confounded with socio-demographic factors. This is important to note given the current popularity of n-3 as a possible treatment for behaviour problems related to inattention and impulsivity. Care must be taken that studies investigating this relationship account fully for factors associated with both behaviour and diet.

J Child Adolesc Psychopharmacol. 2009;19:575-82.

A naturalistic study of predictors and risks of atypical antipsychotic use in an attention-deficit/hyperactivity disorder clinic.

Weiss M, Panagiotopoulos C, Giles L, et al.

OBJECTIVE: This was an exploratory study to examine the use of atypical antipsychotics in an attention-deficit/hyperactivity disorder (ADHD) clinic.

METHOD: A total of 194 patients was examined to compare those receiving atypical or second-generation antipsychotics (atypicals) from those who were not. A sample of 27 children on atypicals received laboratory investigation for indicators of possible metabolic effects.

RESULTS: In all, 19.1% of the patients in the clinic were receiving atypicals with a mean duration of 313 days; 36 of 37 patients on atypicals had received risperidone, with a mean dose of 0.62 mg. Children receiving atypicals were statistically more likely to have a severe co-morbid disorder, a lower Children's Global Assessment Scale score, a greater total score on the teacher Strengths and Difficulties Questionnaire, and greater difficulty with parent-rated symptoms of being touchy, worried, rages, and explosive outbursts. There were no differences found in measures of functioning, adaptive skills, quality of life, or ADHD symptoms. In the subset of children studied for potential metabolic effects, 68.0% had a waist circumference > or =90(th) percentile that was independent of weight gain, 18.5% had impaired fasting glucose, 12.5% had elevated blood pressure, 11.1% had elevated triglycerides, and 16.7% met full criteria for metabolic syndrome.

CONCLUSION: Clinical implementation of the efficacy studies of risperidone for disruptive behavior disorders has led to a significant change in practice. Almost 1 in 5 patients are now receiving atypical neuroleptics, typically to treat severe co-morbid disorders and symptoms other than ADHD per se. Despite these children receiving low doses, concomitant stimulants, and low body mass index z-scores, a significant proportion of children demonstrated either one or more components or the full criteria for metabolic syndrome.

Int J Psychophysiol. 2009 Oct;74:19-27.
Neural activity associated with executive functions in adolescents with attention-deficit/hyperactivity disorder (ADHD).
Wild-Wall N, Oades RD, Schmidt-Wessels M, et al.
This study used event-related potentials (ERPs) and flanker-task performance to compare executive functions in adolescents with ADHD, their siblings and independent healthy controls. The aim was to investigate the processing of distracting stimuli, control over inappropriate responses, and the detection of errors in the presence of incompatible and No-go stimuli (arrow-heads and a circle, respectively). Performance showed no major differences between the groups, although No-go errors were numerically increased for the patients. Adolescents with ADHD were not characterised by the absence of post-error response slowing. The ADHD group showed a generally smaller N2 and a missing amplification of the frontal P3 (P3a) in No-go vs. incompatible trials most likely reflecting impaired inhibitory processing. In response-locked potentials error-related negativity (Ne) and positivity (Pe) did not clearly differentiate between the groups. This study shows that ADHD children are more impaired in controlled than automatic response processing and inhibition. This was particularly evident in reduced frontal activity in general and especially after No-go stimuli. Deficient error processing may, however, not be a cardinal feature of adolescents with ADHD. Future work must orient towards determining if there is a subgroup for whom the inhibitory impairment is characteristic.

J Child Adolesc Psychopharmacol. 2009;19:485-92.
An open study of adjunct OROS-methylphenidate in children and adolescents who are atomoxetine partial responders: I. effectiveness.
Wilens TE, Hammerness P, Utzinger L, et al.
OBJECTIVE: This study evaluated the effectiveness of adding OROS methylphenidate (MPH) to children who are partial responders to atomoxetine (ATMX) in the treatment of attention-deficit/hyperactivity disorder (ADHD).
METHODS: This is a two-phase, 7-week, open study in children aged 6-17 years. Phase I initiated ATMX for a minimum of 4 weeks. Phase II entered partial responders to ATMX and added up to 54 mg of OROS MPH to their regimen. Subjects were assessed on multiple outcomes, including ADHD, executive functioning, and adverse effects. All analyses were intent to treat, with last observation carried forward.
RESULTS: Fifty subjects who were partial responders to ATMX were treated with the combination therapy, with 41 subjects completing the entire protocol. There was a 40% reduction in their ADHD Rating Scale from the start of phase II through the end of study (from 21.14 +/- 9.9 to 12.8 +/- 9.7, $t = 6.5$, $p < 0.0001$). In addition, there was a clinically significant reduction in the Clinical Global Index of ADHD severity from moderate to mild ADHD (start of phase II, 3.7; end of phase II, 2.7, 27%, $t = 6.5$, $p < 0.0001$), as well as improvements in executive functioning.
CONCLUSION: These results suggest that OROS MPH added to the regimen of partial responders to ATMX improves ADHD and executive functioning, necessitating further controlled trials.

J Child Adolesc Psychopharmacol. 2009;19:483-84.
Combined pharmacotherapy in pediatric psychopharmacology: Friend or Foe?
Wilens TE.

J Clin Psychiatry. 2009 Nov;70:1557-62.
Presenting ADHD symptoms, subtypes, and comorbid disorders in clinically referred adults with ADHD.
Wilens TE, Biederman J, Faraone SV, et al.
OBJECTIVE: Despite the increasing presentation of attention-deficit/hyperactivity disorder (ADHD) in adults, many practitioners remain reluctant to assess individuals for ADHD, in part related to the relative lack of data on the presenting symptoms of ADHD in adulthood. Comorbidity among adults with ADHD is also of great interest due to the high rates of psychiatric comorbidity, which can lead to a more persistent ADHD among adults.

METHOD: We assessed 107 adults with ADHD of both sexes (51% female; mean +/- SD of 37 +/- 10.4 years) using structured diagnostic interviews. Using DSM-IV symptoms, we determined DSM-IV subtypes. The study was conducted from 1998 to 2003.
RESULTS: Inattentive symptoms were most frequently endorsed (> 90%) in adults with ADHD. Using current symptoms, 62% of adults had the combined subtype, 31% the inattentive only subtype, and 7% the hyperactive/impulsive only subtype. Adults with the combined subtype had relatively more psychiatric comorbidity compared to those with the predominately inattentive subtype. Women were similar to men in the presentation of ADHD.
CONCLUSION: Adults with ADHD have prominent inattentive symptoms of ADHD, necessitating careful questioning of these symptoms when evaluating these individuals

Behav Genet. 2009 Sep;39:447-60.
Hyperactive-impulsive symptom scores and oppositional behaviours reflect alternate manifestations of a single liability.
Wood AC, Rijsdijk Fh, Asherson P, et al.
Attention deficit hyperactivity disorder and oppositional behaviors frequently co-occur, We aimed to study the etiology of this overlap in a general population-based twin sample, assessing the symptom domains of hyperactivity-impulsivity and inattentiveness separately for their overlap with oppositionality. We further aimed to investigate whether rater bias may contribute to the overlap in previous data which used one rater only. Using parent and teacher ratings on hyperactivity-impulsivity, inattentiveness and oppositionality, and actigraph measurements of activity level, for 668 7-9-year-old twin pairs, oppositionality showed a higher overlap with hyperactivity-impulsivity (r = 0.95) than with inattentiveness (r = 0.52) and all etiological influences on hyperactivity-impulsivity were shared with those on oppositionality, indicated by a genetic correlation of 0.95 and a child-specific environmental correlation of 0.94. Actigraph data did not show an overlap with ratings of oppositionality. In middle childhood, symptoms of hyperactivity-impulsivity and oppositional behavior may represent the same underlying liability, whereas the inattentive domain is more distinct.

J Child Adolesc Psychopharmacol. 2009;19:553-61.
Methylphenidate combined with aripiprazole in children and adolescents with bipolar disorder and attention-deficit/hyperactivity disorder: A randomized crossover trial.
Zeni CP, Tramontina S, Ketzer CR, et al.
In clinical samples, juvenile bipolar disorder (JBPD) is frequently accompanied by co-morbid attention-deficit/hyperactivity disorder (ADHD). Clinical trials assessing combined psychopharmacological interventions in this population are scarce, and methylphenidate (MPH) may worsen manic symptoms. We conducted a randomized crossover trial with MPH and placebo (2 weeks each) combined with aripiprazole in children and adolescents (n? =?16; 8-17 years old) with JBPD and ADHD who had a significant response in manic symptoms with aripiprazole but still presented clinically significant symptoms of ADHD. ADHD, manic, and depressive symptoms were assessed by means of standard scales. Fourteen out of the 16 subjects completed the trial. No significant differences between the effects of methylphenidate and placebo were detected in ADHD (F 1, 43.22?=0.00; p=?0.97) or manic (F1, 40.19?=?0.93; p?=?0.34) symptoms. Significant improvement in depressive symptoms was observed in the MPH group (F1,19.03 =?7.75; p?=?0.01) according to a secondary self-reported outcome measure. One patient using aripiprazole and MPH discontinued the trial due to the onset of a severe mixed episode. No other significant adverse events were observed. Although MPH did not worsen manic symptoms, it was not more effective than placebo in improving ADHD symptoms in children and adolescents with JBPD co-morbid with ADHD stabilized with aripiprazole. Further investigations are warranted. This study is registered at www.clinicaltrials.gov under the identifier NCT00305370.

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