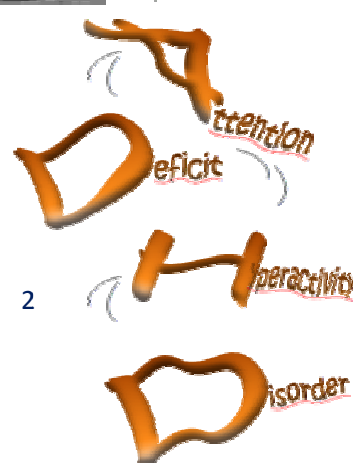




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J Neuropsychiatry Clin Neurosci 2012;24:458-462.

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XI Congresso Nazionale AIDAI-AIRIPA:

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c/o Università degli Studi di Perugia

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BIBLIOGRAFIA ADHD GENNAIO 2013

Alcohol Clin Exp Res. 2013;37:E338-E346.

PRENATAL ALCOHOL EXPOSURE, ATTENTION-DEFICIT/HYPERACTIVITY DISORDER, AND SLUGGISH COGNITIVE TEMPO.

Graham DM, Crocker N, Deweese BN, et al.

Background: Children with heavy prenatal alcohol exposure often meet criteria for attention-deficit/hyperactivity disorder (ADHD). ADHD research has examined subtype differences in symptomatology, including sluggish cognitive tempo (SCT). This construct is defined by behavioral symptoms including hypoactivity and daydreaming and has been linked to increased internalizing behaviors. The current study examined whether similar findings are displayed in children with prenatal alcohol exposure.

Methods: As part of a multisite study, caregivers of 272 children (8 to 16 years) completed the SCT Scale and Child Behavior Checklist (CBCL). Four groups were included: alcohol-exposed children with ADHD (ALC+; n=75), alcohol-exposed children without ADHD (ALC-; n=35), nonexposed children with ADHD (ADHD; n=60), and nonexposed children without ADHD (CON; n=102). SCT and CBCL scores were analyzed using 2 (exposure) null 2 (ADHD) analyses of variance. Pearson's correlations measured the relationships between SCT, CBCL, and Full Scale IQ (FSIQ). Discriminant function analysis examined whether SCT items could accurately classify groups.

Results: Analyses revealed significant main effects of exposure and ADHD on SCT and internalizing and externalizing scores and significant interaction effects on SCT and internalizing scores. SCT significantly correlated with internalizing, externalizing, and attention ratings in all groups and with FSIQ in ALC+. Discriminant function analysis indicated that specific SCT items could distinguish ALC- from CON.

Conclusions: Alcohol-exposed children exhibited elevated SCT scores. Elevations were related to increased parent ratings of internalizing and externalizing behaviors and attention. These findings are observed in alcohol-exposed children regardless of ADHD symptoms and specific SCT items proved useful in distinguishing exposed children, suggesting clinical utility for this measure in further defining the neurobehavioral profile related to prenatal alcohol exposure.

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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.

Ann Epidemiol. 2013.

ASSOCIATION BETWEEN ATOPIC DISEASES AND ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN CHILDHOOD: A POPULATION-BASED CASE-CONTROL STUDY.

Tsai JD, Chang SN, Mou CH, et al.

Purpose: Both atopic diseases (AD) and attention-deficit/hyperactivity disorders (ADHD) are common pediatric disorders that may lead to mental and physical complications. This population-based, case-control design is to correlate the risk of ADHD with AD among a pediatric population.

Methods: By using a Longitudinal Health Insurance Database ranged from 2002 to 2009, 4692 children with ADHD and 18,768 randomly selected controls were enrolled. Odds ratios (OR) of ADHD were calculated for the association with AD.

Results: The children with ADHD had a higher rate of AD than controls, particularly allergic rhinitis and allergic conjunctivitis. The corresponding ORs were 1.81 (95% confidence interval [CI], 1.69-1.93) and 1.69 (95% CI, 1.58-1.81), respectively. Despite the lower prevalence, children with atopic dermatitis and asthma were also at higher risk of ADHD, with ORs of 1.80 (95% CI, 1.58-2.05) and 1.48 (95% CI, 1.24-1.78). Logistic regression analysis estimated ORs showed ADHD risk was higher for those living in urban areas. The risk of ADHD increased with numbers of AD and age.

Conclusions: Most of the children with ADHD had a strong association with AD, especially allergic rhinitis. Awareness of these comorbidities may help clinicians to provide better comprehensive management and reduce the burden of disease.

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Arq Neuro-Psiquiatr. 2013;71:11-17.

STROKE CAUSED AUDITORY ATTENTION DEFICITS IN CHILDREN.

Elias KMIF, de Moura-Ribeiro MVL.

Objective: To verify the auditory selective attention in children with stroke.

Methods: Dichotic tests of binaural separation (non-verbal and consonant-vowel) and binaural integration - digits and Staggered Spondaic Words Test (SSW) - were applied in 13 children (7 boys), from 7 to 16 years, with unilateral stroke confirmed by neurological examination and neuroimaging.

Results: The attention performance showed significant differences in comparison to the control group in both kinds of tests. In the non-verbal test, identifications the ear opposite the lesion in the free recall stage was diminished and, in the following stages, a difficulty in directing attention was detected. In the consonant- vowel test, a modification in perceptual asymmetry and difficulty in focusing in the attended stages was found. In the digits and SSW tests, ipsilateral, contralateral and bilateral deficits were detected, depending on the characteristics of the lesions and demand of the task.

Conclusion: Stroke caused auditory attention deficits when dealing with simultaneous sources of auditory information.

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Basic Clin Neurosci. 2012;3:68-74.

MEMORY PERFORMANCE AMONG CHILDREN WITH ADHD.

Zarghi A, Mehrinejad SA, Zali A, et al.

Introduction: The present post-eventual research study was conducted with the purpose of comparing the memory performance between two distinct groups of 50 healthy children and 50 attention deficit hyperactivity disorder (ADHD) children (25 girls and 25 boys) in Tehran with an age range of 10-12.

Methods: The whole students were selected through simple random sampling method and were assessed in children's medical center, the Clinic of Roozbeh Hospital, and Tehran's Andishe primary school (both girls' and boys' branches). The applied tools for data gathering were the Benton test and Wechsler memory sub-test (form A).

Results: The results showed a significant difference between Benton test scores and Wechsler memory sub-test scores (i.e. personal and general information, orientation, mind control, logical memory, repeating numbers straightly or reversely, learning and memory) among healthy children and those with ADHD.

Discussion: memory performance in children with ADHD was weaker than healthy children. In general, with regard to the memory deficit and attention disorder, these patients require both memory and attention rehabilitation for a better quality of life.

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BMC Psychiatry. 2013;13.

THE CHILDREN'S ATTENTION PROJECT: A COMMUNITY-BASED LONGITUDINAL STUDY OF CHILDREN WITH ADHD AND NON-ADHD CONTROLS.

Sciberras E, Efron D, Schilpzand EJ, et al.

Background: Attention-Deficit/Hyperactivity Disorder (ADHD) affects approximately 5% of children worldwide and results in significant impairments in daily functioning. Few community-ascertained samples of children with ADHD have been studied prospectively to identify factors associated with differential outcomes. The Children's Attention Project is the first such study in Australia, examining the mental health, social, academic and quality of life outcomes for children with diagnostically-confirmed ADHD compared to non-ADHD controls. The study aims to map the course of ADHD symptoms over time and to identify risk and protective factors associated with differential outcomes.

Methods/design: The sample for this prospective longitudinal study is being recruited across 43 socio-economically diverse primary schools across Melbourne, Australia. All children in Grade 1, the second year of formal schooling (6-8 years), are screened for ADHD symptoms using independent parent and teacher reports on the Conners' 3 ADHD index (~N = 5260). Children screening positive for ADHD by both parent and teacher report, and a matched sample (gender, school) screening negative, are invited to participate in the longitudinal study. At baseline this involves parent completion of the NIMH Diagnostic Interview Schedule for Children IV (DISC-IV) to confirm likely ADHD diagnostic status and identify other mental health difficulties, direct child assessments (cognitive, academic, language and executive functioning; height and weight) and questionnaires for parents and teachers assessing outcomes, as well as a broad range of risk and protective factors (child, parent/family, teacher/school, and socio-economic factors). Families will be initially followed up for 3 years.

Discussion: This study is the first Australian longitudinal study of children with ADHD and one of the first community-based longitudinal studies of diagnostically confirmed children with ADHD. The study's examination of a broad range of risk and protective factors and ADHD-related outcomes has the potential to inform novel strategies for intervention and prevention.

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BMC Psychiatry. 2013;13.

INTERVENTIONS TO IMPROVE EXECUTIVE FUNCTIONING AND WORKING MEMORY IN SCHOOL-AGED CHILDREN WITH AD(H)D: A RANDOMISED CONTROLLED TRIAL AND STEPPED-CARE APPROACH.

van der Donk MLA, Hiemstra-Beernink AC, Tjeenk-Kalff AC, et al .

Background: Deficits in executive functioning are of great significance in attention-deficit/hyperactivity disorder (ADHD). One of these executive functions, working memory, plays an important role in academic performance and is often seen as the core deficit of this disorder. There are indications that working memory problems and academic performance can be improved by school-oriented interventions but this has not yet been studied systematically. In this study we will determine the short- and long-term effects of a working memory - and an executive function training applied in a school situation for children with AD(H)D, taking individual characteristics, the level of impairment and costs (stepped-care approach) into account.

Methods/design: The study consists of two parts: the first part is a randomised controlled trial with school-aged children (8-12 yrs) with AD(H)D. Two groups (each n = 50) will be randomly assigned to a well studied computerized working memory training 'Cogmed', or to the 'Paying attention in class' intervention which is an experimental school-based executive function training. Children will be selected from regular - and special education primary schools in the region of Amsterdam, the Netherlands. The second part of the study will determine which specific characteristics are related to non-response of the 'Paying attention in class' intervention. School-aged children (8-12 yrs) with AD(H)D will follow the experimental school-based

executive function training 'Paying attention in class' (n = 175). Academic performance and neurocognitive functioning (primary outcomes) are assessed before, directly after and 6 months after training. Secondary outcome measures are: behaviour in class, behaviour problems and quality of life.

Discussion: So far, there is limited but promising evidence that working memory - and other executive function interventions can improve academic performance. Little is known about the applicability and generalization effects of these interventions in a classroom situation. This study will contribute to this lack of information, especially information related to real classroom and academic situations. By taking into account the costs of both interventions, level of impairment and individual characteristics of the child (stepped-care approach) we will be able to address treatment more adequately for each individual in the future.

Trial registration: Nederlands Trial Register NTR3415.

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BMC Psychiatry. 2013 Feb;13.

THE SEVERITY OF ADHD AND EATING DISORDER SYMPTOMS: A CORRELATIONAL STUDY.

Stulz N, Hepp U, Gächter C, et al.

Background: Attention deficit/hyperactivity disorders (ADHD) and eating disorders (ED) share several clinical features. Research on the association between ADHD and ED is still quite sparse and findings are ambiguous.

Methods: Correlations between the severity of ADHD key features (Barratt Impulsiveness Scale, and Attention Deficit/Hyperactivity Disorder-Self-Rating questionnaire) and the severity of specific ED symptoms (Structured Interview for Anorexia and Bulimia Nervosa) were examined in 32 female patients diagnosed with ED.

Results: Most correlations between the severity of ADHD features and the severity of ED symptoms were low ($r < 0.30$) and did not reach statistical significance. The only exception was a statistically significant, but counterintuitive association between impulsivity and the avoidance of fattening food.

Conclusions: The findings in this small sample suggest a weak link between the severity of ADHD key features and the severity of single ED symptoms in female patients with ED. The role of ADHD features for the development, maintenance, and treatment of EDs seems to be intricate and requires further study.

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BMJ Open. 2013;3.

CHRONIC HEALTH PROBLEMS AND HEALTH-RELATED QUALITY OF LIFE IN CHINESE CHILDREN AND ADOLESCENTS: A POPULATION-BASED STUDY IN HONG KONG.

Lee SL, Cheung YF, Wong HSW, et al.

Objective: We examined the association of different chronic physical and mental conditions, individually or comorbidly on health-related quality of life (QoL) in Chinese children aged (less-than or equal to) 14 years in Hong Kong.

Design: Population-based cross-sectional survey.

Participants: Approximately 7500 Chinese children aged <14 years in Hong Kong.

Interventions: Nil. Primary and secondary outcome measures: Various health concepts of validated Chinese version of Child Health Questionnaire (CHQ), a health-related QoL questionnaire in children.

Result: There was significant association of physical and mental health conditions, either individually or comorbidly, on the various concepts of CHQ. Children with mental health problems were apparently more affected than those with physical health problems. Chronic renal disease and congenital malformation were the physical health conditions associated with the lowest scores in CHQ concepts in children aged 5.10 years and aged 10.14 years, respectively. Behavioural problem was the mental health condition associated with the lowest score in CHQ concepts in both age groups.

Conclusions: Our study shows important information concerning the prevalence of different health conditions and its association, either individually or comorbidly on the QoL in a representative sample of Chinese children in HK.

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Brain Dev. 2013.

PERSISTENT VERBAL AND BEHAVIORAL DEFICITS AFTER RESECTION OF THE LEFT SUPPLEMENTARY MOTOR AREA IN EPILEPSY SURGERY.

Endo Y, Saito Y, Otsuki T, et al.

An 8-year-old boy underwent a resection for focal cortical dysplasia at the left supplementary motor area (SMA) for the treatment of intractable epilepsy. The manifestations of SMA syndrome, such as transient mutism and right hemiparesis, resolved within a few weeks. Verbal disfluency and impaired executive function, accompanied by impulsivity and distractibility, persisted for more than 12 months. The verbal and behavioral problems caused serious difficulties in the school life of the patient, until they became less evident at 18 months after surgery. Tractography performed 18 months after surgery revealed a defect in the subportion of fronto-parietal association fibers within the left superior longitudinal fascicles. Verbal infuency can persist with unusually long duration after resection of SMA during childhood. Although not discernible on the routine neuroimaging, white matter damage beneath the SMA region could result in serious disabilities in executive function. These complications should be recognized for the prediction and assessment of deficits in children after surgical intervention involving this region.

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Can J Psychiatry. 2012;57:715-16.

EPIDEMIOLOGIC AND CLINICAL PERSPECTIVES ON ANTIPSYCHOTIC TREATMENT OF CHILDREN AND ADOLESCENTS.
Olfson M.

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Can J Psychiatry. 2012;57:608-16.

AN EXAMINATION OF THE IMPACT OF ATTENTION-DEFICIT HYPERACTIVITY DISORDER ON IQ: A LARGE CONTROLLED FAMILY-BASED ANALYSIS.

Biederman J, Fried R, Petty C, et al.

Objective: Although children with attention-deficit hyperactivity disorder (ADHD) have, on average, lower intelligence quotient (IQ) scores than control subjects, the reasons for these deficits remain unknown. Because IQ is highly familial, we investigated whether children with ADHD have a decrement in IQ from expectations based on parental IQ.

Method: Subjects were 276 children with ADHD and 239 control subjects of similar age and sex. Expected IQ was calculated based on biological parents' estimated IQ. A significant discrepancy between observed and expected estimated IQ was defined by a child scoring 15 IQ points or more lower than expected, based on parental IQ.

Results: Compared with control subjects, children with ADHD were significantly more likely to have lower than expected estimated IQ scores based on parental IQ, though this finding was accounted for by a small subgroup of children with ADHD who had an IQ 15 points or more lower than expected, based on parental IQ. These children were more likely to be female, have higher psychopathological, neuropsychological, educational, and interpersonal deficits, as well as higher rates of perinatal complications.

Conclusions: Group differences in IQ scores between children with and without ADHD reported in the literature may be accounted for by a subgroup of children with ADHD who have a large decrement in IQ from expectations based on parental IQ. Although perinatal complications may explain these findings, more work is needed to better understand the etiology of these IQ deficits.

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Child Neuropsychol. 2013 Jan;19:37-54.

INTERFERENCE CONTROL IN WORKING MEMORY: COMPARING GROUPS OF CHILDREN WITH ATYPICAL DEVELOPMENT.

Palladino P, Ferrari M.

The study aimed to test whether working memory deficits in children at risk of Learning Disabilities (LD) and/or attention deficit/hyperactivity disorder (ADHD) can be attributed to deficits in interference control, thereby implicating prefrontal systems. Two groups of children known for showing poor working memory (i.e., children with poor comprehension and children with ADHD) were compared to a group of children with specific reading decoding problems (i.e., having severe problems in phonological rather than working memory) and to a control group. All children were tested with a verbal working memory task. Interference control of irrelevant items was examined by a lexical decision task presented immediately after the final recall in about half the trials, selected at random. The interference control measure was therefore directly related to working memory performance. Results confirmed deficient working memory performance in poor comprehenders and children at risk of ADHD+LD. More interestingly, this working memory deficit was associated with greater activation of irrelevant information than in the control group. Poor decoders showed more efficient interference control, in contrast to poor comprehenders and ADHD+LD children. These results indicated that interfering items were still highly accessible to working memory in children who fail the working memory task. In turn, these findings strengthen and clarify the role of interference control, one of the most critical prefrontal functions, in working memory.

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Coll Antropol. 2012 Dec;36:1183-88.

EARLY DETECTION AND RECOGNITION OF CHILDREN WITH ADHD (ATTENTION DEFICIT HIPERACTIVITY DISORDER) SYMPTOMS.

Vukojevic M, Dizdarevic A, Novakovic D.

Aim of this study was to determine the probability of occurrence of Attention Deficit/Hyperactivity Disorder-ADHD in children of preschool age and early school age, and to identify differences in the assessment of children identified with high probability for the disorder with regard to assessment by parents and teachers, and with respect on age and sex of children. Total of 107 children were included in the study: 51 girls and 56 boys. The study employed two questionnaires: Questionnaire for Analysis at School for teachers and Questionnaire for Analysis at Home for parents. Both questionnaires contained 39 statements which covered three dimensions of child's behavior needed for ADHD diagnosis. Raw data in each questionnaire were converted according to the standard norms of Guide to Standard Scores (SS) and Total Standard Scores (TSS) and as such were used for statistical analysis. It was found that a considerable number of children demonstrated high probability for ADHD disorder in assessments done by both parents and teachers. Parents recognize probability of ADHD presence more frequently among male children, while teachers recognize this probability more often among female children. Research shows that a significant percentage of children from the entire sample have been labeled with significant ADHD symptoms. Given the age of the child both parents and teachers recognize similar levels of high ADHD probability. Future studies should be directed toward early detection and recognition of children with ADHD syndrome, and clinical evaluation as a first step toward successful treatment and prevention of additional psychological and other problems in an adult.

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Compr Psychiatry. 2013;54:E1.

ADULT ADHD: PERSISTENCE, SYMPTOMPROFILE AND DEMOGRAPHIC CHARACTERISTICS.

Agnew-Blais J, Seidman LJ, Buka S.

Introduction: Attention-deficit/hyperactivity disorder (ADHD) is relatively common in childhood, affecting approximately 4%-7% of the population. It is increasingly recognized that symptoms of ADHD may not resolve in childhood, but continue into adolescence and adulthood, with associated functional impairment and distress.

Methods: A subset of the New England Family Study (N=1971) was interviewed in adulthood regarding childhood symptoms of ADHD, and current (past 6months) symptoms, using an instrument based on the DIS. Individuals met criteria for childhood ADHD if they endorsed 6+ symptoms of inattention and/or hyperactivity/impulsivity as occurring during their elementary school years (ages 6-10), and if these symptoms nullgot them into troublenull in two or more settings (home, school or other).

Results: 176 (9.5%) individuals met criteria for childhood ADHD: 48 for hyperactive/impulsive-type only, 63 for inattentive-type only and 65 for both inattentive- and hyperactive/impulsive-type (combined-type). Among all subjects with ADHD, 62 (35.2%) continued to report 6+ symptoms in adulthood. Inattentive-type was more likely to persist than hyperactive/ impulsive-type, with 16 of 63 (25.4%) subjects with inattentive-type continuing to have symptoms, and 11 of 48 (22.9%) of those with hyperactive/impulsive-type continuing to have symptoms; 35 of the 63 (53.9%) with combined-type continued to have 6+ symptoms in adulthood. Symptoms that most commonly persisted include: nullAnswers questions before finished being askednull (71.1%), nullFelt fidgety and restlessnull (58.2%), and nullLeaves tasks unfinishednull (54.7%). Symptoms most likely to resolve include: nullMakes a lot of careless mistakesnull (32.8%), nullGets up from seat a lot when not supposed tonull (33.3%) and nullLoses things a lotnull (34.9%). 19.4%of thosewith 6+ inattentive symptoms in adulthood stated these symptoms caused problems in two or more environments (work, home, other); 20.6% of subjects with 6+ hyperactivity symptoms endorsed impairment in two or more environments. Womenwith childhoodADHDweremore likely to continue to have symptoms into adulthood (47.1%) compared with men (28.0%; $P=.01$). Lower childhood SES was associated an increased risk of persistence of symptoms of hyperactivity ($P=.01$), but not inattention ($P=.58$).

Conclusion: The results of this study suggest that a considerable portion of children with ADHD continue to have a number of clinically significant ADHD symptoms into mid-life.

Public Health Significance: ADHD is a common childhood disorder and it is increasingly recognized that it may continue into adulthood. ADHD symptoms in adulthood have been associated with an increased risk for a range of negative outcomes including auto-accidents, substance abuse and academic underachievement.

Compr Psychiatry. 2013;54:128-40.

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

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

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

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

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

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

Developmental Medicine & Child Neurology. 2013 Feb;55:131-38.

SYMPTOMATOLOGY OF AUTISM SPECTRUM DISORDER IN A POPULATION WITH NEUROFIBROMATOSIS TYPE 1.

Walsh KS, Vélez JI, Kardel PG, et al.

Aim: Difficulties in neurocognition and social interaction are the most prominent causes of morbidity and long-term disability in children with neurofibromatosis type 1 (NF1). Symptoms of attention-deficit-hyperactivity disorder (ADHD) have also been extensively recognized in NF1. However, systematic evaluation of symptoms of autism spectrum disorder (ASD) in children with NF1 has been limited.

Method: We present a retrospective, cross-sectional study of the prevalence of symptoms of ASD and ADHD and their relationship in a consecutive series of 66 patients from our NF1 clinic. The Social Responsiveness Scale and the Vanderbilt ADHD Diagnostic Parent Rating Scale were used to assess symptoms of ASD and ADHD.

Results: Sixty-six participants (42 males, 24 females) were included in this study. Mean age at assessment was 10 years 11 months (SD 5 y 4 mo). Forty percent of our NF1 sample had raised symptom levels reaching clinical significance on the Social Responsiveness Scale ($T = 60$), and 14% reached levels consistent with those seen in children with ASDs ($T = 75$). These raised levels were not explained by NF1 disease severity or externalizing/internalizing behavioral disorders. There was a statistically significant relationship between symptoms of ADHD and ASD ($\chi^2=9.11$, $df=1$, $p=0.003$, $f=0.56$). Particularly salient were the relationships between attention and hyperactivity deficits, with impairments in social awareness and social motivation.

Interpretation: We found that symptoms of ASD in our NF1 population were raised, consistent with previous reports. Further characterization of the specific ASD symptoms and their impact on daily function is fundamental to the development and implementation of effective interventions in this population, which will probably include a combination of medical and behavioral approaches.

Developmental Medicine & Child Neurology. 2013 Feb;55:139-45.

AUTISM AND OTHER PSYCHIATRIC COMORBIDITY IN NEUROFIBROMATOSIS TYPE 1: EVIDENCE FROM A POPULATION-BASED STUDY.

Garg S, Lehtonen A, Huson SM, et al.

Aim: To investigate psychopathology in children with neurofibromatosis type 1 (NF1), particularly the prevalence of autism spectrum disorder (ASD) and attention-deficit-hyperactivity disorder (ADHD) symptomatology, using a population-based sampling approach.

Method: Standard questionnaire screen reports were analysed for ASD (Social Responsiveness Scale, SRS), ADHD (Conners' Parent Rating Scale- Revised, CPRS-R), and other psychiatric morbidity (Strengths and Difficulties Questionnaire, SDQ) from parents and teachers of children aged from 4 to 16 years (112 females, 95 males) on the UK North West Regional Genetic Service register for NF1.

Results: Parental response rate was 52.7% (109/207 children; 59 females, 50 males, mean age 9 y 11 mo, SD 3 y 3 mo). The SRS showed that in 29.4% (32/109) of children, autism was in the severe, clinical range (T -score > 75) and in 26.6% (29/109) in the mild to moderate range (T -score 60–75). CPRS-R scores showed that in 53.8% (57/106) of children autism was in the clinical ADHD range (ADHD index T -score > 65). Based on their scores on the SDQ total difficulties scale, 41.5% (44/106) of children were in the abnormal range and 14.2% (15/106) were in the borderline range. Twenty-five per cent (26/104) of children met criteria for both clinical autism and ADHD.

Interpretation: This representative population-based sample of children with NF1 indicates a high prevalence of ASD symptoms associated with NF1 as well as substantial co-occurrence with ADHD

symptoms. The findings clarify the psychopathology of NF1 and show the disorder as a potentially important single-gene cause for autism symptoms.

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Dev Neurorehabilitation. 2013 Feb;16:52-57.

EXTERNALIZING AND TANTRUM BEHAVIOURS IN CHILDREN WITH ASD AND ADHD COMPARED TO CHILDREN WITH ADHD.

Tureck K, Matson JL, May A, et al.

Objective: Compare rates of externalizing in children with autism spectrum disorder (ASD) and attention deficit/ hyperactivity disorder (ADHD) symptoms to children with ADHD.

Method: Parents/caregivers of 85 children with ASD and/or ADHD were surveyed about their children's behaviours using the Autism Spectrum Disorders-Comorbidity for Children and the Autism Spectrum Disorders-Behaviour Problem for Children.

Results: Specific main effects analyses were then conducted. Children with ASD exhibited a higher number of externalizing ($F(1, 83) = 83.34, p < 0.001$) and tantrum behaviours ($F(1, 83) = 781.86, p < 0.001$) than children without ASD.

Conclusions: ASD exacerbates the externalizing symptoms of ADHD during childhood. This study adds to the literature on the importance of assessing for a wide-range of possible behaviour problems in children presenting with ADHD symptomatology. The implications of these findings are discussed in the context of other research.

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Developmental Psychology. 2013 Feb;49:270-91.

IS WORKING MEMORY TRAINING EFFECTIVE? A META-ANALYTIC REVIEW.

Melby-Lervåg M, Hulme C.

It has been suggested that working memory training programs are effective both as treatments for attention-deficit/hyperactivity disorder (ADHD) and other cognitive disorders in children and as a tool to improve cognitive ability and scholastic attainment in typically developing children and adults. However, effects across studies appear to be variable, and a systematic meta-analytic review was undertaken. To be included in the review, studies had to be randomized controlled trials or quasi-experiments without randomization, have a treatment, and have either a treated group or an untreated control group. Twenty-three studies with 30 group comparisons met the criteria for inclusion. The studies included involved clinical samples and samples of typically developing children and adults. Meta-analyses indicated that the programs produced reliable short-term improvements in working memory skills. For verbal working memory, these near-transfer effects were not sustained at follow-up, whereas for visuospatial working memory, limited evidence suggested that such effects might be maintained. More importantly, there was no convincing evidence of the generalization of working memory training to other skills (nonverbal and verbal ability, inhibitory processes in attention, word decoding, and arithmetic). The authors conclude that memory training programs appear to produce short-term, specific training effects that do not generalize. Possible limitations of the review (including age differences in the samples and the variety of different clinical conditions included) are noted. However, current findings cast doubt on both the clinical relevance of working memory training programs and their utility as methods of enhancing cognitive functioning in typically developing children and healthy adults.

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Eur Child Adolesc Psychiatry. 2013;1-8.

EARLY PSYCHOSOCIAL ADVERSITY AND CORTISOL LEVELS IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Isaksson J, Nilsson KW, Lindblad F.

Previous studies suggest a different regulation of the hypothalamus-pituitary-adrenal axis (HPA-axis) with lower diurnal cortisol levels, especially in the morning, in children with attention-deficit/hyperactivity disorder (ADHD) compared with controls. Since exposure to foetal and childhood psychosocial adversity has been associated with both ADHD and HPA-axis functioning, such exposures may explain these low cortisol levels in ADHD via early programming of the HPA-axis. Thus, our main aim was to retrospectively study foetal and early childhood exposures to psychosocial adversity in children with ADHD and to relate these exposures to cortisol levels. Saliva samples were collected during a regular weekday in children, 6-17 years old, with clinically confirmed ADHD (n=197) and non-affected comparisons (n=221) for radioimmunoassay analysis of cortisol. Parental rating scales were used for categorising subtypes of ADHD and degree of exposure to adversity. Children with ADHD had more reports of at least one rated foetal adversity (p=0.041) and childhood adversity (p < 0.001) than comparisons. The association between low morning cortisol levels and ADHD-symptoms remained when analyses were adjusted for adversities, age, sex, sampling time and symptoms of oppositional defiant disorder. No relation was found between exposures to foetal/childhood adversity and cortisol levels except for a positive relation between childhood adversity and cortisol morning increase in children with ADHD. The hypothesis that early adversity may influence the HPA-axis, leading to lower cortisol levels in children with ADHD, was not supported by our findings.

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Eur Child Adolesc Psychiatry. 2013;1-9.

ARE PARENTAL ADHD PROBLEMS ASSOCIATED WITH A MORE SEVERE CLINICAL PRESENTATION AND GREATER FAMILY ADVERSITY IN CHILDREN WITH ADHD?

Agha SS, Zammit S, Thapar A, et al.

Although Attention Deficit Hyperactivity Disorder (ADHD) is recognised to be a familial and heritable disorder, little is known about the broader family characteristics of having a parent with ADHD problems. The main aim of this study was to investigate the relationship between parent ADHD problems, child clinical presentation and family functioning in a sample of children with ADHD. The sample consisted of 570 children with ADHD. Child psychopathology was assessed using a semi-structured diagnostic interview. Questionnaires were used to assess ADHD in the parents (childhood and current symptoms), family environment and mother/father-child relationship. Parental ADHD problems were associated with a range of adverse clinical outcomes in children with no difference in effects for mothers with ADHD problems compared to fathers with ADHD problems. Levels of maternal hostility were higher in families where mothers had ADHD problems, but reduced where fathers had ADHD problems. Parental ADHD problems index higher risk for more severe clinical presentation of ADHD in children and higher levels of family conflict (where there are maternal but not paternal ADHD problems). This study highlights that children with more severe behavioural symptoms are more likely to have a parent with persistent ADHD which has important implications when considering treatment and intervention strategies.

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Eur J Nucl Med Mol Imaging. 2012;39:S548.

Tc-99m TRODAT BRAIN SPECT CHANGES IN ADOLESCENTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER: AFTER 2 MONTH-METHYLPHENIDATE THERAPY.

Kaya C, Akay AP, Baykara B, et al.

The aim of this study was to assess Tc-99m Trodat-1 brain SPECT changes in adolescents with ADHD after 2 months methylphenidate (MPH) therapy. Eighteen adolescents with the diagnosis of ADHD participated in the study. None of them had comorbid neurological disease or psychiatric disorders other than oppositional defiant disorder. All patients were right handed and had never been medicated. ADHD

diagnosis was made based on the ADHD criteria listed in DSM-IV-TR. Du Paul ADHD Questionnaire rating and clinical global impression (CGI) ratings were used. Tc-99m Trodat-1 SPECT was performed in all adolescents before (pre therapy) and after 2 months therapy (under treatment). MPH treatment was not discontinued during the second brain SPECT imaging. Radiochemical purity of Tc-99m Trodat-1 was exceeded 95% when tested by HPLC. Three hours after the injection of 444- 814 MBq Tc-99m Trodat-1, brain images were obtained. A total of 128 frames were acquired in 128x128 matrices, 30sec/frame, 1.46 zoom and 360(degrees). Transaxial slices were transformed into plane images. Regions of interest (ROIs) were drawn on the right basal ganglia (rbg), left basal ganglia (lbg) and the localization of cerebellum as the background. The two consecutive transverse slices showing the highest uptake in the basal ganglia were selected. Mean counts per pixel were used. Mean corrected activity in the basal ganglia was calculated as follows: (basal ganglia- background)/background. Images were evaluated visually and semiquantitatively. There was a statistically significant decrease in pre-therapy availability of DAT assessed by brain SPECT under treatment (Wilcoxon statistical test, $p=0.000$). The mean score on the CGI was significantly decreased. There was also a statistically significant improvement in behavior under treatment, as indicated by the scores in Du Paul rating scales ($p=0.000$). Table shows clinical and Trodat-1 SPECT parameters.

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Eur J Pediatr. 2013;1-12.

MANAGEMENT OF ADHD IN CHILDREN ACROSS EUROPE: PATIENT DEMOGRAPHICS, PHYSICIAN CHARACTERISTICS AND TREATMENT PATTERNS.

Hodgkins P, Setyawan J, Mitra D, et al.

This study was a retrospective chart review performed to examine and describe physician practice patterns in managing attention deficit/hyperactivity disorder (ADHD) across Europe. Physicians treating ADHD in the UK, France, Germany, Italy, the Netherlands and Spain were recruited. Each physician abstracted medical records of five patients (aged 6-17 years at time of review) with a documented diagnosis of ADHD made between January 2004 and June 2007. Data provided by the physician via the abstraction included (a) physician characteristics, (b) patient characteristics, (c) ADHD diagnosis and (d) ADHD outcomes (adherence, symptom control and satisfaction). A total of 779 patients met study inclusion criteria. In the overall population, patients' mean (SD) age at time of diagnosis was 8.9 (2.6) years. The predominant treatment choice was long-acting methylphenidate, which was prescribed to more than 56% of patients. According to physicians, only 30.8% of patients showed 'complete symptom control' on current treatment and only 31.8% of physicians reported being 'very satisfied' with their patients' current treatment. Physicians' assessments of complete symptom control and physician satisfaction with treatment were low, indicating unmet needs with current ADHD management in Europe.

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Indian J Psychiatry. 2013;55:S90-S91.

PREVALENCE OF PERI-NATAL COMPLICATIONS AMONG THE CHILDREN DIAGNOSED AS ADHD ATTENDING CHILD GUIDANCE CLINIC OF RGKMCH, KOLKATA.

Mitra S, Dawn AK, Mukherjee DG.

Aims and Objectives: To determine the Prevalence of perinatal complications among the children diagnosed as ADHD attending Child Guidance Clinic of RGKMCH, Kolkata

Methodology: The present study was conducted in the child guidance clinic of a tertiary hospital, Kolkata. The inclusion criteria was children aged between 7 and 12 years and exclusion criteria were those with IQ less than 50, any sensory or other neurological deficit. Then they were screened with child symptom inventory (CSI)- parent checklist to rule out any other co-morbid psychiatric illness. Those included in the ADHD inattentive, hyperactivity and combined categories were then sorted out and diagnostic and statistical manual (DSM-IV)-TR criteria were applied to diagnose them as ADHD. Then their detailed ante-natal, peri-natal and developmental histories were documented in a semi-structured format.

Results: Nine of the 28 (32.14%) children diagnosed as ADHD had a history of peri-natal insult-birth asphyxia in five, pathological jaundice in three and sepsis in one of them.

Conclusions: The results reinstate the hypothesis of acquired etiological influence in the form of mild cerebral insult to predispose ADHD and emphasize the need of proper neonatal care.

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Indian J Psychiatry. 2013;55:S90.

PSYCHIATRIC CO-MORBIDITY IN CHILDREN AND ADOLESCENTS WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER: A CROSS-SECTIONAL HOSPITAL-BASED STUDY.

Chakraverty D, Basu J, Sarkhel S.

Aims and Objectives: Evaluate comorbidities of children and adolescents with ADHD using standardized diagnostic instrument. Analyze clinical characteristics, co-relate any co-morbidity with gender, age and ADHD subtype

Methodology: Informed consent from the guardian cases [age from 5 to 16] diagnosed ADHD by Diagnostic and statistical manual (DSM-IV)-TR by two consultant psychiatrists. After Sociodemographic data, history the Kiddie-Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Version will be completed in 50 patients attending the child psychiatry opd of IOP from december 2011 to december 2012 We would analyze clinical characteristics, psychiatric comorbidities, assess correlation of any co-morbidity gender, age and ADHD subtype.

Results: Till now of 38 participants, 26 (68.4%) have been diagnosed with combined-type ADHD, 09 (23.7%) were predominantly inattentive type, only 1 (2.6%) was found to have the predominantly hyperactive-impulsive type of ADHD. Twenty three (60.5%) subjects had at least one comorbid disorder such as conduct disorder; n=8; 21%; oppositional defiant disorder (n=09, 23.7%), anxiety disorders (n=6, 15.8%) and affective disorders (n=3, 7.9%).

Conclusions: Psychiatric co-morbidity in ADHD is similar to western countries. Interestingly the inattentive-type group had a significantly higher ratio of comorbid disorders. Completed results and discussion will be presented at the time of presentation in the conference.

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Indian J Psychiatry. 2013;55:S17.

PEDIATRIC BIPOLAR DISORDER AND ADHD: WHAT IS THE CONTROVERSY?

Joshi PT.

Bipolar Disorder (BPD) clearly exists in children and adolescents. However, the relevant issues concern its prevalence and the continuity between the various conceptualizations of BPD in youth and adults. Further, the treatment and research implications of missing the diagnosis of BPD versus the implications when another diagnosis such as ADHD is mistakenly identified as BPD is also an important clinical question. ADHD usually begins prior to developing BPD and may co-occur with it. There are several reports in the literature that ADHD may be found in 90% of pre-pubertal children with BPD. This presentation describes the phenotypic presentation of these two distinct clinical entities, the overlapping symptomatology and the co-morbid relationship. Pivotal studies that help in delineating these two conditions will be reviewed from the pre-school age group to adolescence. In addition the author will address the findings of a recent research study nullThe Treatment of Early Age Mania null - TEAM that included the study of 290 well defined children and adolescents between the ages of 6-17 years with Bipolar Disorder - Mixed or Manic Phase and the co-morbidity of ADHD. Finally, the DSM - 5 is planning to include a new category nullDisruptive Mood Dysregulation Disorder.null What are the implications of this new category.

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Indian J Psychiatry. 2013;55:S89-S90.

IMPACT OF ATTENTION DEFICIT HYPERACTIVITY DISORDER ON FAMILY.

Yadav S, Agarwal V, Arya A, et al.

Aims and Objectives: To study the impact of Attention Deficit Hyperactivity Disorder (ADHD) on family.

Methodology: Impact of ADHD on the life of sixty seven patient's families (patients were between 6 and 16 years fulfilling the Diagnostic and statistical manual (DSM-IV)-TR criteria for ADHD) was assessed on impact questionnaire. Socio-demographic and clinical details including the severity of ADHD were assessed.

Results: Impulsive behavior had a definite impact on the family (79.1%), followed by demanding behavior (74.6%). The relationship among parent and child was most affected (91.0%), followed by relationship among parents (77.6%). Worry for the future of the child (89.6%), child's behavior affecting parent's work (88.1%), worry that second baby might also get similar problems (79.1%) had significant impact on lives of parents. Problems at school (92.5%), interaction with relatives (83.6%) and problems in society due to behavior of the child (80.6%) were reported.

Conclusion: ADHD has widespread impact on all aspects of the family's functioning. The impact on various domains and its implications are discussed in this study.

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Indian J Psychiatry. 2013;55:52-58.

IMPACT OF COMORBID ATTENTIONDEFICIT/HYPERACTIVITY DISORDER ON SELFPERCEIVED HEALTHRELATED QUALITYOFLIFE OF CHILDREN WITH SPECIFIC LEARNING DISABILITY.

Karande S, Venkataraman R.

Background: About 12-24% of children with specific learning disability (SpLD) have co-occurring attention-deficit/hyperactivity disorder (ADHD). According to "parent-proxy reports", co-occurring "untreated" ADHD adversely impacts the health-related quality of life (HRQoL) of children with newly diagnosed SpLD, especially in their psychosocial functioning.

Aims: To analyze the impact of "untreated" co-occurring ADHD on the "self-perceived" HRQoL of children with "newly diagnosed" SpLD.

Setting and Design: Cross-sectional questionnaire-based study in a learning disability clinic situated in a medical college.

Materials and Methods: From February 2008 to December 2008, 136 consecutive children newly diagnosed as having "SpLD with co-occurring ADHD (SpLD/ADHD)" or "SpLD only" were enrolled. The DISABKIDS chronic generic module (DCGM-37-S (V31)) instrument was used to measure their HRQoL. DCGM-37-S (V31) mean facet and total scores were computed for "SpLD/ADHD" and "SpLD only" children groups and compared using independent samples t-test.

Results: HRQoL of "SpLD/ADHD" children was significantly better in limitation facet (mean difference: 8.20; 95% confidence interval (CI): 1.75-15.29; P=0.024). Although not statistically significant, the HRQoL of "SpLD/ADHD" children was better in independence, emotion, social inclusion and social exclusion facets; and in total score.

Conclusions: "SpLD/ADHD" children perceive their physical functioning to be significantly better. Also their perceptions of their psychosocial functioning are better. Contrary to parent-proxy reports, co-occurring "untreated" ADHD does not adversely impact the self-perceived HRQoL of children with "newly diagnosed" SpLD.

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Indian J Psychiatry. 2013;55:S17.

ADHD AND BIPOLAR DISORDERS ACROSS THE LIFE SPAN PEDIATRIC BIPOLAR DISORDER: PHENOMENOLOGY AND TREATMENT APPROACHES.

Sood AB.

Mood dysregulation in children frequently requires professional intervention. Pediatric bipolar disorder (PBD) has a prevalence of 1% and it carries significant morbidity in the form of academic under-

performance, impaired social relationships, high familial stress and completed suicide. The implications of early onset bipolar disorder is that the course of the illness is chronic and often more malignant unless actively treated. It is distinct in its presentation from classic bipolar 1 disorder, which is the more common adult presentation. Acknowledging the controversy around the descriptive phenomenology of PBD, this paper will describe developmental considerations when evaluating children with severe mood dysregulation and PBD and highlight the difference in the presentation of pediatric and adult bipolar disorder. Changes in nosology proposed in the DSM V will be referenced. In addition the presentation will review the extant literature around the concept of continuity and discontinuity of PBD with adult bipolar disorder and adult depression, cover current understanding of the etiology of PBD, natural course and prognostic factors that impact outcome. The presentation will briefly cover advances in the treatment of pediatric bipolar disorder which will include an overview of the evidence that exists for psychotherapies and psychopharmacological interventions.

J Abnorm Psychol. 2012;121:978-90.

DISTINGUISHING SLUGGISH COGNITIVE TEMPO FROM ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN ADULTS.

Barkley RA.

Researchers who study subtypes of attention-deficit/hyperactivity disorder (ADHD) in children have identified a subset having a sluggish cognitive tempo (SCT) typified by symptoms of daydreaming, mental confusion, sluggish-lethargic behavior, and hypoactivity, among others who differ in many respects from ADHD. No studies have examined the nature and correlates of SCT in adults. This study sought to do so using a general population sample in which those having high levels of SCT symptoms were identified ((greater-than or equal to)95th percentile) and compared to adults having high levels of ADHD symptoms and adults having both SCT and ADHD symptoms. From a representative sample of 1,249 U.S. adults 18-96 years four groups were created: (a) high levels of SCT but not ADHD (N=33), (b) high levels of ADHD but not SCT (N=46), (c) high levels of both SCT and ADHD (N=39), and (d) the remaining adults as a control group (N=1,131). As in children, SCT formed a distinct dimension from ADHD symptoms that was unrelated to age, sex, or ethnicity. Adults in both ADHD groups were younger than those with SCT only or control adults. The SCT-only group had less education than the control group, whereas both SCT groups earned less annual income than the control or ADHD-only group. More individuals in the combined group were out of work on disability. In their EF, both SCT groups reported greater difficulties with self-organization and problem solving than controls or the ADHD-only group. Otherwise, the SCT=ADHD group reported significantly greater problems with all other domains of EF than the other groups. But both the SCT-only and ADHD-only groups had significantly more EF difficulties than controls though not differing from each other. A similar pattern was evident on most ratings of psychosocial impairment, except in work and education where SCT was more impairing than ADHD alone and in driving where ADHD was more impairing. SCT contributed unique variance to EF deficits and psychosocial impairment apart from ADHD inattention and hyperactive-impulsive symptoms. Results further suggested that a symptom threshold of 5 or more out of 9 along with a requirement of impairment would result in 5.1% of the population as having SCT. It is concluded that SCT may be a separate disorder from ADHD yet with comorbidity occurring in approximately half of all cases of each.

J Abnorm Psychol. 2012;121:360-71.

EVALUATING VIGILANCE DEFICITS IN ADHD: A META-ANALYSIS OF CPT PERFORMANCE.

Huang-Pollock CL, Karalunas SL, Tam H, et al.

We meta-analytically review 47 between-groups studies of continuous performance test (CPT) performance in children with attention-deficit/hyperactivity disorder (ADHD). Using a random effects model and correcting for both sampling error and measurement unreliability, we found large effect sizes ((delta)) for overall performance, but only small to moderate (delta) for performance over time in the handful of studies that reported that data. Smaller (delta)s for performance over time are likely attributable, in part, to

the extensive use of stimuli for which targets and distractors are quite easily differentiated. Artifacts accounted for a considerable proportion of variance among observed (delta)s. Effect sizes reported in previous reviews were significantly attenuated because of the presence of uncorrected artifacts and highlight the necessity of accounting for artifactual variance in future work to determine the amount of true neurocognitive heterogeneity within ADHD. Signal detection theory and diffusion modeling analyses indicated that the ADHD-related deficits were because of decreased perceptual sensitivity ($d(\text{delta})$) and slower drift rates (v). Results are interpreted the context of several recent models of ADHD.

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J Adolesc Health. 2013;52:S81.

INCREASED RISK FOR ANXIETY AMONG COLLEGE STUDENTS WITH ADHD.

Goniu N, Moreno M.

Purpose: Attention deficit hyperactivity disorder (ADHD) and anxiety are both neurological disorders that can have adverse effects on college students academically, socially and psychologically. For adolescents with ADHD who attend college, the concurrent presence of anxiety has the potential to significantly impact academic achievement and overall college experience. While associations between ADHD and depression have been established, the relationship between ADHD and anxiety is less understood. Thus, the purpose of this study was to determine whether students who screen positive for ADHD are more likely to also exhibit anxiety.

Methods: Undergraduate students at a large state university who were enrolled in an introductory communications class were recruited. Participants completed a secure online survey that included the Adult ADHD Self-Report Scale (ASRS-v1.1), a 6-item scale in which participants rank the frequency of ADHD symptoms. The survey also included the Generalized Anxiety Disorder Scale (GAD-7), a 7-item measurement that assesses anxiety symptom frequency. A GAD-7 score of 4 or less predicts no anxiety, 5-9 mild anxiety, 10-14 moderate anxiety, and 15-21 severe anxiety. Analysis included logistic regression, adjusting for gender as well as examining gender in stratified models.

Results: Of the 375 students in the class, 273 (73%) participated. Three participants did not complete the entire survey and were excluded, thus 270 surveys were included in the data analysis. Of these 270 participants, 62.96% were women and 90.74% were white. The mean age was 18.9 (SD = 1.1) years. 57 (21.5%) of participants' scores met criteria for the presence of ADHD based on the ASRS-v1.1, of which 35 (61.4%) were women. A total of 141 (52.2%) participants met GAD-7 criteria for anxiety; 92 (34.1%) met the criteria for mild anxiety, 31 (11.5%) for moderate anxiety, and 18 (6.7%) for severe anxiety. Meeting criteria for ADHD was associated with an increased risk of meeting any criteria for anxiety (OR = 3.3; 95% CI 1.7-6.4, $p < .001$). Results were particularly notable among participants whose GAD-7 scores predicted severe anxiety. This included 11 (19.3%) participants with ADHD compared to 7 (3.3%) participants without ADHD. Among participants with ADHD, being female was also associated with an increased risk of anxiety (OR = 1.8; 95% CI 1.1-3.0, $p = .03$).

Conclusions: College students with ADHD were more likely to suffer from anxiety compared to their non-ADHD counterparts. In particular, there was an increased likelihood for women with ADHD to experience anxiety, which is consistent with previous work illustrating higher risk of anxiety among women. While many college services target ADHD and anxiety through individual programs, physicians and university health services should consider screenings and interventions that encompass both ADHD and anxiety.

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J Consult Clin Psychol. 2013 Feb;81:113-28.

REMEDATING ORGANIZATIONAL FUNCTIONING IN CHILDREN WITH ADHD: IMMEDIATE AND LONG-TERM EFFECTS FROM A RANDOMIZED CONTROLLED TRIAL.

Abikoff H, Gallagher R, Wells KC, et al.

Objective: The study compared the efficacy of 2 behavioral interventions to ameliorate organization, time management, and planning (OTMP) difficulties in 3rd- to 5th-grade children with attention-deficit/hyperactivity disorder (ADHD).

Method: In a dual-site randomized controlled trial, 158 children were assigned to organizational skills training (OST; N=64); PATHKO, a performance-based intervention that precluded skills training (N=61); or a wait-list control (WL, N=33). Treatments were 20 individual clinic-based sessions over 10–12 weeks. OST involved skills building provided primarily to the child. PATHKO trained parents and teachers to reinforce children contingently for meeting end-point target goals. Primary outcomes were the Children's Organizational Skills Scales (COSS-Parent, COSS-Teacher). Other relevant functional outcomes were assessed. Percentage of participants no longer meeting inclusion criteria for OTMP impairments informed on clinical significance. Assessments occurred at post-treatment, 1-month post-treatment, and twice in the following school year.

Results: OST was superior to WL on the COSS-P (Cohen's $d=2.77$; $p<.0001$), COSS-T ($d=1.18$; $p<.0001$), children's COSS self-ratings, academic performance and proficiency, homework, and family functioning. OST was significantly better than PATHKO only on the COSS-P ($d=0.63$; $p<.005$). PATHKO was superior to WL on most outcomes but not on academic proficiency. Sixty percent of OST and PATHKO participants versus 3% of controls no longer met OTMP inclusion criteria. Significant maintenance effects were found for both treatments.

Conclusions: Two distinct treatments targeting OTMP problems in children with ADHD generated robust, sustained functional improvements. The interventions show promise of clinical utility in children with ADHD and organizational deficits.

J Consult Clin Psychol. 2013 Feb;81:100-12.

A RANDOMIZED TRIAL OF A CLASSROOM INTERVENTION TO INCREASE PEERS' SOCIAL INCLUSION OF CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Mikami AY, Griggs MS, Lerner MD, et al.

Objective: Interventions for peer problems among children with attention-deficit/hyperactivity disorder (ADHD) typically focus on improving these children's behaviors. This study tested the proposition that an adjunctive component encouraging the peer group to be socially inclusive of children with ADHD would augment the efficacy of traditional interventions.

Method: Two interventions were compared: contingency management training (COMET), a traditional behavioral management treatment to improve socially competent behavior in children with ADHD, and Making Socially Accepting Inclusive Classrooms (MOSAIC), a novel treatment that supplemented behavioral management for children with ADHD with procedures training peers to be socially inclusive. Children ages 6.8–9.8 (24 with ADHD; 113 typically developing [TD]) attended a summer day program grouped into same-age, same-sex classrooms with previously unacquainted peers. Children with ADHD received both COMET and MOSAIC with a repeated measures crossover design. TD children provided sociometric information about the children with ADHD.

Results: Whereas the level of behavior problems displayed by children with ADHD did not differ across treatment conditions, children with ADHD displayed improved sociometric preference and more reciprocated friendships, and received more positive messages from peers, when they were in MOSAIC relative to COMET. However, the beneficial effects of MOSAIC over COMET predominantly occurred for boys relative to girls.

Conclusions: Data support the concept that adjunctive procedures to increase the inclusiveness of the peer group may ameliorate peer problems among children with ADHD, and suggest the potential utility of modifying MOSAIC to be delivered in regular classroom settings.

J Invest Med. 2013;61:386.

IDIOPATHIC COLLAPSING FOCAL SEGMENTAL GLOMERULOSCLEROSIS (FSGS) IN PEDIATRIC PATIENT WITH ATTENTION DEFICIT HYPERACTIVITY (ADHD) AND OPPOSITIONAL DEFIANT (ODD) DISORDERS .

Kaleemullah R, Hirsh S, Yosypiv I.

Purpose of Study: This case illustrates a rare case of primary collapsing FSGS, a chronic progressive disease potentially leading to end-stage renal disease, in conjunction with ADHD and ODD. Physicians should be aware of the adverse effect of severe chronic disease and potent immunosuppressive medications on exacerbation of mental diseases in children.

Methods Used: Retrospective review of medical records. A 16 year old African American female with history of ADHD and ODD presented with difficulty breathing and generalized edema. Psychosocial history consisted of neglect, physical and sexual abuse, and foster family care. Physical examination revealed a blood pressure of 140/85 mmHg, periorbital edema, lung crackles and 3+ pitting edema of the lower extremities.

Summary of Results: Laboratory findings demonstrated (mg/dL): serum albumin of 0.3, creatinine of 1.4, cholesterol 256, complement C3 118, C4 18, negative hepatitis B, C and HIV serologies, and spot urine protein to creatinine ratio of 10.0. Her urinalysis was remarkable for proteinuria of 600 mg/dl with 5-10 RBC's. Renal ultrasound revealed presence of 2 structurally normal kidneys. Molecular diagnostic testing conducted to rule out genetic causes of FSGS displayed variants of the NPHS2 LAMB2 and WTI of unknown clinical significance.

Conclusions: Subsequent development of diuretic-resistant severe anasarca required initiation of CRRT and high-dose intravenous administration of solumedrol (SM) combined with cyclophosphamide according to Mendoza protocol. Complete remission of nephritic syndrome was achieved after 6 months of SM infusions. ADHD and ODD were treated with methylphenidate and risperidone. Treatment with high dose SM and prednisone exacerbated the patient's mood symptoms which lead to increased non-adherence with dietary restrictions and medications. Effective management of FSGS, ADHD and ODD required care by a multidisciplinary team which included pediatric nephrologist and psychiatrist, general pediatrician and social worker.

J Psychopathol Behav Assess. 2013;1-10.

PARENTING PRACTICES AND PROSPECTIVE LEVELS OF HYPERACTIVITY/INATTENTION ACROSS EARLY- AND MIDDLE-CHILDHOOD.

Hawes DJ, Dadds MR, Frost ADJ, et al.

This study examined specific parenting practices as predictors of prospective levels of children's hyperactivity/inattention across early- and middle-childhood. Participants were a mixed-sex community cohort (N=976; 52% boys) aged 4-10 years (M=6.5, SD=1.3). Measures of parenting practices, hyperactivity/inattention, conduct problems, and maternal education were collected at baseline, and hyperactivity/inattention re-assessed at 12-month follow-up. Analyses examined predictors of 12-month hyperactivity/inattention while controlling for levels at baseline. High levels of parental involvement were associated with reduced levels of hyperactivity/inattention, but only across early childhood. Conversely, increases in child age were associated with increased levels of hyperactivity/inattention across middle-childhood, but only among children exposed to high levels of inconsistent discipline. Inconsistent discipline and parental involvement appear to be uniquely associated with prospective hyperactivity/inattention across childhood, independent of associated conduct problems. Our results further suggest some developmental specificity with regard to the effects of these distinct dimensions of parenting on hyperactivity/inattention at different points in childhood.

J Sleep Res. 2013;22:41-49.

SLEEP AND SLEEPINESS IN CHILDREN WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER AND CONTROLS.

Wiebe S, Carrier J, Frenette S, et al.

The present study assessed the association between habitual sleep patterns and one night of PSG measured sleep with daytime sleepiness in children with ADHD and typically developing children. Eighty-two children (26 ADHD, 56 typically developing children), between 7 and 11 years, had nighttime sleep recorded using actigraphy over five nights (habitual sleep patterns) and polysomnography during one night (immediate sleep patterns), both within their home environments. Daytime sleepiness was examined using the multiple sleep latency test within a controlled laboratory setting the following day. Using Spearman correlations, the relationships between mean sleep latencies on the multiple sleep latency test and scores on a modified Epworth Sleepiness Scale with polysomnographic measures of sleep quality and architecture and with actigraphic sleep quality measures were examined. Longer sleep latency, measured using polysomnography and actigraphy, was related to longer mean sleep latencies on the multiple sleep latency test in typically developing participants, whereas actigraphic measures of sleep restlessness (time awake and activity during the night), as well as time in slow-wave sleep, were positively related to mean sleep latency on the multiple sleep latency test in children with ADHD. These results show a differential relationship for children with ADHD and typically developing children between habitual and immediate sleep patterns with daytime sleepiness and suggest that problems initiating and maintaining sleep may be present both in nighttime and daytime sleep.

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J Am Acad Child Adolesc Psychiatry. 2013;52:153-62.

DOES CHILDHOOD ATTENTION-DEFICIT/HYPERACTIVITY DISORDER PREDICT RISK-TAKING AND MEDICAL ILLNESSES IN ADULTHOOD?

Ramos Olazagasti MA, Klein RG, Mannuzza S, et al.

Objective: To test whether children with attention-deficit/hyperactivity disorder (ADHD), free of conduct disorder (CD) in childhood (mean=8 years), have elevated risk-taking, accidents, and medical illnesses in adulthood (mean = 41 years); whether development of CD influences risk-taking during adulthood; and whether exposure to psychostimulants in childhood predicts cardiovascular disease. We hypothesized positive relationships between childhood ADHD and risky driving (in the past 5 years), risky sex (in the past year), and between risk-taking and medical conditions in adulthood; and that development of CD/antisocial personality (APD) would account for the link between ADHD and risk-taking. We report causes of death.

Method: Prospective 33-year follow-up of 135 boys of white ethnicity with ADHD in childhood and without CD (probands), and 136 matched male comparison subjects without ADHD (comparison subjects; mean=41 years), blindly interviewed by clinicians.

Results: In adulthood, probands had relatively more risky driving, sexually transmitted disease, head injury, and emergency department admissions ($p<.05-.01$). Groups did not differ on other medical outcomes. Lifetime risk-taking was associated with negative health outcomes ($p=.01-.001$). Development of CD/APD accounted for the relationship between ADHD and risk-taking. Probands without CD/APD did not differ from comparison subjects in lifetime risky behaviors. Psychostimulant treatment did not predict cardiac illness ($p=.55$). Probands had more deaths not related to specific medical conditions ($p=.01$).

Conclusions: Overall, among children with ADHD, it is those who develop CD/APD who have elevated risky behaviors as adults. Over their lifetime, those who did not develop CD/APD did not differ from comparison subjects in risk-taking behaviors. Findings also provide support for long-term safety of early psychostimulant treatment.

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J Am Acad Child Adolesc Psychiatry. 2013;52:163-71.

EMOTION REGULATION AND HETEROGENEITY IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Musser ED, Galloway-Long HS, Frick PJ, et al.

Objective: How best to capture heterogeneity in attention-deficit/ hyperactivity disorder (ADHD) using biomarkers has been elusive. This study evaluated whether emotion reactivity and regulation provide a means to achieve this.

Method: Participants were classified into three groups: children with ADHD plus low prosocial behavior (hypothesized to be high in callous/unemotional traits; n=21); children with ADHD with age-appropriate prosocial behavior (n=54); and typically developing children (n=75). Children completed a task with four conditions: negative induction, negative suppression, positive induction, and positive suppression of affect. The task required children to view an emotion-laden film clip, while either facially mimicking (induction) or masking (suppression) the emotion of the main character. Parasympathetic and sympathetic nervous system activity were assessed via respiratory sinus arrhythmia (RSA) and cardiac pre-ejection period (PEP), respectively. Symptoms of anxiety, conduct, and oppositional defiant disorders were treated as covariates.

Results: The ADHD-typical-prosocial group displayed atypically elevated parasympathetic reactivity (emotion dysregulation) during positive induction, along with increased sympathetic activity (elevated arousal) across conditions. In contrast, the ADHD-low-prosocial group displayed reduced parasympathetic reactivity and reduced sympathetic activity (low emotional arousal) across baseline and task conditions. Thus, both ADHD groups had altered patterns of autonomic functioning, but in two distinct forms.

Conclusion: Although ADHD is heterogeneous clinically, results suggest that ADHD is also heterogeneous with regard to physiological indices of emotion and regulation. Future studies of emotion, regulation, and ADHD should take this into account. Further study of physiological responding in ADHD may yield clinically and etiologically distinct domains or groups.

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J Am Acad Child Adolesc Psychiatry. 2013.

ADOLESCENT SUBSTANCE USE IN THE MULTIMODAL TREATMENT STUDY OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD) (MTA) AS A FUNCTION OF CHILDHOOD ADHD, RANDOM ASSIGNMENT TO CHILDHOOD TREATMENTS, AND SUBSEQUENT MEDICATION.

Molina BSG, Hinshaw SP, Eugene Arnold L, et al.

Objective: To determine long-term effects on substance use and substance use disorder (SUD), up to 8 years after childhood enrollment, of the randomly assigned 14-month treatments in the multisite Multimodal Treatment Study of Children with Attention-Deficit/Hyperactivity Disorder (MTA; n=436); to test whether medication at follow-up, cumulative psychostimulant treatment over time, or both relate to substance use/SUD; and to compare substance use/SUD in the ADHD sample to the non-ADHD childhood classmate comparison group (n=261).

Method: Mixed-effects regression models with planned contrasts were used for all tests except the important cumulative stimulant treatment question, for which propensity score matching analysis was used.

Results: The originally randomized treatment groups did not differ significantly on substance use/SUD by the 8-year follow-up or earlier (mean age=17 years). Neither medication at follow-up (mostly stimulants) nor cumulative stimulant treatment was associated with adolescent substance use/SUD. Substance use at all time points, including use of two or more substances and SUD, were each greater in the ADHD than in the non-ADHD samples, regardless of sex.

Conclusions: Medication for ADHD did not protect from, or contribute to, visible risk of substance use or SUD by adolescence, whether analyzed as randomized treatment assignment in childhood, as medication at follow-up, or as cumulative stimulant treatment over an 8-year follow-up from childhood. These results suggest the need to identify alternative or adjunctive adolescent-focused approaches to substance abuse prevention and treatment for boys and girls with ADHD, especially given their increased risk for use and abuse of multiple substances that is not improved with stimulant medication.

Clinical trial registration information-Multimodal Treatment Study of Children with ADHD (MTA); <http://clinicaltrials.gov/>; NCT00000388.

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J Formos Med Assoc. 2013;112:41-47.

CORRELATION BETWEEN CLINICAL MANIFESTATIONS OF NOCTURNAL ENURESIS AND ATTENTIONAL PERFORMANCE IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD).

Yang TK, Huang KH, Chen SC, et al.

Background/Purpose: Children with attention deficit hyperactivity disorder (ADHD) tend to be more vulnerable to various forms of voiding dysfunction and nocturnal enuresis (NE). We attempt to compare the clinical manifestations and attentional performance between ADHD children with NE and those without NE.

Methods: We consecutively enrolled children diagnosed with ADHD in child and adolescent psychiatric clinics. The questionnaires for evaluation of ADHD symptoms and voiding dysfunction symptoms were administered to all study participants. All participants also received the Test Battery for Attention Performance (TAP) for assessment of attentional function.

Results: A total of 53 children were enrolled in this study, comprising 47 boys and six girls. The prevalence rate of NE was 28.3%. Children in the NE group had statistically significant higher dysfunctional voiding symptom score (5.40 (plus or minus) 3.66 vs. 3.16 (plus or minus) 2.74; $p=0.018$) and two subscales of "When I wet myself, my underwear is soaked" ($p<0.001$) and "I miss having a bowel movement every day" ($p=0.047$). There were no significant differences with regard to all psychiatric evaluations between the NE and non-NE groups. In the TAP test, the NE group showed a significantly shorter reaction time in the domain of inhibitory control, working memory, and auditory sustained attention than the non-NE group.

Conclusion: Children with ADHD have a high prevalence of NE. ADHD children with NE had a significantly higher dysfunctional voiding symptom score and shorter reaction time in most domains of the TAP test. Further study is needed to discern the impact of NE on the neuropsychological function of ADHD children.

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J Int Neuropsychol Soc. 2013 Jan;19:110-14.

IMPAIRED DECISION-MAKING AS A YOUNG ADULT OUTCOME OF GIRLS DIAGNOSED WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN CHILDHOOD.

Miller M, Sheridan M, Cardoos SL, et al.

We examined decision-making in young adulthood in a follow-up study of females diagnosed with attention-deficit/hyperactivity disorder (ADHD) between 6 and 12 years. Participants with childhood ADHD ($n = 114$) and matched comparison females ($n = 77$), followed prospectively for 10 years, performed the Iowa Gambling Task (IGT) at ages 17-25 years. This task assesses preference for high-reward/high-risk chances that result in lower overall gains (disadvantageous decks of cards) compared to low-reward/low-risk chances that result in higher overall gains (advantageous decks of cards). Relative to comparison participants, young adult females with a history of ADHD did not increase their preference for advantageous decks across time blocks, suggesting difficulties in learning to change behavior over the course of the IGT. Overall, childhood diagnoses of ADHD were associated with disadvantageous decision-making in young adulthood. These results extend findings on decision-making in males with ADHD by demonstrating comparable levels of impairment in an all-female sample.

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Neuropsychiatr Dis Treat. 2013;9:163-68.

GENERAL VERSUS EXECUTIVE COGNITIVE ABILITY IN PUPILS WITH ADHD AND WITH Milder ATTENTION PROBLEMS.

Ek U, Westerlund J, Fernell E.

Background: The aim of this study was to analyze two main types of cognitive domains in school children with different types and severities of attention-related problems. The cognitive domains examined were general cognitive ability and executive abilities.

Methods: Three different clinical samples of pupils with school problems were analyzed to assess their cognitive Wechsler Intelligence Scale for Children profiles. In particular, the general cognitive ability index and the executive markers (ie, verbal memory index and processing speed index) were of interest. Of the total sample ($n=198$), two main groups were contrasted; one met the full criteria for attention deficit

hyperactivity disorder (ADHD)/subthreshold ADHD, and one was comprised of those with milder attention problems, insufficient to meet the criteria for ADHD/subthreshold ADHD.

Results: It could be demonstrated that both groups had a significantly higher score on the general cognitive ability index than on measures of working memory and processing speed. This difference was more pronounced for boys.

Conclusion: These types of cognitive differences need to be considered in children with different kinds of learning, behavior, and attention problems; this is also true for children presenting with an average general intelligence quotient and with milder attention problems. Current educational expectations are demanding for children with mild difficulties, and such cognitive information will add to the understanding of the child's learning problems, hopefully leading to a better adapted education than that conventionally available.

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Neuropsychiatry. 2013;3:17-21.

PSYCHOSIS IN A BOY WITH ADHD TREATED WITH STIMULANTS AND ACUTE LYMPHOCYTIC LEUKEMIA TREATED WITH CHEMOTHERAPY AND STEROIDS.

Hechtman L, Russell RC, Young LJ.

This article describes the case of a 14-year-old boy who presented at the emergency room with acute psychotic symptoms, ADHD treated with stimulants and acute lymphocytic leukemia treated with chemotherapy and steroids. The stimulants were discontinued and not reinstated; the course of chemotherapy and steroids were continued; and the psychosis was treated with risperidone. The psychotic symptoms resolved and the risperidone was discontinued. The patient presented again as a psychiatric emergency 1 month later with acute anxiety and paranoia after he began a further course of chemotherapy and steroids. The risperidone course was again initiated and the symptoms resolved. As the chemotherapy and steroids would be continued almost on a monthly basis to treat the leukemia, a prophylactic protocol was established. Very small dosages of risperidone were administered prophylactically a day before the steroids and chemotherapy course began and were continued throughout the course (5-6 days). This treatment approach has been repeated over several months of treatment and there has been no recurrence of the acute psychosis. This case report highlights the possibility of developing steroid psychosis and the potential effectiveness of intermittent small doses of risperidone in preventing the recurrence of the steroid-associated psychotic symptoms.

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Neuropsychopharmacology. 2013.

METHYLPHENIDATE NORMALIZES RESTING-STATE BRAIN DYSFUNCTION IN BOYS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

An L, Cao XH, Cao QJ, et al.

We used resting-state functional magnetic resonance imaging (RS-fMRI) to investigate the acute effects of methylphenidate hydrochloride (MPH) on spontaneous brain activity in children with attention deficit hyperactivity disorder (ADHD). In all, 23 boys with ADHD were scanned twice, under either 10 mg dose of MPH or placebo, in a randomized, cross-over, counterbalanced placebo-controlled design. 32 Matched healthy controls were scanned once for comparison. Seven of the 23 ADHD boys participated in a follow-up 8-week MPH treatment. A regional homogeneity (ReHo) method was applied to characterize the local synchronization of spontaneous brain activity. ADHD boys under placebo compared with controls showed decreased ReHo in bilateral dorsolateral prefrontal cortices and increased ReHo in bilateral sensorimotor and parieto-visual cortices. Relative to placebo, MPH upregulated ReHo in bilateral ventral prefrontal cortices and cerebellar vermis, and downregulated ReHo in right parietal and visual areas that overlapped with the abnormally enhanced activities. When under MPH, ReHo differences between patients and controls were no longer observed. The preliminary prediction analysis revealed that the decreased ReHo in right parietal cortex after the acute MPH was positively correlated with the decreased symptom scores after the 8-week MPH treatment in the seven patients. We show that an acute dose of MPH normalized all fronto-parieto-cerebellar dysfunctions in boys with ADHD during the resting state. Preliminary findings

furthermore suggest the potential of RS-fMRI as a prognostic imaging tool to identify response to MPH treatment. *Neuropsychopharmacology* advance online publication, 27 February 2013; doi:10.1038/npp.2013.27.

Paediatrics and Child Health (Canada). 2013;18:70-73.

THE CLINICAL IMPACT OF SWITCHING ATTENTION DEFICIT HYPERACTIVITY DISORDER PATIENTS FROM OROS (REGISTERED TRADEMARK)-MPH TO NOVO-MPH ER-C(REGISTERED TRADEMARK): A PAEDIATRIC PRACTICE REVIEW.

Van Stralen JPM.

OBJECTIVE: In Canada, novo-methylphenidate extended-release capsules (Novo-MPH ER-C, Novopharm Limited, Canada) was approved as being bioequivalent to a current first-line treatment for attention deficit hyperactivity disorder (ADHD), CONCERTA (OROS-MPH, Janssen Inc, Canada). The present practice review was undertaken to determine whether bioequivalence of these products translates into therapeutic equivalence.

METHODS: The present study was a retrospective, single-centre, observational review of consecutive paediatric ADHD patients pre-scribed OROS-MPH during a seven-month period.

RESULTS: Of the 53 patients who had been switched to the bioequivalent product, 87% destabilized and 43% indicated a shorter duration of effect. In comparison, of those who never tried the second entry medication, only 26% destabilized. Qualitative data indicated differences with regard to side effects, efficacy and duration of effect.

CONCLUSIONS: The present retrospective study indicated that Novo-MPH ER-C is not therapeutically equivalent to OROS-MPH. Once an individual with ADHD is effectively managed, disruption of their treatment should be avoided.

Pediatrics. 2013;131:e53-e61.

IN UTERO EXPOSURE TO ISCHEMIC-HYPOXIC CONDITIONS AND ATTENTION-DEFICIT/ HYPERACTIVITY DISORDER.

Getahun D, Rhoads GG, Demissie K, et al.

OBJECTIVE: To examine the association between ischemic-hypoxic conditions (IHCs) and attention-deficit/hyperactivity disorder (ADHD) by gestational age and race/ethnicity.

METHODS: Nested case-control study using the Kaiser Permanente Southern California (KPSC) medical records. The study cohort included children aged 5 to 11 years who were delivered and cared for in the KPSC between 1995 and 2010 (N=308 634). Case children had a diagnosis of ADHD and received (greater-than or equal to) 2 prescriptions specific to ADHD during the follow-up period. For each case, 5 control children were matched by age at diagnosis. Exposures were defined by using International Classification of Diseases, Ninth Revision codes. A conditional regression model was used to estimate adjusted odds ratios (ORs).

RESULTS: Among eligible children, 13 613 (4.3%) had a diagnosis of ADHD. Compared with control children, case children were more likely to be male and of white or African American race/ethnicity. Case children were more likely to be exposed to IHCs (OR=1.16, 95% confidence interval [CI] 1.11-1.21). When stratified by gestational age, cases born at 28 to 33, 34 to 36, and 37 to 42 weeks of gestation, were more likely to be exposed to IHCs (ORs, 1.6 [95% CI 1.2-2.1], 1.2 [95% CI 1.1-1.3], and 1.1 [95% CI 1.0-1.2], respectively) compared with controls. IHC was associated with increased odds of ADHD across all race/ethnicity groups.

CONCLUSIONS: These findings suggest that IHCs, especially birth asphyxia, respiratory distress syndrome, and preeclampsia, are independently associated with ADHD. This association was strongest in preterm births.

Pediatrics. 2013;131:5-13.

ADOLESCENT ADHD AND ADULT PHYSICAL AND MENTAL HEALTH, WORK PERFORMANCE, AND FINANCIAL STRESS.

Brook JS, Brook DW, Zhang C, et al.

OBJECTIVE: There is a scarcity of longitudinal studies of adolescents with attention-deficit/hyperactivity disorder (ADHD) followed until adulthood. We studied the relationship between ADHD in adolescence and impaired general physical health, impaired general mental health, antisocial personality disorder, impaired work performance, and high financial stress in adulthood.

METHODS: A prospective design incorporated 6 assessments of participants spanning mean ages from 14 to 37 years. Two baseline assessments were taken between ages 14 and 16 years, and 5 outcome assessments were taken at mean age 37 years. Participants were assessed with structured interviews and questionnaires. The participants were from a community sample of individuals initially drawn in 1975 and followed to a mean age of 37 years in 2009.

RESULTS: The adjusted odds ratios and 95% confidence intervals (CIs) for ADHD in adolescence as related to internal stress in adulthood were 1.82 (95% CI=1.01-3.25; $P<0.05$) for impaired general physical health, 2.36 (95% CI=1.23-4.51; $P<0.01$) for impaired general mental health, and 3.28 (95% CI=1.51-7.13; $P<0.01$) for antisocial personality disorder. The adjusted odds ratios and 95% CIs for ADHD in adolescence as related to external stress were 2.46 (95% CI=1.37- 4.43; $P<0.01$) for impaired work performance and 3.33 (95% CI=1.70-6.55; $P<0.001$) for high financial stress.

CONCLUSIONS: Clinicians should focus on early diagnosis and treatment of adolescent ADHD because it is a major predictor of an array of physical, mental, work, and financial problems in adulthood.

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Pediatr Int. 2012;54:838-43.

PREVALENCE OF ADHD SYMPTOMS IN PATIENTS WITH CONGENITAL HEART DISEASE.

Hansen E, Poole TA, Nguyen V, et al.

Objective: The presence of attention-deficit-hyperactivity disorder (ADHD) symptoms in children with congenital heart disease (CHD) was investigated.

Methods: Swanson, Nolan and Pelham teacher and parent rating scales, version 4 (SNAP-IV), commonly used for assessing symptoms of ADHD, were completed by parents and counselors of children who attended a CHD summer camp. Mean scores ($n=51$) were compared with two comparison groups without CHD: patients with ADHD ($n=75$) and patients without ADHD ($n=41$). Parent scores were also compared to previously published parent normative data.

Results: Patients with CHD were reported to have elevated SNAP-IV scores by parents and counselors (11.8%). Parent ratings of inattention were significantly greater in CHD subjects when compared to the comparison group without ADHD ($P<0.001$), and similar to the ADHD-positive comparison group. Regarding parent ratings of hyperactivity and impulsivity, the CHD group was significantly lower than the ADHD-positive controls ($P=0.024$) but greater than the ADHD-negative controls ($P<0.001$).

Conclusion: ADHD symptoms are more prevalent in children with CHD. Parent ratings of inattention and hyperactivity symptoms in CHD patients are similar to ratings in children diagnosed with ADHD. There is a trend towards a greater prevalence of inattention symptoms in patients with cyanosis or single ventricle physiology.

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Pediatr Int. 2012;54:849-53.

KANA READING DISABILITY AND DAS-NAGLIERI COGNITIVE ASSESSMENT SYSTEM FINDINGS IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Nakashima N, Yamashita Y, Hirata R, et al.

Background: Epidemiological and clinical studies suggest that attention deficit hyperactivity disorder (ADHD) and reading disability co-occur more frequently than would be expected by chance. The purposes of this study were to (i) assess the frequency of Japanese syllabary (Kana) reading disability (RD) and (ii)

measure the psychometric properties of the Das-Naglieri Cognitive Assessment System (DN-CAS) in a clinic-referred sample of Japanese children with ADHD.

Methods: Twenty children with ADHD aged 8-13 years were evaluated using both Kana reading tasks and the DN-CAS.

Results: Seven children (35%) showed excessive reading time in at least two of four Kana reading tasks and were diagnosed as ADHD plus RD. The children with ADHD plus RD took significantly longer to read a single mora, four-syllable words, and short sentences. There was no significant difference in the time it took the children with ADHD plus RD to read four-syllable non-words compared to the children with ADHD only. The children with ADHD plus RD had significantly lower simultaneous-processing scores in the DN-CAS compared to children with ADHD but not RD.

Conclusion: Children with ADHD should be given Kana reading tasks because RD is highly comorbid with ADHD. DN-CAS is a useful method for evaluating cognitive processing in children with ADHD with or without RD.

Pharm Person Med. 2013;6:3-7.

IMPORTANCE OF PHARMACOGENETICS IN THE TREATMENT OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVE DISORDER: A CASE REPORT.

Tan-kam T, Suthisisang C, Pavasuthipaisit C, et al.

This case report highlights the importance of pharmacogenetic testing in the treatment of attention deficit hyperactive disorder (ADHD). A 6-year-old boy diagnosed with ADHD was prescribed methylphenidate 5 mg twice daily (7 am and noon) and the family was compliant with administration of this medication. On the first day of treatment, the patient had an adverse reaction, becoming disobedient, more mischievous, erratic, resistant to discipline, would not go to sleep until midnight, and had a poor appetite. The All-In-One PGX (All-In-One Pharmacogenetics for Antipsychotics test for CYP2D6, CYP2C19, and CYP2C9) was performed using microarray-based and real-time polymerase chain reaction techniques. The genotype of our patient was identified to be CYP2D6*2/*10, with isoforms of the enzyme consistent with a predicted cytochrome P450 2D6 intermediate metabolizer phenotype. Consequently, the physician adjusted the methylphenidate dose to 2.5 mg once daily in the morning. At this dosage, the patient had a good response without any further adverse reactions. Pharmacogenetic testing should be included in the management plan for ADHD. In this case, cooperation between the medical team and the patients' relatives was key to successful treatment.

Pharmacopsychiatry. 2013.

PARENTAL PERCEIVED BENEFITS OF OROS-METHYLPHENIDATE TREATMENT FOR THE CHILD WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND FOR PARENTS THEMSELVES.

Kim JW, Park S, Kim BN, et al.

Introduction: Given the shortage of studies on parental perceived benefits of OROS-methylphenidate treatment in Asian populations, we assessed parental response to OROS-methylphenidate treatment of Korean children with attention-deficit/hyperactivity disorder (ADHD), in relation to children's academic performance and behavioral symptoms as well as parental rearing stress and depressive symptoms.

Methods: We enrolled 132 medication-naïve children with ADHD into a multicenter, open-label, 12-week trial of OROS-MPH. The outcome measures were the ADHD rating scale-IV (ADHD-RS), the comprehensive attention test and academic performance rating scale, and the clinical global impression (CGI)-severity/improvement instrument (for the children) and Beck depression inventory and parenting stress index (for their parents).

Results: We found parent-perceived improvements in children's ADHD-related behavioral symptoms and academic function and their parents' depressive symptoms and parenting stress. Investigator-rated ADHD symptoms and subjects' neuropsychological function were also improved ($p < 0.001$).

Discussion: Parents of Korean children with ADHD perceive that OROS-methylphenidate treatment improves their children's academic function and behavior as well as their own child-rearing stress and emotional state. These findings must be interpreted with caution, due to a non-comparative open-label trial.

PLoS ONE. 2013;8.

BODY WEIGHT AND ADHD: EXAMINING THE ROLE OF SELF-REGULATION.

Choudhry Z, Sengupta SM, Grizenko N, et al.

Objective: Attention-Deficit/Hyperactivity Disorder (ADHD) is a complex and heterogeneous childhood disorder that often coexists with other psychiatric and somatic disorders. Recently, a link between ADHD and body weight dysregulation has been reported and often interpreted as impaired self-regulation that is shared between the two conditions. The objective of this study is to investigate the relation between body weight/BMI and cognitive, emotional and motor characteristics in children with ADHD.

Methods: 284 ADHD children were stratified by weight status/BMI according to WHO classification and compared with regard to their neurocognitive characteristics, motivational style, and motor profile as assessed by a comprehensive battery of tests. All comparisons were adjusted for demographic characteristics of relevance including, socioeconomic status (SES).

Results: Both Obese and overweight ADHD children exhibited significantly lower SES compared to normal weight ADHD children. No significant differences were observed between the three groups with regards to their neurocognitive, emotional and motor profile.

Conclusions: Our findings provide evidence that differences in weight/BMI are not accounted for by cognitive, motivational and motor profiles. Socio-economic characteristics are strongly associated with overweight and obesity in ADHD children and may inform strategies aimed at promoting healthier weight.

PLoS ONE. 2013;8.

EXECUTIVE FUNCTION AND IQ PREDICT MATHEMATICAL AND ATTENTION PROBLEMS IN VERY PRETERM CHILDREN.

Aarnoudse-Moens CSH, Weisglas-Kuperus N, Duivenvoorden HJ, et al.

Objective of this study was to examine the impact of executive function (EF) on mathematical and attention problems in very preterm (gestational age (less-than or equal to) 30 weeks) children. Participants were 200 very preterm (mean age 8.2 (plus or minus) 2.5 years) and 230 term children (mean age 8.3 (plus or minus) 2.3 years) without severe disabilities, born between 1996 and 2004. EFs assessed included verbal fluency, verbal working memory, visuospatial span, planning, and impulse control. Mathematics was assessed with the Dutch Pupil Monitoring System and parents and teachers rated attention problems using standardized behavior questionnaires. The impact of EF was calculated over and above processing speed indices and IQ. Interactions with group (very preterm versus term birth status) were examined. Analyses were conducted separately for two subsamples: children in preschool and children in primary school. Very preterm children performed poorer on tests for mathematics and had more parent and teacher rated attention problems than term controls (ss>.11, Ps<.01). IQ contributed unique variance to mathematics in preschool and in primary school (ss>.16, Ps<.007). A significant interaction of group with IQ (ss=-.24, P=.02) showed that IQ contributed unique variance to attention problems as rated by teachers, but that effects were stronger for very preterm than for term infants. Over and above IQ, EF contributed unique variance to mathematics in primary school (ss=.13, P<.001), to parent rated inattention in preschool and in primary school (ss>-.16, Ps<.04), and to teacher rated inattention in primary school (ss=-.19; ss=.19, Ps<.009). In conclusion, impaired EF is, over and above impaired IQ, an important predictor for poor mathematics and attention problems following very preterm birth.

Psychiatr Q. 2013;1-9.

PHARMACOLOGY AND PHARMACOGENETICS OF PEDIATRIC ADHD WITH ASSOCIATED AGGRESSION: A REVIEW.

Patel BD, Barzman DH.

Attention deficit hyperactivity disorder (ADHD) is often associated with symptoms of aggression in children and adolescents. Clinically, this is complex because aggression can be from hyperactivity and impulsivity, or could be a distinct symptom from a comorbid diagnosis. Past research has recommended first treating the primary disorder of ADHD. Stimulants are the most common treatment for pediatric ADHD, which can be helpful in decreasing aggressive behaviors. Alpha-adrenergic agonists and atomoxetine (ATX) are non-stimulant medications for ADHD and aggression, but more research is necessary to compare these drugs to stimulants. If aggressive symptoms do not improve from treating the primary disorder, aggression can be treated separately. Risperidone, lithium, valproic acid, clonidine, and guanfacine have shown positive results in reducing aggression, but studies including children with aggression and ADHD are limited. The variability in treatment tolerability in patients has stimulated research in pharmacogenetics for ADHD. Although this field is still emerging, research has found evidence supporting a link between the response rate of methylphenidate and the dopamine transporter (DAT1) and a link between the metabolism rate of atomoxetine and hepatic cytochrome 450 isozymes. Pharmacogenetics may be relevant to ADHD and associated aggression. Further research in pharmacogenetics will strive to identify patterns of genetic variations that can tailor individual treatments.

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Psychiatry Res. 2013;205:143-50.

Do SNPs of DRD4 GENE PREDICT ADULT PERSISTENCE OF ADHD IN A CHINESE SAMPLE?

Li Y, Baker-Ericzen M, Ji N, et al.

The dopamine D4 receptor (DRD4) gene has been frequently studied in relation to attention deficit hyperactivity disorder (ADHD) but little is known about the contribution of single nucleotide polymorphisms (SNPs) of the DRD4 gene to the development and persistence of ADHD. In the present study, we examined the association between two SNPs in DRD4 (rs1800955, rs916455) and adult ADHD persistence in a Chinese sample. Subjects (n=193) were diagnosed with ADHD in childhood and reassessed in young adulthood at an affiliated clinic of Peking University Sixth Hospital. Kaplan-Meier survival analyses and Cox proportional hazard models were used to test the association between ADHD remission and alleles of the two SNPs. DRD4 rs916455 C allele carriers were more likely to have persistent ADHD symptoms in adulthood. No significant association was found between rs1800955 allele and the course of ADHD. These newly detected associations between DRD4 polymorphisms and ADHD prognosis in adulthood may help to predict the persistence of childhood ADHD into adulthood.

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Psychiatry Res Neuroimaging. 2013;211:186-87.

DIFFUSION TENSOR IMAGING STUDY OF WHITE MATTER FIBER TRACTS IN ADOLESCENT ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Chuang TC, Wu MT, Huang SP, et al.

A diffusion tensor imaging (DTI) study was conducted in 12 adolescents with attention deficit/hyperactivity disorder and 14 age- and IQ-matched healthy controls. Inter-subject comparison of fractional anisotropy (FA) of the whole brain between the groups was obtained using the tract-based spatial statistics method. Results revealed significantly lower FA in widespread white matter tracts in cases relative to controls. Also, the FA measure of identified regions was associated with cognitive performance.

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Res Dev Disabil. 2013;34:1100-08.

INJURY-PRONENESS OF YOUTH WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER: A NATIONAL CLINICAL DATA ANALYSIS IN TAIWAN.

Tai YM, Gau SSF, Gau CS.

Limited literature documents injury-proneness of attention-deficit hyperactivity disorder in western population. However, only a few studies prospectively investigated the prediction of ADHD to injuries without considering other psychiatric and physical conditions and there is lack of such data in Asian population. To prospectively examine the prediction of ADHD to the risk of injury in a national sample of Taiwan, we conducted this study with samples including 1965 6-18-year-old youths with newly diagnosis of ADHD from 1999 to 2003, and 7860 sex-, age- and index day-matched non-ADHD controls from Taiwan's National Health Insurance Research Database (1997-2008). Relevant psychiatric and physical disorders, demographics, and medications were also included in the Cox proportional hazard models with injury as the outcome. Our results showed that ADHD cases had a roughly 2-fold and 5-fold higher risk of each injury, and overall injury than controls after considering all confounding factors, respectively. In addition to ADHD, use of anxiolytics, antidepressants, and antipsychotics, and comorbid physical illnesses also predicted the injury prospectively. Our findings strongly support that ADHD predicted injury risks and imply that physicians should take the risk of injury into consideration while prescribing medications other than stimulants to patients with ADHD, especially anxiolytics.

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Schizophr Res. 2013;144:136-41.

INCREASED DISTRACTOR VULNERABILITY BUT PRESERVED VIGILANCE IN PATIENTS WITH SCHIZOPHRENIA: EVIDENCE FROM A TRANSLATIONAL SUSTAINED ATTENTION TASK.

Demeter E, Guthrie SK, Taylor SF, et al.

Objective: Attentional deficits represent a core cognitive impairment in schizophrenia. The distractor condition Sustained Attention Task (dSAT) has been identified by the Cognitive Neuroscience Treatment to Improve Cognition in Schizophrenia (CNTRICS) initiative as a promising translational task for assessing schizophrenia-related deficits in attentional selection-control, identifying neuroimaging biomarkers of such deficits, and for preclinical animal research on potential pro-cognitive treatments. Here, we examined whether patients would show specific difficulties in selection-control and in avoiding distraction in the dSAT.

Method: Selection-control deficits are measured by comparing attentional performance in the Sustained Attention Task (SAT) without distraction to performance on the task when distraction is present (dSAT). The baseline SAT condition can also be used to assess time-on-task or vigilance effects. Patients with schizophrenia, age- and gender-matched healthy controls and, as an additional control, school-aged children were tested on both the SAT and dSAT.

Results: Compared to healthy controls, patients had reduced performance overall and were differentially vulnerable to distraction. In contrast, patients but not children had preserved vigilance over time.

Conclusion: These results demonstrate specific input-selection control impairments in schizophrenia and suggest that patients' distraction-related impairments can be distinguished from general performance impairments and from deficits in other attentional processes (e.g., sustaining attention) evident in other groups.

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Twin Res Hum Genet. 2012;15:700-13.

OFFSPRING ADHD AS A RISK FACTOR FOR PARENTAL MARITAL PROBLEMS: CONTROLS FOR GENETIC AND ENVIRONMENTAL CONFOUNDS.

Schermerhorn AC, DOnofrio BM, Slutske WS, et al.

Background: Previous studies have found that child attention-deficit/ hyperactivity disorder (ADHD) is associated with more parental marital problems. However, the reasons for this association are unclear. The association might be due to genetic or environmental confounds that contribute to both marital problems and ADHD.

Method: Data were drawn from the Australian Twin Registry, including 1,296 individual twins, their spouses, and offspring. We studied adult twins who were discordant for offspring ADHD. Using a discordant twin pairs design, we examined the extent to which genetic and environmental confounds, as well as measured parental and offspring characteristics, explain the ADHD-marital problems association.

Results: Offspring ADHD predicted parental divorce and marital conflict. The associations were also robust when comparing differentially exposed identical twins to control for unmeasured genetic and environmental factors, when controlling for measured maternal and paternal psychopathology, when restricting the sample based on timing of parental divorce and ADHD onset, and when controlling for other forms of offspring psychopathology. Each of these controls rules out alternative explanations for the association.

Conclusion: The results of the current study converge with those of prior research in suggesting that factors directly associated with offspring ADHD increase parental marital problems.

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Interference control in working memory: Comparing groups of children with atypical development

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The study aimed to test whether working memory deficits in children at risk of Learning Disabilities (LD) and/or attention deficit/hyperactivity disorder (ADHD) can be attributed to deficits in interference control, thereby implicating prefrontal systems.

Two groups of children known for showing poor working memory (i.e., children with poor comprehension and children with ADHD) were compared to a group of children with specific reading decoding problems (i.e., having severe problems in phonological rather than working memory) and to a control group. All children were tested with a verbal working memory task. Interference control of irrelevant items was examined by a lexical decision task presented immediately after the final recall in about half the trials, selected at random. The interference control measure was therefore directly related to working memory performance.

Results confirmed deficient working memory performance in poor comprehenders and children at risk of ADHD + LD. More interestingly, this working memory deficit was associated with greater activation of irrelevant information than in the control group. Poor decoders showed more efficient interference control, in contrast to poor comprehenders and ADHD + LD children. These results indicated that interfering items were still highly accessible to working memory in children who fail the working memory task. In turn, these findings strengthen and clarify the role of interference control, one of the most critical prefrontal functions, in working memory.

Keywords: Working memory; Interference control; Poor comprehenders; ADHD children; Learning disabilities.

The concept of working memory (WM) refers to the capacity to store and manipulate information contemporaneously (Baddeley, 1986; Baddeley & Hitch, 1974). In the last few decades, working memory has been widely investigated and consistently associated with pathological development of academic learning, for example, learning disabilities and attention deficit/hyperactivity disorder (ADHD; for a review, see Alloway & Gathercole, 2006; Swanson & Siegel, 2001).

A measure of working memory expressing the complex requirement of both storing and processing information was developed by Daneman and Carpenter (1980). This measure, the Reading/Listening Span Test, requires participants to process (i.e., verify the

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truth of) a series of sentences but then to recall only a part of them (e.g., the last word of each sentence).

Performance on working memory tests has been demonstrated to be a good predictor of a large range of skills such as reading comprehension and problem solving (Conway, Jarrold, Kane, Miyake, & Towse, 2007; Gathercole, Brown, & Pickering, 2003; Pickering, 2006). It is also considered a good index of a domain-general skill close, in principle, to the concept of general intelligence (Engle, Tuholski, Laughlin, & Conway, 1999; Kane & Engle, 2003; Swanson & Ashbaker, 2000).

Satisfactory performance on a working memory task, however, cannot be directly and definitively related to a single mechanism or to one interpretation. The complexity of this kind of task suggests several possible explanations, each pertaining to different mechanisms and processes (see Miyake & Shah, 1999, for a review).

Interference control appears to be a significant factor involved in the close relationship between working memory and high levels of cognitive efficiency; in the present article, interference and inhibitory control will be used as synonyms. Interference control is considered an independent executive function (Miyake et al., 2000) where the input of the working memory central executive has been highlighted. In the recent neuropsychological literature, proactive interference/inhibitory control has been investigated as one of the most critical executive functions in working memory (see, for example, Collette & van der Linden, 2002) and incorporated into several theories of prefrontal cortex (PFC) functioning (Miller & Cohen, 2001). The review by Jonides and Nee (2006) on proactive interference brain mechanisms in working memory starts from the assumption that “if working memory is critical to normal cognitive functioning, then proactive interference is an important determinant of the success of working memory” (p. 181).

The relationship between working memory and proactive interference/inhibitory control was originally put forward by Hasher and Zacks (1988), who suggested that older adults’ poor working memory performance could be due, at least in part, to their inefficient control of activation of irrelevant information. A potential interpretation of what is happening during a working memory task (e.g., the listening span test) is that all materials are processed and gain some activation, but then most must be ignored in order to maintain only the target information (e.g., the last word of each sentence). Where information has become irrelevant, it must be efficiently suppressed, or else it will interfere with the memory of relevant information. In the worst case, it will be recalled instead of the required target words. Research examining working memory performance in older adults indicates that irrelevant thoughts are maintained or reach conspicuous activation, thus interfering significantly in the recall of relevant material (see, for example, De Beni & Palladino 2004; Hartman & Hasher, 1991; Hasher, Quig, & May, 1997; May, Hasher, & Kane, 1999; Palladino & De Beni, 1999, 2003).

From a developmental perspective, children with poor reading comprehension are the prototypical example of a learning disability strictly associated with a working memory deficit and a failure to control for irrelevant information (Cain, 2006a; Cain, Oakhill, & Bryant, 2004; Carretti, Cornoldi, De Beni, & Palladino, 2004; De Beni & Palladino, 2000; De Beni, Palladino, Pazzaglia, & Cornoldi, 1998; Oakhill, 1984; Oakhill, Yuill, & Parkin, 1986; Palladino, Cornoldi, De Beni, & Pazzaglia, 2001; Pimperton & Nation, 2010; Yuill, Oakhill, & Parkin, 1989). Both children and adults with comprehension problems consistently recalled a lower number of target items and a greater number of processed but no-longer-relevant information (intrusion errors) than control participants (Carretti

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et al., 2004; Daneman & Carpenter, 1980; De Beni et al., 1998; De Beni & Palladino, 2000; Palladino et al., 2001). Similarly, they appeared to have difficulty in reducing the activation of no-longer-relevant information when reading a passage (Gernsbacher & Faust, 1991). When a new character was introduced into a narrative, less-skilled comprehenders appeared to be less efficient in suppressing interfering information, represented in this case by previously encountered character(s) (Gernsbacher & Faust, 1991; Gernsbacher, Robertson, Palladino, & Werner, 2004).

A similar association between working memory deficit and intrusion errors was found in children with ADHD. Children with ADHD showed poor performance in different working memory tasks and a deficit in inhibitory control (for a review, see Barkley, 1997; see also, Lorschach & Reimer, 1997; Manari & Barkley, 1997; Nigg, 2001; Oosterlaan & Sergeant, 1996; Quay, 1997; Schachar, Tannock, & Logan, 1993; Schachar, Tannock, Marriot, & Logan, 1995; Shallice et al., 2002). Furthermore, children with ADHD showed poor working memory performance, together with a high production of intrusion errors (Cornoldi et al., 2001). As with poor comprehenders, they were found to be sensitive to the amount of previous activation of no-longer-relevant information.

The fact that both poor comprehenders and children with ADHD show a higher rate of intrusion of highly activated information allowed us to argue in favor of a less efficient inhibitory control mechanism as a common cause of failure in the working memory task. Participants who are less efficient in recalling final words may have trouble in reducing the activation of no-longer-relevant information that has been entered and processed in working memory. Consequently, they may be less able to exclude this information from recall and more likely to allow intrusion of a previously processed word. However, to our knowledge, there are no studies directly comparing poor comprehenders with ADHD-affected children on inhibitory control in a working memory task.

A problem for the studies described above is that intrusions are an indirect index of poor inhibitory control and are often a rare event. For example, in De Beni et al.'s study (1998), poor comprehenders produced an overall number of intrusion errors of about 3 out of a total of 60 words recalled (Experiment 1). In fact, intrusion can only be identified in the extreme cases where irrelevant information reaches such a conspicuous activation level as to be recalled instead of the target word.

Despite the consistency of the relationship between poor working memory and intrusion errors, the interpretation of these is not unequivocal, and their nature is still unclear. Indeed, intrusion errors may be associated with the efficiency of the inhibition control mechanism, reducing or suppressing the activation of irrelevant information, but they may also result from a compensatory strategy with these errors being a consequence of poor recall and an attempt to complete the number of expected recalled items (e.g., Rosen & Engle, 1997, 1998; Hasher & Zacks, 1988).

One way of clarifying this issue would be to measure the activation of the irrelevant information directly in the working memory task. In this situation, the two different explanations, poor working memory/intrusion errors as evidence of lack of suppression versus lack of memory, would result in different predictions. If poor working memory and intrusions are caused by lack of memory, they will be associated with an overall poor memory performance and poor activation of both irrelevant and relevant information, processed during the working memory task. If caused by inefficient suppression, then there will be associations with higher activation of irrelevant information.

A recent study (Palladino, 2006) examined activation-inhibition of no-longer-relevant information directly during a working memory task performed by children at risk

of ADHD. Immediately after recall, activation of irrelevant information was measured with a lexical decision task. Irrelevant information processed during the working memory task was proportionally more activated in children with poor working memory performance. Children at risk of ADHD appeared to keep activation of irrelevant information at a level interfering with the ongoing task performance. This suggests an underlying difficulty in reducing the activation of no-longer-relevant information.

In the present research, we were interested in replicating and extending the results of Palladino (2006); testing whether the impairment in a working memory task, observed in children with specific developmental disorders, was associated with a performance decrement in interference control of processed, but no-longer-relevant, information. To compare groups of children who suffer from specific impairments, the following groups were selected: a group of children who were poor comprehenders and a group of children at risk of ADHD with Learning Disabilities (LD; both known to have problems with working memory and inhibitory control) compared with a group of poor reading decoders and a control group. A verbal working memory task and a measure of the relative activation of irrelevant information were used.

Children with poor decoding were selected as a form of control group, since they are a population with a very specific learning disability. They are known to have a memory deficit at the phonological store level, in addition to poor performance in phonological awareness, but a less specific and severe impairment in working memory (Cain, 2006b; Swanson & Howell, 2001; but see also, de Jong, Seveke, & van Veen, 2000). Their profile of memory difficulties appears, at least partly, dissociated from that of poor comprehenders that show a deficit in tasks tapping working memory (e.g., Cain, 2006a; Nation, Adams, Bowyer-Crane, & Snowling, 1999; Yuill et al., 1989). However, this appears alongside an unimpaired phonological loop function and normal levels of phonological short-term memory, as measured by nonword repetition (Cain, 2006a; Nation, Clarke, Marshall, & Durand, 2004; Oakhill, Yuill, & Parkin, 1988; Stothard & Hulme, 1992). Although the profiles of poor comprehenders and poor decoders (or dyslexic children) are not as independent or “pure” as might be hoped for (as in many clinical groups), they do highlight significant dissociations and allow very interesting comparisons of the performance on several cognitive and metacognitive tasks (for an extensive overview, see Cornoldi & Oakhill, 1996; and also Cain, 2006b; Nation et al., 1999).

Despite substantial evidence for the link between working memory and learning skills, to our knowledge, there are no studies comparing working memory performance and interference control in these specific disabilities using a common, direct assessment measure. The advantage of such a research design is to allow for direct comparisons across disorders and to minimize related discrepancies. Furthermore, we are able to compare two groups known to have a working memory deficit (i.e., poor comprehenders and children with ADHD) with two groups known to have less specific and severe working memory difficulties (i.e., poor decoders) and no difficulty (matched control children). Any differences in memory and interference-control-related processing can then be specifically associated with a specific learning deficit, controlling for confounding variables connected with learning problems (general cognitive difficulties, motivational and behavioral problems, learning experience deprivation) through a comparison with both control groups (learning disabled and typically developing children).

The present research design allows us to examine the specificity of the relationship between poor inhibitory control and poor working memory performance. We can

compare groups showing different and independent specific developmental disorders associated with a comparable working memory deficit (poor comprehenders and children with ADHD), in addition to groups with a specific learning impairment in the linguistic field and partly different memory problems (poor comprehenders and poor decoders).

A further advantage of the present research design is the direct measurement of inhibition control in working memory. Previous studies, focused on the role of interference control in working memory, have employed different interference control tasks (e.g., Stroop task, Hayling task; see for example Kane & Engle, 2003) or have used analysis of error type to explore the hypothesis from a correlational and/or indirect point of view alone (De Beni et al., 1998; Palladino et al., 2001).

In contrast, here, we have investigated the hypothesis of a relationship between poor working memory and poor inhibitory control with a direct measure of the latter, taken immediately after final recall and, in this way, directly referable to the working memory process. Activation of irrelevant items has been tested with a lexical decision task in accordance with a classical procedure (Gernsbacher, 1990, 1994). If children are showing poor working memory performance and intrusion errors because they are less efficient in reducing the activation of irrelevant information, then a measure of their activation of irrelevant information will show higher values when compared to those of control children. This result would highlight the extent to which the to-be-excluded items are still highly accessible to working memory, revealing a counterintuitive picture where children with poor working memory have a better recall/activation of parts of the processed information, that is, the interfering information.

If, on the contrary, working memory difficulty and intrusions are due to poor processing and memory, children who are poor reading comprehenders or at risk for ADHD + LD should show poorer memory of both target and irrelevant items. Therefore, low activation of irrelevant information would indicate a poor memory overall, consistent with the picture of a general memory deficit of children with learning disability (LD).

The comparison between groups of children with specific and partly dissociated deficits, according to the classical neuropsychological research paradigm, would allow us to replicate and extend previous results (Palladino, 2006). Furthermore, it would also highlight whether inhibitory control deficit is associated with a poor working memory performance, independently from the pathological pattern developed and distinguished from more general memory deficits.

METHOD

Participants

One hundred and ninety seven third graders (93 females, 104 males), with a mean age of 101 months ($SD = 7.8$ months), who attended public schools in northern Italy, participated in the first selection stage of this study. Students signalled by teachers for having been diagnosed with severe learning disabilities or mental retardation in a public health center were excluded. Children nonnative-Italian speakers were not included as well. All participants had a normal educational career and regularly attended school.

Group Selection

Materials and Procedure. The following standardized tests were administered to participants in order to examine their learning skills and control for nonverbal ability:

- Spatial Reasoning was tested using the “Ragionamento Spaziale” subtest from the Primary Mental Aptitude Battery (PMA; Thurstone & Thurstone, 1981). This was presented collectively in classrooms during the school day. Testing sessions lasted approximately 30 minutes.
- Reading Proficiency was tested using an Italian standardized battery of reading tests that measures (a) reading accuracy and speed and (b) reading comprehension (Cornoldi, Colpo, & Gruppo, 1995).
 1. *Reading accuracy and speed:* Here, the participant was required to read a passage aloud, as fast and accurately as possible. The experimenter scored reading decoding accuracy on an error sheet, recording the total reading time in seconds (using a stop-watch) on the answer sheet. The reading accuracy and speed task lasted on average 2–3 minutes.
 2. *Reading Comprehension:* The comprehension task was composed of a passage, appropriate for third grade students, followed by 10 questions. All questions were inferential, and the passage kept available to the reader throughout the test, including during the choice the correct answer. One point was given for each correct answer. The task lasted about 20–30 minutes.
 3. *Attentional and Behavioral Control Scale:* SDAI. This was measured by a teacher-rated scale for evaluation of lack of attention and behavioral control, SDAI (Cornoldi, Gardinale, Pettenò, & Masi, 1996; Marzocchi & Cornoldi, 2000; Marzocchi, Lucangeli, De Meo, Fini, & Cornoldi, 2002). The SDAI scale was presented to teachers in order to detect the frequency of behaviors assumed to indicate attention and self-regulation problems. The scale was composed of 18 items, half of which referred to lack of attention (indicated by odd items) and half referring to difficulties in self-regulation (even items).

According to Italian norms and clinical classification, an individual with an average score of 1.5 per item (13.5 in the total score) or higher is considered impaired, whilst a case with a mean score between 1 and 1.5 ($9 < X < 13.5$ in the total score) is considered at risk of attention deficit/ hyperactivity disorder (ADHD; Cornoldi et al., 1996; Marzocchi et al., 2000).

Groups. A group of 14 children with a reading comprehension deficit (6 boys and 8 girls), a group of 11 children with a reading decoding deficit (5 boys and 6 girls), a group of 16 at risk of ADHD and LD (13 boys and 3 girls), and a control group of 57 children (29 boys and 28 girls) were selected according to the following criteria:

1. A nonverbal intelligence score higher than the 40th percentile for all groups, with a score equal to or greater than 14 (raw score), mean value of 15.89 ($SD = 3.81$). The control group was selected with average scores on all learning indexes and matched for age and school grade with children at risk.
2. Children with a reading comprehension problem (without a risk of ADHD) were selected with a score equal or lower than 5 (less than or equal to the 10th percentile) on the reading comprehension test (MT battery; Cornoldi, Colpo, & Gruppo, 1995).

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Table 1 Means (and Standard Deviations) of Groups' Scores in the Reading, Nonverbal Tests and in the Rating Scale for Attention and Behavioral Control for Teachers (SDAI).

	Control	Poor Comprehenders	Poor Decoders	ADHD + LD*
Reading comprehension (correct answers)	8.60 (1.16)	4.07 (0.83)	7.54 (1.51)	6.87 (2.3)
Reading accuracy (number of errors)	1.38 (1.20)	2.50 (1.41)	5.82 (2.29)	4.47 (2.97)
Reading speed (secs)	36.5 (8.60)	53.64 (17.5)	55.73 (11.71)	58.2 (20.2)
SDAI attention	3.04 (3.31)	7.36 (5.42)	6.45 (3.83)	17.94 (4.5)
SDAI** hyperactivity	2.51 (2.77)	4.21 (3.42)	3.81 (3.9)	14.75 (7.7)
PMA*** nonverbal Correct answers	11.12 (4.5)	7.57 (3.34)	11.27 (6.1)	9.56 (5.4)

*ADHD + LD = group of children at risk of attention deficit/hyperactivity disorder and Learning Disabilities.
 SDAI = attentional and behavioral control rating scale for teachers. * PMA = Primary mental aptitude battery.

- Children with a reading decoding problem (but without reading comprehension and/or ADHD problems) were selected with a score equal or higher than 5 (greater than or equal to the 90th percentile) on the accuracy index of the reading decoding test (error score) and/or a score equal or higher than 61 seconds (greater than or equal to the 90th percentile) on the speed index of the reading decoding test. Their reading comprehension was equivalent to average performance.
- Children at risk of ADHD (with LD) were selected with a score equal to or greater than 13.5 for either the attention and/or the self-regulation items portion of the Italian teacher-rated scale (a score of 13.5 is the criterion established for a child to be considered impaired; Cornoldi et al., 1996).

Mean scores (and standard deviations) of selected groups are presented in Table 1.

A multivariate analysis of variance (MANOVA) was conducted comparing groups on all scores considered in the selection phase. Results showed that groups differed according to selection criteria (for details of the analysis see the appendix).

Materials and Procedure

Working Memory Span Test with Categorization. The materials differed in part from the working memory test with categorization (WMC) of Palladino (2006). Five sets, rather than three originally proposed, were included (the increase in the number of sets was in response to consistency needs). Each set was composed of three series containing a growing number of strings of words (from two to four). Each string contained four high-medium frequency words. Strings contained zero, one, or two animal nouns that could have been presented in various locations, including the final position. There were 30 animal nouns and 150 nouns of other categories. Fifteen animal nouns were located in the final position (end of a string) whilst other animal nouns were distributed in all positions but the end. Words within each string were easily discernible, both with respect to meaning and phonology. An example of a string was the following:

Oca (goose), Parco (park), Scuola (school), Piede (foot),
 Carta (paper), Nave (ship), Ramo (branch), Buco (hole),
 Occhio (eyes), Bosco (wood), Soldi (money), Falco (hawk),

Pelo (hair), Gabbia (cage), Monte (mountain), Lingua (tongue).

The material was presented via a computer screen (SUPERLAB software). Each word remained on the screen for 3 seconds, with an ISI (Interstimulus Interval) of 1 second. The end of a string was signaled by a 3-second interval with a blank screen. The participant's task was to read each word out loud and to press the space bar when an animal noun was presented (in bold type in the example). After each series, the request "RICORDA" (REMEMBER) appeared on the screen and the participant had to recall the last word of each string in serial order. Following the example above, *Piede*, *Buco*, *Falco*, and *Lingua* were to be recalled. A practice block followed the spoken instructions.

For about half of the series (8 out of 15), recall was immediately followed by a lexical decision task in a fixed random order.

Lexical Decision Task

This task consisted of computer presentation (SUPERLAB software) of 16 items: eight words, four animal, four nonanimal nouns, and eight nonwords, immediately after final recall for 8 out of 15 of the series outlined above. Four of the eight words were a representative sample of the words included in the series presented above (two were nonanimal and two were animal nouns). One of the animal nouns was a final noun (i.e., presented as an item for final recall) and one was a nonfinal animal noun. Both the nonanimal nouns were nonfinal nouns. The other four words were not part of the working memory span task material but had similar characteristics (with the same proportion of animal and nonanimal nouns). The nonwords were obtained by changing a syllable in existing words to get a pseudoword, having the same characteristics as the rest of the experimental material. An example of the items in a lexical decision task string was the following:

Oca (goose), Terto (nonword), Marma (nonword), **Bosco** (wood), Cillo (nonword), Malcio (nonword), Naro (nonword), Mulo (Mule), Sago (nonword), Cergo (nonword), Merlo (blackbird), Grano (grain), **Falco** (hawk), Punta (head), Gomo (nonword), **Soldi** (Money).

To summarize using this example, *Oca* was a nonfinal animal noun, **Falco** was a final animal noun, and **Bosco** and **Soldi** were the nonfinal nonanimal nouns. All would be familiar to participants, as they were recently presented in the working memory task. *Mulo*, *Merlo*, *Grano*, and *Punta* were unfamiliar animal and nonanimal nouns (i.e., they were not presented previously). The participant's task was to decide, as quickly as possible, if the presented item was a word. Responses were given by pressing one key if the item was a word and another if it was a nonword (YES/NO). A small number of practice trials preceded the task. Accuracy and reaction time were recorded.

RESULTS

Working Memory Span Test with Categorization

All participants were able to carry out both the final memory and categorization-animal detection components of the task. All the children but one could understand the dual nature of the working memory task, relating to when an animal noun was presented

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and recalling the final nouns. Only one child, a poor comprehender, was excluded from data analysis for not being able to do the double task, specifically being unable to detect animal nouns. On the categorization task, there were significant differences when the groups' accuracy scores and reaction times in detecting animal nouns were compared. Although all groups were able to detect at least half of the animal nouns, children poor in reading comprehension and children at risk of ADHD + LD were significantly less efficient, for both accuracy and reaction time, in detecting animal nouns in comparison to control groups, $F(3, 93) = 6.52, p < .001, \eta^2 = .17, F(3, 93) = 4.55, p < .01, \eta^2 = .13$, respectively (means are presented in Table 2). As may have been expected, the reaction times of children with poor reading decoding were also slower than the control, Tukey's test $p < .05$.

As can be seen in Table 2, groups differed in the number of final words recalled, $F(3, 93) = 5.83, p < .01, \eta^2 = .16$. Post hoc analysis conducted with Tukey's method indicated that poor comprehenders and those at risk of ADHD + LD recalled a lower number of final words than the control group, $p < .01$. It is worth to notice that although poor decoders also recalled a lower number of final nouns than control children the difference was small and not significant.

The differences statistically relevant appear to be reliably stable through the analyses of recall at each level of span. In particular, at Levels 3 and 4 (15 and 20 words to be recalled, respectively), poor comprehenders and children with ADHD + LD, but not poor decoders, significantly differed from the control group: Level 3, $F(3, 93) = 4.23, p < .01$; Level 4, $F(3, 93) = 4.55, p < .01$. When final to-be-recalled nouns were distinguished by animal and nonanimal nouns, poor comprehenders and children at risk of ADHD + LD showed different patterns. The former group performing weakly on both animal and nonanimal nouns, and the latter having difficulty only with nonanimal nouns.

A multivariate analysis of variance was conducted on errors, intrusions-words processed but no-longer-relevant and inventions, words not processed during the task. It showed a significant difference between groups on intrusion errors, $F(3, 93) = 3.09, p < .05, \eta^2 = .09$. This effect was due to the higher absolute number of intrusions generated by children at risk of ADHD + LD compared to control group, Tukey test $p < .05$ (Control: $M = 0.56, SD = 0.94$; ADHD + LD: $M = 1.44, SD = 1.20$; Poor Comprehenders: $M = 1.23, SD = 1.30$; Poor Decoders: $M = 1.00, SD = 1.78$). The mean number of invention errors was very low for all groups, $M < 1$.

Table 2 Means (and Standard Deviations) of Groups' Scores in the Working Memory Test: Animal Noun Detection and Final Recall.

	Control	Poor comprehenders	Poor decoders	ADHD + LD
Animal noun correct detections	20.3 (5.2)	13.5 (6.3)	18.3 (5.4)	14.9 (8.6)
Animal noun detection time (msec)	1237 (140)	1357 (170)	1376 (121)	1319 (185)
Recall Level 2 (max 10)	8.2 (1.8)	6.4 (2.2)	7.4 (2.0)	7.2 (1.3)
Recall Level 3 (max 15)	10.6 (2.8)	8.5 (2.3)	9.2 (2.8)	8.2 (3.1)
Recall Level 4 (max 20)	11.3 (3.6)	8.3 (2.6)	9.1 (3.7)	8.7 (3.6)
Total recall	30.1 (7.2)	23.2 (5.6)	25.7 (7.8)	24.1 (6.2)
Animal noun recall	11.7 (2.4)	9.4 (2.1)	10.0 (2.9)	10.0 (2.2)

Lexical Decision Task

Participants were able to perform the task and obtained an average performance not lower than 70% correct. Assessment of accuracy was based on a composite measure (i.e., corrected hits, calculated as hits minus false alarms). Corrected hits are controlled for biases in the use of response categories and, therefore, preferable to raw hit rates as a measure of recognition accuracy (Swets, 1986). Table 3 presents mean proportions of both hits and false alarms separately. False alarms were more frequent in children with ADHD + LD, as might be expected according to their attention/impulsivity problems, $F(3, 93) = 4.4$, $p < .01$, $\eta^2 = .13$; however, the Familiarity \times Group interaction was not significant. Corrected hits are presented in Figure 1.

In order to examine the activation of irrelevant information immediately after recall, a $4 \times 2 \times 2$ analysis of variance (ANOVA) was computed on the mean proportion of corrected hits on the Lexical Decision task (i.e., where words had to be distinguished from nonwords) for the four groups of children (between-subjects factor) with familiarity (old vs. new nouns) and stress (animal vs. nonanimal nouns) as within-subjects factors.

The statistical analysis conducted on corrected hits showed a main effect of group due to poor comprehenders and ADHD + LD children's lower performance than the control group, $F(3, 93) = 6.13$, $p < .001$, $\eta^2 = .17$.

Table 3 Mean Proportions (Standard Deviations) of Hits and False Alarms for Old Versus New Nouns in the Lexical Decision Task, Collapsed for Animal and Nonanimal Nouns.

	Control	Poor Comprehenders	Poor Decoders	ADHD + LD
Hits Old nouns	0.87 (0.09)	0.81 (0.11)	0.78 (0.13)	0.78 (0.13)
False alarms Old nouns	0.10 (0.07)	0.13 (0.06)	0.13 (0.12)	0.16 (0.10)
Hits New nouns	0.89 (0.09)	0.76 (0.12)	0.84 (0.14)	0.73 (0.16)
False alarms New nouns	0.08 (0.07)	0.13 (0.09)	0.07 (0.07)	0.17 (0.12)

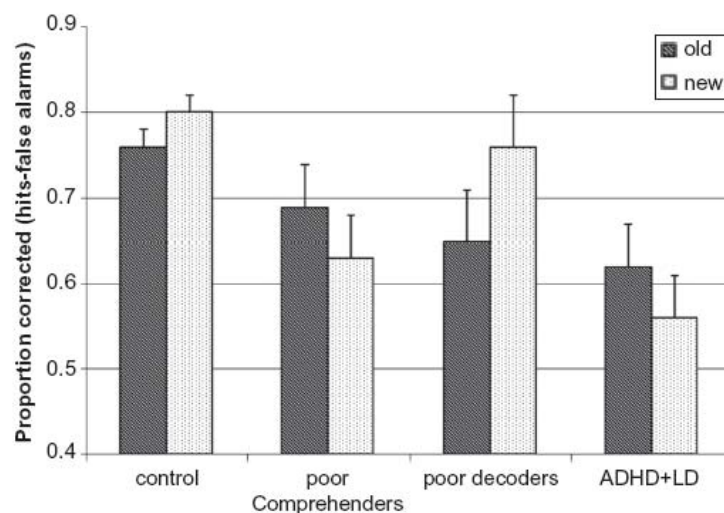


Figure 1 Mean proportion of corrected hits (and standard error [SE] bars) as a function of familiarity (old vs. new nouns).

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However, differences between groups were better clarified by the significant interaction between group and familiarity, $F(3, 93) = 3.91, p < .01, \eta^2 = .12$.

As can be seen in Figure 1, this interaction was due to the fact that poor comprehenders and children at risk of ADHD + LD manifested an advantage on already-presented nouns (*old*), compared with children in the other groups. Both groups with significant WM deficit in recall were more likely to be correct in deciding on the old items than the new items. Poor decoders and children in the control group did not show any advantage due to familiarity, $p < .05$. In fact, it is noteworthy that post hoc comparisons with Tukey's method highlighted the opposite pattern in poor decoders: They showed better performance with new (less) familiar than old (more) familiar items, $p < .05$. No differences between old and new items were evident in the control group.

The different benefit-cost effects for the groups can be clarified, if we consider the score difference, that is, the benefit for old items that derives from the difference between the corrected hits to the old items and the corrected hits to the new items (see Figure 2).

Poor comprehenders children and children at risk of ADHD + LD showed an advantage of between 4% and 5 %, attributable to familiarity, whilst poor decoders showed an opposite effect, a cost of about 6%. No significant gain or cost was observed in the control group.

The activation of irrelevant information has also been examined in terms of mean response times. Since the level of correct performance was far from being perfect, response times for correct answers on each category of items (old vs. new, stressed vs. nonstressed) were not completely balanced. However, response times were computed for each group separately, and a mean value of the group replaced missing values. Furthermore, for each single item, response times deviating more than three standard deviations below or above the item's mean were replaced by the cutoff value for that item. A $4 \times 2 \times 2$ ANOVA was computed on the mean response times of correctly identified words for the four groups, evaluating item familiarity (old vs. new nouns) and stress (animal vs. nonanimal nouns).

These results showed a significant main effect of familiarity, where lexical decisions concerning previously processed items were produced faster than those concerning new items (Old: $M = 1521$ ms, $SD = 268$ ms; New: $M = 1690$ ms, $SD = 275$ ms), $F(1, 93) = 98.7, p < .001, \eta^2 = .52$. New nonanimal nouns elicited slower answers than old nonanimal nouns, producing a significant interaction between familiarity and stress, $F(1,$

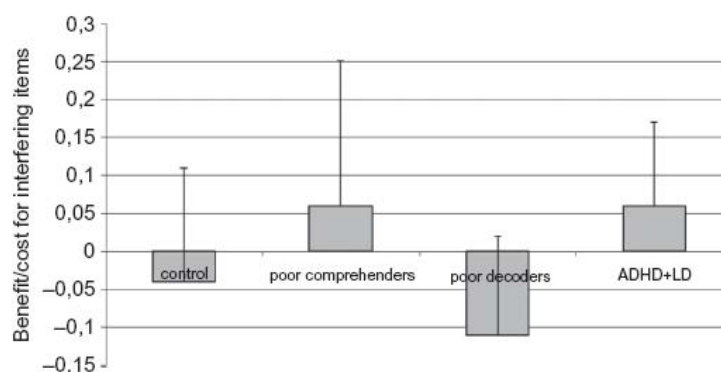


Figure 2 Mean proportion of benefit/cost (and SE bars) for irrelevant/interfering items (old nouns - new nouns) for each group.

Table 4 Mean (Standard Deviation) Reaction Times (ms) for Familiar versus Unfamiliar and Animal Versus Nonanimal Nouns in the Lexical Decision Task.

	Animal (stressed nouns)	Non animal (nonstressed nouns)
Familiar	1487 (263)	1492 (274)
Unfamiliar	1650 (285)	1701 (279)

93) = 7.9, $p < .01$ $\eta^2 = .08$, as can be seen in Table 4. Furthermore, animal nouns produced faster answers than nonanimal nouns, $F(1, 93) = 7.4$, $p < .01$, $\eta^2 = .07$.

The main effect of group was also significant $F(3, 93) = 6.4$, $p < .01$ $\eta^2 = .17$, and differences between groups were due to slower responses from poor decoders and children at risk of ADHD + LD than the control group ($M = 1782$, $SD = 170$; $M = 1767$, $SD = 303$; $M = 1525$, $SD = 232$, respectively), post hoc comparisons with Tukey's test $p < .05$. Poor comprehenders did not differ from control children, $F < 1$.

No interactions with Group reached significance, all F s < 1 .

In the lexical decision task, a target item (the final animal noun to be recalled) was introduced in order to control for effects due to being a target in the interplay of activation between relevant and irrelevant information. A main effect of being target versus nontarget was significant, $F(3, 93) = 14$, $p < .001$ $\eta^2 = .13$, but no interaction was found, $F < 1$.

DISCUSSION AND CONCLUSION

The present study supports and clarifies the role of interference control in working memory performance: one of the most critical prefrontal functions. It shows how inhibitory control affects activation of interfering information together with working memory performance by testing its function directly, immediately after the working memory task itself.

Two hypotheses were compared. Firstly, that poor working memory performance in poor comprehenders and children at risk of ADHD with LD is due to poor memory function overall, and, so, less memory of information (whether relevant or not) will be evident. Secondly, that poor working memory performance is related to inhibitory control difficulties and, thus, is associated with less efficient control of activation of irrelevant information. According to the former hypothesis, children with low working memory performance are expected to show low activation of irrelevant information, consistent with poorer memory for all information processed during the task. By contrast, according to the latter hypothesis, children with impaired working memory function should reveal higher activation of irrelevant information than children with no, or less severe, working memory problem (the control group and poor decoders, respectively).

Results from the present study indicate that all participants who demonstrated the weakest verbal working memory performance (i.e., poor comprehenders and children at risk of ADHD + LD), maintained activation of irrelevant information significantly more than children in the other groups. An advantage in making lexical decisions about previously processed, but irrelevant, words was observed specifically for these children. Children who were poor decoders showed an opposite effect with an advantage for new items or, in other words, a disadvantage for old irrelevant items. Children in the control group showed no effect. These results are coherent with previous findings in showing

that both groups with deficient working memory (poor comprehenders and children with ADHD + LD) kept irrelevant information more highly activated during and immediately after memory recall, where at this point irrelevant information had become interfering (Carretti et al., 2004; Palladino, 2006).

Importantly, this evidence is obtained by applying an original procedure by directly measuring activation of working memory for irrelevant information immediately after recall. Furthermore, in the same study, the combination of high activation of irrelevant information with poor working memory performance was observed consistently, but only in both groups with poor working memory. In addition, the study design compared groups with specific disorders known to show partially dissociated memory decrements, according to the typical neuropsychological paradigm. Although the sample size of each individual specific deficit group is relatively small, these were carefully selected from a relatively large original sample, according to specific criteria and effective matches between specific deficit groups and the control group. Particular care was taken to select groups with specific learning problems, as independent from each other as possible. The reliability of our selection process was also confirmed in the consistency of the working memory profiles of each group with the predictions of the literature.

Of particular interest is the fact that poor comprehenders and children with ADHD were not only compared with a control group of typically developing children. In addition, a group of poor decoders was selected to control for the variable of a specific developmental disorder, in addition to a memory deficit. According to the literature, memory problems in poor comprehenders and ADHD + LD children are mainly due to a phonological memory deficit (Cain, 2006b; Swanson & Howell, 2001).

The current data from poor decoders allow us to exclude the general role of disability per se in the working memory and lexical decision performances of poor comprehenders and ADHD + LD children since there are differences between groups according to our hypotheses and previous findings. Moreover, other interesting dissociations were found when comparing between the learning disabled groups. For example, poor decoders appear slower than control children when processing items in the working memory-detection task, as well as in the lexical decision task; although this performance is comparable to both poor comprehenders and ADHD + LD children. However, poor decoders did not differ from control children in working memory-detection task accuracy and working memory recall performance, both in total indexes of recall and partial ones. The exiguity of the control group's advantage over poor decoders would be expected according to both the literature and the following hypotheses. Poor decoders are, in fact, children with severe problems in phonological memory also anticipated to affect their performance on verbal working memory tasks. However, since their difficulty is not primarily in working memory, their performance in such a task should not be impaired to the same extent as poor comprehenders and children with ADHD. Most interesting for the aims of the present work is that, in the lexical decision task, poor decoders showed an opposite benefit-cost pattern to the other two impaired groups. In fact, poor decoders showed a significant disadvantage in processing old items compared to new ones, whilst poor comprehenders and children with ADHD + LD showed an advantage in processing old (i.e., irrelevant) items. Poor decoders seem to be able to reduce activation of irrelevant information, in accordance with their less severe difficulty in working memory.

Taken together, these data allow us to rule out the hypothesis that the higher activation of irrelevant information observed in children with working memory deficit is due simply to slower processing related to their disability. Instead, these results indicate that

the direction of the benefit-cost effect is independent of a more general speed of processing since ADHD + LD children and poor comprehenders both showed an advantage, despite differences in speed of processing. Poor decoders, with processing speeds as slow as ADHD + LD children, did not show any advantage, instead, showing the opposite pattern of a performance cost due to more efficient inhibition of irrelevant information.

Although these data appear consistent with both previous evidence and hypotheses of the present study, some caution should be asserted. Reaction times in the lexical decision task were obtained from less-than-perfect performances and, therefore, were not completely balanced throughout the testing conditions. In addition, working memory and lexical decision tasks were presented in an extended format compared to procedures used in an earlier study (Palladino, 2006). It is possible that these longer tasks could have been more difficult for third graders than those in the previous study. Indeed, this is a likely reason for the emergence of the significant benefit-cost pattern in the accuracy performance instead of in reaction times. However, according to previous literature (Schweickert, 1985; van Bon, Hoevenaars, & Jongeneelen, 2004), accuracy in a lexical decision task can be considered as reliable an index of performance as reaction time. Moreover, the purpose of lengthening the task was to increase the probability of intrusion errors, which were scarce in children previously tested by Palladino (2006). A significantly higher number of intrusions was found here in children with ADHD + LD, but the number was still relatively low and not reliably related to poor working memory. In fact, poor comprehenders did not show higher numbers of intrusion errors than control children.

The advantage observed in the data of poor comprehenders and children at risk of ADHD + LD for irrelevant information processing was, in fact, not the simple byproduct of the recognition of a just-recalled, nontarget, animal/nonanimal noun (intrusion error), because the range of the two phenomena was different. Only in very few cases did a required lexical decision in respect of an animal noun coincide with a previous intrusion. Intrusion errors were rather low in number and again, although more frequent in the group with ADHD + LD, were not significantly higher in the group of poor comprehenders.

Taken together, the results from this study are consistent with a view that less efficient inhibitory control processing is related to working memory deficit in children with a specific developmental disorder. Data analysis showed a paradoxical contrasting performance in poor comprehenders and children with ADHD + LD. That is, poor working memory overall, together with greater activation of words processed during the working memory task but no-longer-relevant at final recall. The paradox in the co-occurrence of poor and good performance within the same task appears in line with the hypothesis of a working memory deficit due to a lack of interference control (see, for example, Barkley, 1997; Carretti et al., 2004; Cornoldi et al., 1996; Palladino, 2006). Higher activation of irrelevant information seems to derive from inefficient interference control, allowing irrelevant information to remain activated and, thus, generating interference detrimental to target recall.

In conclusion, the present study sheds light on the role of interference control mechanisms in working memory, using a procedure of directly measured activation of irrelevant information in a working memory task. This procedure could open new horizons of investigation into understanding the factors that control the capacity of working memory; both in behavioral and brain mechanisms neuroscience research and their related research methods (Jonides & Nee, 2006). That said, further investigation is required both to increase sample size that represents a limitation of the present study and to analyze the specificity of the relationship between interference control problems, working memory deficits, and learning

disabilities, particularly in order to understand why the same basic deficits would result in different specific developmental impairments.

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APPENDIX

Results of the ANOVA conducted comparing groups on all scores considered in the selection phase.

	<i>F</i>	<i>p</i>	Post hoc HSD Tukey <i>p</i> < .05
PMA nonverbal	<1	<i>ns</i>	C = PC = PD = ADHD + LD
Reading Comprehension	35.32	<.001	C = PD > PC = ADHD + LD
Reading Accuracy	28.25	<.001	C = PC > PD = ADHD + LD
Reading Speed	19.22	<.001	C > PC = PD = ADHD + LD
SDAI attention	53.69	<.001	ADHD + LD > PC = PD > C
SDAI hyperactivity	30.06	<.001	ADHD + LD > PC = PD = C

Note. PC: poor comprehenders; PD: poor decoders; ADHD + LD: attention deficit /hyperactivity disorder + learning difficulty; C: control group.

The Effects of Comorbid Obsessive-Compulsive Disorder and Attention-Deficit Hyperactivity Disorder on Quality of Life in Tourette Syndrome

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Tourette syndrome (TS) is a complex neuropsychiatric disorder affecting patients' quality of life (QoL). The authors compared QoL measures in young patients with "pure" TS (without comorbid conditions) versus those with TS+OCD (obsessive-compulsive disorder), TS+ADHD (attention-deficit hyperactivity disorder), or TS+OCD+ADHD. Age and scores on scales assessing tic severity, depression, anxiety, and behavioral problems were included as covariates. Young patients with both comorbidities exhibited significantly lower Total and Relationship Domain QoL scores, versus patients with pure TS. Across the whole sample, high ADHD-symptom scores were related to poorer QoL within the Self and Relationship domains, whereas high OCD symptom scores were associated with more widespread difficulties across the Self, Relationship, Environment, and General domains. Significant differences in QoL may be most likely when both comorbidities are present, and features of OCD and ADHD may have different impacts on QoL across individual domains.

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Tourette syndrome (TS) is a neurobehavioral disorder characterized by multiple motor and one or more phonic tics. Comorbid disorders such as attention-deficit hyperactivity disorder (ADHD) and obsessive-compulsive disorder (OCD) are common.^{1,2} TS is associated with poor Quality of Life (QoL),^{3–6} including difficulties with social interaction.^{7–10} The study of QoL in TS can support the development of effective interventions and understanding the role of comorbid conditions may aid treatment prioritization.

Comorbid OCD and ADHD have an important influence on QoL in TS^{4,11} and the severity of these

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conditions can be more strongly related to QoL than tic severity.¹² Various studies^{6,13–16} have shown that many of the psychosocial and behavioral difficulties experienced by children with TS are linked to comorbid OCD and/or ADHD. For example, Pringsheim *et al.*¹⁷ reported that the QoL scores of patients with TS and ADHD, or ADHD and OCD were lower in almost all psychosocial domains, whereas, for the “pure” TS (no comorbidities) subgroup, only the Family Activities domain was significantly affected.

First, we aimed to investigate the hypothesis that QoL differed in patients with “pure” TS, as compared with those with TS and either comorbid OCD or ADHD, or both comorbidities. Secondly, we aimed to explore whether symptoms relating to either OCD or ADHD may differently affect QoL domains. QoL was assessed with the multidimensional Youth Quality of Life Instrument–Research Version (YQL–RV).^{18,19} This instrument allowed investigation of whether OCD or ADHD exerted varying influences on perceived QoL in general and domains of QoL related to the self, relationships, and environment. This measure therefore allowed us to consider domains of QoL shown to be particularly important in TS, including social relationships.⁴ Clinical scales were included to assess variables that could differ between comorbidity groups, including tic severity, anxiety, depression, and behavioral problems, in addition to symptoms of OCD and symptoms of ADHD. Such clinical factors may interact to influence perceived QoL in TS.^{4,5,11,20–22}

METHODS

Participants

A group of 50 young people with TS according to DSM-IV-TR criteria participated. Age ranged from 11 to 17 years. The diagnosis of comorbid OCD and ADHD was established by the treating clinician in accordance with current DSM criteria. Eleven had pure TS (10 boys; mean age: 13.73; SD: 2.41); 13 had TS+OCD (11 boys; mean age: 13.77; SD: 2.62); 15 had TS+ADHD (14 boys; mean age: 12.40; SD: 1.84); and 11 had TS+OCD and ADHD (9 boys; mean age: 13.36; SD: 2.42). Thirty patients were taking medication: pure TS: 2 pimozide (1+fluoxetine), 1 aripiprazole; TS+OCD: 4 risperidone (1+fluoxetine), 2 pimozide (1+fluoxetine), 2 aripiprazole (1+fluoxetine), 1 sulpiride; TS+ADHD: 4 pimozide (1+clonidine), 3 aripiprazole, 1 risperidone; TS+OCD+ADHD: 7

pimozide (5+fluoxetine), 1 aripiprazole, 1 risperidone, 1 sulpiride.

Procedure

The study received ethics approval. Patients were recruited consecutively from a pediatric outpatient clinic at the University of Catania, Italy, after giving informed consent. The QoL measure Youth Quality of Life Instrument–Research Version (YQOL–R)^{18,19} was completed, along with six clinical scales: the Yale Global Tic Severity Scale (YGTSS),²³ the Multidimensional Anxiety Scale for Children (MASC),²⁴ the Child Depression Inventory (CDI),²⁵ the Child Behavior Checklist (CBCL),²⁶ the Yale-Brown Obsessive Compulsive Scale (Y-BOCS)²⁷ and the Conner’s ADHD/DSM-IV Scale (CADS).²⁸

Measures

YQOL–R The 41 “perceptual items” contained in the YQOL–R generate scores for four domains. The Self domain (14 items) provides a perspective on the adolescent’s sense of the person who they are (e.g., “I feel good about myself.”). The Relationships domain (14 items) assesses family and peer relationships (e.g., “I am happy with the friends I have.”). The Environment domain includes 10 items, including “I feel my life is full of interesting things to do.”, and the General domain contains three broader items (e.g., “I enjoy life.”). Total scores are generated by summing the scores across the four domains.

YGTSS The YGTSS is a reliable, clinician-rated scale, in which tic severity is assessed on the basis of number, frequency, intensity, complexity, and interference.

MASC The MASC is a validated scale that assesses anxiety disorders in children and adolescents. It contains three subscales (physical, harm, and social), which are combined to generate a total score.

CDI The CDI is a self-rated instrument that allows the diagnosis of major depressive or dysthymic disorder in children and adolescents age 7–17.

CBCL The CBCL is a validated, parent-rated scale assessing the frequency and intensity of behavioral and emotional difficulties shown by a child over the preceding 6 months. It contains 8 syndrome scales (withdrawn, somatic complaints, anxious/depressed, social problems,

COMORBIDITY AND QoL IN TOURETTE SYNDROME

TABLE 1. Scores on the QoL Measure and Clinical Scales for the Four Subgroups: "Pure" TS, TS+OCD, TS+ADHD, and TS+OCD+ADHD, Mean (SD)

Task/Measure	TS	TS+OCD	TS+ADHD	TS+OCD+ADHD
YGTSS	24.36 (7.24)	31.92 (6.44)	31.14 (7.88)	33.64 (6.36)
Y-BOCS	9 (10.61)	21.38 (7.43)	15 (7.71)	22.63 (10.87)
CDI	4.18 (4.60)	12.54 (10.08)	6.40 (4.22)	11.91 (8.03)
CADS	10.90 (6.76)	16.92 (13.28)	25.64 (12.99)	32.82 (18.00)
MASC	30.36 (7.72)	41 (15.21)	37.87 (13.53)	50.36 (22.62)
CBCL	16.90 (12.62)	38.92 (18.43)	36.73 (21.38)	49.45 (28.82)
QoL Total	335.91 (52.61)	287.08 (67.50)	324.13 (48.42)	278.82 (58.03)
Self	105.73 (18.63)	85.23 (28.03)	99.47 (27.04)	83.64 (24.09)
Relationships	120.73 (25.06)	88.31 (40.77)	15.60 (13.91)	83.55 (34.23)
Environment	88.36 (17.08)	75.85 (17.75)	85.13 (12.61)	73.64 (15.73)
General	28.64 (2.62)	22.62 (10.08)	27.07 (4.46)	25.27 (5.35)

TS: Tourette's syndrome; OCD: obsessive-compulsive disorder; ADHD: attention-deficit hyperactivity disorder; SD: standard deviation; YGTSS: Yale Global Tic Severity Scale; Y-BOCS: Yale-Brown Obsessive Compulsive Scale; CDI: Children's Depression Inventory; CADS: Conners ADHD/DSM-IV Scale; MASC: Multidimensional Anxiety Scale for Children; CBCL: Child Behavior Checklist; QoL: Quality-of-Life Measure.

thought problems, attention problems, delinquent behavior, and aggressive behavior) and 2 composite scales (externalizing and internalizing problems).

Children's Y-BOCS The Y-BOCS is a reliable, clinician-rated instrument used to assess the severity of obsessive-compulsive symptoms in children. Obsessions and compulsions are recorded, based on observation and child and parent report, and their severity is rated in terms of number, frequency, intensity, resistance, and interference.

CADS The CADS is a validated, self- and proxy-rated (parent, teacher) scale used with 12–18-year-olds. It is used to diagnose ADHD and can allow discrimination between subtypes (e.g., predominantly inattentive/hyperactive-impulsive).

Data Analysis

We compared QoL in pure TS to each of the comorbidity groups in turn (TS+OCD; TS+ADHD; TS+OCD+ADHD) using ANCOVA, with QoL score (Total, then Domain scores) as the dependent variable, Group as fixed factor, and Age, YGTSS score, MASC score, CDI score, and CBCL score as covariates to be controlled for; we also investigated how the severity of OCD symptoms and ADHD symptoms was related to QoL scores across different domains.

RESULTS

Symptom scores for OCD and ADHD significantly differed across the comorbidity groups when age and

scores on other clinical measures (MASC, CDI, CBCL, CADS/YBOCS) were included as covariates. Y-BOCS scores were significantly lower in pure TS than in both TS+OCD ($F[7,1]=3.467$; $p=0.021$) and TS+OCD+ADHD ($F[7,1]=3.093$; $p=0.038$). CADS scores were significantly lower in pure TS than both TS+ADHD ($F[7,1]=3.902$; $p=0.011$) and TS+OCD+ADHD ($F[7,1]=11.301$; $p<0.001$).

One significant difference was found for total QoL when relevant covariates were controlled for. The pure TS group exhibited significantly higher QoL total scores (Table 1) than the TS+OCD+ADHD group ($F[5,1]=3.658$; $p=0.023$). The other significant difference was for the QoL Relationships domain score. The pure TS group scored significantly higher than the TS+OCD+ADHD group ($F[5,1]=2.932$; $p=0.046$). No other significant differences were found.

The influences of OCD and ADHD symptom severity were then examined across the whole sample, to see whether these factors affected QoL domain scores differently. This allowed us to investigate the impact of OCD and ADHD symptoms regardless of diagnostic category and across a range of symptom severities. Y-BOCS scores were the following: significantly negatively related to QoL scores for the Relationships ($Pr = -0.444$; $p=0.001$), Self ($Pr = -0.297$; $p=0.038$), General ($Pr = -0.404$; $p=0.004$), and Environment domains ($Pr = -0.296$; $p=0.039$), in addition to QoL Total score ($Pr = -0.426$; $p=0.002$). CADS scores were only significantly related to QoL scores for the Self ($Pr = -0.327$; $p=0.023$), and Relationship domains ($Pr = -0.323$; $p=0.025$), in addition to QoL Total score ($Pr = -0.359$; $p=0.012$).

EDDY *et al.*

DISCUSSION

We have shown that when potentially confounding factors are controlled for, QoL in patients with TS is adversely affected by the presence of both OCD and ADHD. However, the presence of just one of these comorbid conditions may not lower QoL scores significantly. When separate domains of QoL were considered, relationships domain scores were significantly lower in TS+OCD+ADHD than in pure TS. The relationships domain contained items linked to feelings about interactions with and understanding from family and friends (e.g., “getting along with parents,” “satisfied with social life”). This finding supports previous research suggesting that the nature and quality of social relationships deserves attention in TS,¹² although this area appears most vulnerable in complex cases, where symptoms linked to both OCD and ADHD are present.

Although other studies have shown that ADHD may be detrimental,^{13–16} our findings suggest that symptoms of comorbid OCD could have a more widespread negative impact on QoL. Severity of OCD symptoms was negatively related to poorer QoL within the Self, Relationships, Environment, and General domains, whereas ADHD symptoms appeared to have a more selective negative impact on the Self and Relationships domains. The Environment domain contains items linked to interaction between individuals and their surroundings, in terms of feeling safe and enjoying their environment (e.g., “I like trying new things,” “I look forward to the future.”). Although further research is needed, we tentatively suggest that the difference for the Environment domain could reflect an association between OCD symptoms and being less trusting of one’s surroundings, unlike ADHD symptoms, which may be linked to a drive to seek reward from the environment. However, it is also possible that characteristics of these

comorbid conditions could directly influence individuals’ self-report of perceived QoL.²⁹ Young people with ADHD may give a less-considered report because of attention difficulties, whereas patients with OCD may be more critical because of perfectionism. Whatever the case, such effects may not explain more specific differences in reported QoL across different domains. Future research should look at the impact exerted on QoL by different subtypes of comorbid ADHD.

One advantage of the present study was that we collected information about QoL directly from individuals with TS, because self-reported QoL of young patients with TS may differ from proxy report.⁹ However, there were a number of limitations, including small sample size, lack of a measure of functional impairment, likely overlaps between QoL items and clinical scale items (e.g., for depression) and the possibility that factors unrelated to clinical symptoms (e.g., living conditions, socioeconomic status) or medications could have affected scores on the QoL measure and clinical scales and contributed to differences between patient subgroups. Furthermore, it is likely that young people with TS face unique challenges and impacts on their QoL that may only be partly addressed by the QoL measure employed.

The findings from this study suggest that, as compared with pure TS, perceived QoL may only be significantly worse when comorbid OCD and ADHD are both present. Furthermore, the symptoms of these two conditions are likely to have different relationships with various factors affecting QoL. Here, we highlight the importance of considering the impact of complex symptomatology in TS when evaluating the efficacy of treatment through perceived QoL.

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Percorsi di teacher training

I percorsi di teacher training fanno parte degli interventi offerti dalle NPI del territorio per la presa in carico del bambino con ADHD.

Il teacher training è una formazione di gruppo rivolta ad insegnanti che abbiano in classe uno o più alunni diagnosticati come adhd, tale percorso ha lo scopo di fornire tre principali competenze ai docenti coinvolti:

Capacità di osservare e interpretare correttamente il comportamento del bambino in classe.

Agli insegnanti viene presentato il disturbo e i suoi principali sintomi, l'attenzione è posta sulle manifestazioni in classe dell'adhd e sulle difficoltà che il bambino con questo disturbo può presentare in compiti di apprendimento.

Capacità di strutturare spazi, tempi e compiti in modo da sostenere l'apprendimento del soggetto adhd.

Vengono forniti suggerimenti su come creare un ambiente che possa essere sia facilitante per il bambino che per l'instaurarsi di una buona relazione insegnante/alunno.

Capacità di utilizzare in modo efficace strumenti e strategie per favorire l'integrazione del soggetto adhd nel gruppo classe.

Agli insegnanti vengono presentate alcune strategie per la gestione dell'alunno in classe, in modo particolare per far fronte alle difficoltà relazionali che potrebbero manifestarsi in seguito ad alcuni comportamenti impulsivi messi in atto dal bambino con adhd.

L'incontro è rivolto agli operatori delle NPI della **Regione Lombardia**

che, nei mesi successivi alla conclusione del percorso, si impegnino ad avviare percorsi di Teacher Training presso il proprio centro.

Per l'iscrizione utilizzare il formulario on line

<http://adhdlombardia.webnode.it/iscrizioni-percorsi-formativi/>

l'organizzazione si riserva il diritto di selezionare i partecipanti in base alla coerenza tra caratteristiche del percorso e funzione svolta dall'operatore all'interno del centro nonché in base al numero di posti disponibili

SEGRETERIA ORGANIZZATIVA:

Servizio Territoriale Npi
Spedali Civili di Brescia

Fax 0303704436

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Percorso Formativo PER OPERATORI

STRUMENTI E STRATEGIE PER L'AVVIO DI INTERVENTI DI

TRAINING RIVOLTI A INSEGNANTI DI BAMBINI ADHD IN LOMBARDIA



FEBBRAIO 2013 - MAGGIO 2013

BRESCIA - COMO - PAVIA

PROGRAMMA DEL CORSO

Prima giornata

A cura degli operatori dei centri
aderenti al progetto ADHD Lombardia

Modulo 1

**COS' E' IL TEACHER TRAINING:
ESPERIENZE DAI CENTRI**

- ♦ Introduzione al concetto di teacher training in un'ottica di intervento multimodale
- ♦ Presentazione di vari modelli di teacher training e aggiornamento sulla letteratura esistente
- ♦ Analisi di casi e presentazione di esperienze
- ♦ Aspetti organizzativi legati all'avvio di un gruppo di teacher training
- ♦ Le competenze degli operatori coinvolti

Seconda giornata

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Psicologo e Psicoterapeuta, Università degli Studi di Padova

Modulo 2

**CONTENUTI, STRATEGIE E STRUMENTI DA UTILIZZARE
NEL PERCORSO DI PARENT TRAINING**

- ♦ La rilevazione dei comportamenti problema in classe;
- ♦ Strategie per favorire l'autoregolazione;
- ♦ Procedure per incrementare i comportamenti adattivi in classe;
- ♦ L'acquisizione di abilità sociali;
- ♦ La collaborazione coi genitori.

Terza giornata

A cura di Dr Gianluca Daffi,
D.ssa Paola Effedri, D.ssa Elena Filippini

NPI Spedali Civili di Brescia, Centro Capofila di progetto

Modulo 3

FOLLOW UP SUL PERCORSO SVOLTO

- ♦ Follow up finale
- ♦ Messa a sistema delle procedure per l'avvio e la realizzazione del Teacher Training
- ♦ Condivisione del protocollo operativo e verifica finale

Prima edizione : Febbraio 2013**BRESCIA**

SPEDALI CIVILI, P.ZZA SPEDALI CIVILI 1
AULA MAGNA.

13 Febbraio 2013 - dalle 14.00 alle 18.00

25 Marzo 2013 - dalle 14.00 alle 18.00

8 Maggio 2013 - dalle 14.00 alle 18.00

INCONTRO COMUNE:

Brescia: Spedali Civili, P.zza
Spedali civili 1, Aula Magna.

Seconda edizione : Marzo 2013**COMO**

OSP SAN ANNA VECCHIO VIA NAPOLEONA N. 60
AULA BIBLIOTECA PIANO RIALZATO

13 Marzo 2013 - dalle 14.00 alle 18.00

27 Marzo 2013 - dalle 14.00 alle 18.00

8 Maggio 2013 - dalle 14.00 alle 18.00

INCONTRO COMUNE:

Brescia: Spedali Civili, P.zza
Spedali civili 1, Aula Magna.

Terza edizione : Aprile 2013**PAVIA**

IRCCS MONDINO, VIA MONDINO 2
AULA BERLUCCHI

10 Aprile 2013 - dalle 9.00 alle 13.00

30 Aprile 2013 - dalle 14.00 alle 18.00

8 Maggio 2013 - dalle 14.00 alle 18.00

INCONTRO COMUNE:

Brescia: Spedali Civili, P.zza
Spedali civili 1, Aula Magna.

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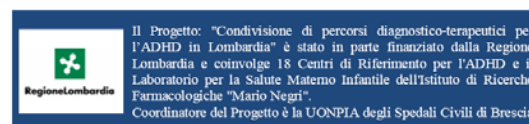
L'iscrizione al Convegno è obbligatoria e deve essere effettuata entro il 15 maggio 2013 accedendo al link:

ADHD.marionegri.it



Milano, 28-29 maggio 2013
Ore 9.00-18.00 - AULA A

Istituto di Ricerche Farmacologiche
"Mario Negri" – IRCCS
Via G. La Masa 19 - 20156 Milano



ADHD: PER UNA CONDIVISIONE DEI PERCORSI DIAGNOSTICO-TERAPEUTICI

Il disturbo da deficit di attenzione e iperattività (ADHD) è una delle più frequenti sindromi neuropsichiatriche infantili, sebbene la stima della prevalenza vari tra le nazioni.

La complessità della diagnosi necessita dell'uso di strumenti appropriati che consentano di valutare la presenza dei sintomi nei diversi contesti di vita del bambino. Così anche ogni terapia va adattata alle caratteristiche specifiche del bambino e del suo contesto di vita. L'effettiva scelta terapeutica è basata sulla valutazione di diversi fattori, tra cui la comorbidità, la situazione familiare e la collaborazione con la scuola. Il trattamento farmacologico rappresenta una delle scelte possibili che, comunque, va ad integrarsi agli altri interventi terapeutici che devono essere attivati. Tuttavia gli approcci diagnostici e terapeutici e assistenziali variano ampiamente tra i Centri di Riferimento.

Per meglio comprendere quali sono i determinanti significativi che caratterizzano i percorsi assistenziali per i pazienti con ADHD e per le loro famiglie, e contemporaneamente agire per migliorarne l'appropriatezza, a partire dal gennaio 2010 con il contributo della Regione Lombardia è stato attivato uno specifico progetto di NPia per la creazione di una rete di Centri di Riferimento per l'ADHD con la finalità principale di definire e condividere pratiche basate sull'evidenza.

Le attività previste dal progetto sono organizzate in 3 sottoprogetti paralleli e sinergici:

- **Analisi dei percorsi esistenti in Lombardia per l'ADHD**
La costruzione e l'aggiornamento continuo di un Registro regionale per l'ADHD consente di raccogliere informazioni approfondite relative a: dati anagrafici e anamnestici, percorsi di valutazione, diagnosi, interventi terapeutici sia non farmacologici che farmacologici.
- **Formazione e informazione**
La formazione degli operatori sanitari e la sensibilizzazione della popolazione mira a diagnosi e interventi più tempestivi e appropriati.
- **Definizione di percorsi diagnostico-terapeutici condivisi**
La condivisione di percorsi di riferimento comuni vuole garantire approcci e gestioni più omogenei da parte di tutti i Centri di Riferimento della Regione Lombardia.

PRIMA GIORNATA – 28 MAGGIO 2013

09.00 - 10.30

I BISOGNI PER IL PAZIENTE CON ADHD E PER LA SUA FAMIGLIA

Maurizio Bonati

La percezione dell/la
Genitore
Insegnante
Pediatra
Psicologo
Neuropsichiatra

Patrizia Di Noia

Maria Teresa Foà

Ippolita Roncoroni

Gian Marco Mazzocchi

Paola Morosini

10.30 - 11.00

Dal Registro regionale

Anna Didoni

LE CRITICITÀ NELL'APPROCCIO ALL'ADHD

Diagnosi categoriali o dimensionali?

Massimo Molteni

11.00 - 13.30

L'IMPIEGO CRITICO DEGLI STRUMENTI DIAGNOSTICI

Paolo Moderato

L'appropriatezza degli strumenti
nei processi diagnostici
L'osservazione clinica e la valutazione
neuropsicologica
Questionari e scale di valutazione
qEEG e mapping cerebrale

Paolo Moderato

Davide Villani

Daniele Arisi

Luciano Montaldi

14.30 - 15.30

Dal Registro regionale

Paola Effedri, Elena Filippini

Cosa mi porto a casa?

Daniela Candeloro

DISCUSSIONE

15.30 - 18.00

COMORBILITÀ

Gian Vincenzo Zuccotti

Comorbidità vs coesistenza e interazioni
dei disturbi
Disturbi dell'apprendimento
Disturbo oppositivo-provocatorio
I disturbi organici

Gian Vincenzo Zuccotti

Emidio Fornaro

Monica Sacconi

Roberto Segala

Dal Registro regionale

Cristiano Termine

Cosa mi porto a casa?

Stefano Guerini

DISCUSSIONE

SECONDA GIORNATA – 29 MAGGIO 2013

09.00 - 13.00

TERAPIA

Andrea Gardini

Per una cura appropriata, sostenibile, equa,
attenta alla persona e all'ambiente
Interventi sul contesto

Andrea Gardini

Child training

Silvia Merati, Gaia Oldani

Parent training

Claudio Bissoli

Teacher training

Gianluca Daffi

Approccio integrato psicodinamico

Umberto Balottin

L'uso razionale degli psicofarmaci

Antonio Clavenna

Dal Registro regionale

Stefano Conte

Cosa mi porto a casa?

Erika Buzzi

DISCUSSIONE

14.30 - 18.00

RISPOSTE ORGANIZZATIVE PER I BISOGNI

Antonella Costantino

Modelli organizzativi e Servizi di NPia

centrati sulla famiglia

Antonella Costantino

Le criticità per i servizi

Francesco Rinaldi

I percorsi di passaggio alla maggiore età

Le evidenze

Laura Reale

La pratica

Neuropsichiatria

Mauro Camuffo

Psichiatria

Antonio Vita

Dal Registro regionale

Corrado Meraviglia

Cosa mi porto a casa?

Tristana Castrignanò

DISCUSSIONE GENERALE

CONCLUSIONI E PROSPETTIVE
Alessandra Tiberti, Maurizio Bonati





**IX CONGRESSO NAZIONALE AIDAI-AIRIPA
“NUOVE PROSPETTIVE DI INTERVENTO”
PERUGIA 30-31 MAGGIO 2013
UNIVERSITA' DEGLI STUDI
FACOLTA' DI SCIENZE DELLA FORMAZIONE PRIMARIA**



PROGRAMMA PRELIMINARE

Lettura magistrale

David Daley, University of Nottingham

Interventi terapeutici nell'ADHD

Lettura Magistrale

Jaap Van Der Meere, University of Groningen

Regolazione ed emozioni nell'ADHD

Lettura Magistrale

Cesare Cornoldi, Università di Padova

Simposio: Alfabetizzazione emergente e intervento nella scuola

Giuliana Pinto, Lucia Bigozzi, Università di Firenze

Simposio: Nuove prospettive e Parent Training

Coordinatore: Anna Re, Università di Padova

Anna Re, Università di Padova: “Un nuovo modello di Parent Training”

Claudio Vio, ASL San Donà di Piave: “L'intervento di Parent Training nei prescolari”

Sara Pezzica, Università di Firenze: “L'utilizzo dell'autocaratterizzazione nell'intervento con i genitori”

Loredana Benedetto, Università di Messina: “L'adattamento dell'APQ per i prescolari”

Simposio: Le istituzioni e l'ADHD

Coordinatore: Pietro Panei, Istituto Superiore di Sanità

Romano Arcieri, Istituto Superiore di Sanità: “Il registro nazionale: sintesi di 5 anni di attività”

Giovanni Mazzotta, Università degli Studi di Perugia - Fabio Guccione, ASL Novara: “I Centri di riferimento: obiettivi raggiunti e potenzialità inesprese”

Associazione culturale pediatri: “La Pediatria: alle radici del mancato coinvolgimento”

Francesca Rocchi, Agenzia Italiana del Farmaco: “L'AIFA: l'azione svolta e le prospettive future, il concept paper”

Simposio: Il comportamento dirompente: dalla prevenzione all'urgenza

Coordinatore: Sara Pezzica, Università di Firenze

Ersilia Menesini, Università di Firenze: “la prevenzione dei comportamenti aggressivi”

Daniele Fedeli, Università di Udine: “Ragazzi con Disturbo della Condotta in classe”

Pietro Muratori, IRCSS Stella Maris, Pisa: “Coping Power Program”

Carlo Buonanno, Scuola di Psicoterapia Cognitiva, Grosseto: “La psicoterapia cognitivo-comportamentale”

Dario Calderoni, UOC TSMREE, ASL Roma B: “Il ricovero ospedaliero nei Disturbi del Comportamento”

Simposio: La normativa scolastica sugli alunni ADHD

Coordinatore: Raffaele Ciambrone, MIUR, Roma

Simposio: ADHD e Disprassia

Coordinatore: Francesco Benso, Università di Genova

Workshop: Il Coping Power Program

Pietro Muratori, IRCSS Stella Maris, Pisa

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

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

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