NEWSLETTER

INDICE:

ISTITUTO DI RICERCHE FARMACOLOGICHE MARIO NEGRI · IRCCS

BIBLIOGRAFIA ADHD APRILE 2020

Acad Pediatr. 2020.

DISPARITIES IN CHILDHOOD ATTENTION DEFICIT HYPERACTIVITY DISORDER SYMPTOM SEVERITY BY NEIGHBORHOOD POVERTY.

Nfonoyim B, Griffis H, Guevara J.

Objective: To determine the association between neighborhood poverty and Attention Deficit Hyperactivity Disorder (ADHD) severity among children in a large metropolitan area.

Methods: This is a secondary analysis of data collected April 2016 to July 2017 at the Children's Hospital of Philadelphia Care Network. We attributed 2015 American Community Survey census tract poverty, defined as percent of individuals with income below poverty level, to each child's residential address. Tracts were grouped from low to high poverty. ADHD severity was determined by Vanderbilt Parent Rating Scale (VPRS) symptom score. We also recorded parent-reported child ADHD medication use.

Results: A total of 286 children were linked to 203 unique census tracts. The majority of children from high poverty tracts were black and from disadvantaged households. Higher neighborhood poverty was associated with higher VPRS scores and decreased medication use in bivariate analysis. Poverty was no longer associated with VPRS scores in multivariate analysis, but medication use still had a significant negative association with VPRS score. Post hoc stratification by medication use revealed that neighborhood poverty and VPRS score were significantly associated for children on medication, but not for those off medication.

Conclusions: Neighborhood poverty was not associated with ADHD severity in multivariate analysis. This suggests other factors, including medication use, confound the relationship between neighborhood poverty and ADHD severity. Lack of medication treatment was significantly associated with higher symptom burdens for children with access to primary care. Decreased medication use in higher poverty communities warrants exploration and public health interventions to ensure adequate ADHD management for all children

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Per la ricerca degli articoli pubblicati nella letteratura scientifica nel mese in esame sono state consultate le banche dati Medline, Embase, PsycINFO e PsycArticle utilizzando le seguenti parole chiave (o i loro sinonimi): 'Attention deficit disorder', 'Attention deficit hyperactivity disorder', 'Infant', 'Child', 'Adolescent', 'Human'. Sono qui riportate le referenze considerate rilevanti e pertinenti.

Acta Paediatr. 2019 Feb;108:282-87.

ASSOCIATION BETWEEN THE FREQUENCY OF BEDWETTING AND LATE PRETERM BIRTH IN CHILDREN AGED >/=5 YEARS.

Nishizaki N, Obinata K, Kantake M, et al.

AIM: We examined the associations between late preterm (LPT) birth children aged >/=5 years and the frequency of bedwetting. Moreover, those who were born full-term/low birthweight (BW), LPT/low BW, LPT/normal BW and LPT/low BW were compared.

METHODS: In total, we evaluated 614 patients who underwent assessments for frequent bedwetting at the three hospitals from January 2014 to December 2016. Data at the initial visit were collected from the electronic medical records. We assessed the patients' bladder diaries and questionnaires containing detailed information on demographics and frequency of bedwetting per month. Neonatal data were collected from the Maternal and Child Health Handbook.

RESULTS: Frequency of bedwetting in the LPT/low BW group was higher than in the term/low BW group (28 vs. 22.5, $p < 0.05$). However, the frequency between the LPT/normal BW group and the LPT/low BW group was not significantly different (28 vs. 28, $p = 1.00$). Multiple regression analyses were conducted to eliminate potential confounding factors, attention-deficit/hyperactivity disorder and intellectual disability, but results were not changed.

CONCLUSION: This study revealed that LPT/low BW was associated with increased frequency of bedwetting in children. The results suggest that gestational age should be considered when examining patients with severe bedwetting

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Alcohol. 2019 May;76:23-28.

NEURODEVELOPMENTAL OUTCOMES IN INDIVIDUALS WITH FETAL ALCOHOL SPECTRUM DISORDER (FASD) WITH AND WITHOUT EXPOSURE TO NEGLECT: CLINICAL COHORT DATA FROM A NATIONAL FASD DIAGNOSTIC CLINIC.

Mukherjee RAS, Cook PA, Norgate SH, et al.

Disentangling the relative developmental impact of prenatal alcohol exposure from postnatal neglect is clinically valuable for informing future service provision. In this study, developmental outcomes across groups are compared in a 'natural experiment'.

METHODS: Clinical data from 99 persons with fetal alcohol spectrum disorder (FASD) diagnoses were audited. Developmental outcomes (diagnosis of attention deficit hyperactivity disorder, ADHD; social and communication disorder, SCD; or Autistic Spectrum Disorder, ASD; Short Sensory Profile, SSP; Vineland II Adaptive Behaviour Scales) were compared across two exposure groups: prenatal alcohol only; and mixed prenatal alcohol and neglect.

RESULTS: ADHD (74%) and ASD/SCD (68%) were common, with no significant difference between groups (ADHD, $p = 0.924$; ASD, $p = 0.742$). Vineland age equivalence scores were lower than chronological age (11.1 years - prenatal alcohol only, and 12.7 years - neglect) across all domains, especially receptive language (3.7 years for both groups). Age equivalence did not differ between groups, with the exception of domestic daily living (neglect: 7.7 years vs. prenatal alcohol only: 5.8 years, $p = 0.027$). A probable/definite difference on SSP was more common in the prenatal alcohol only (96% vs. 67%, $p = 0.006$). For the individual subscales of SSP, there were no significant differences by neglect category.

DISCUSSION: Postnatal neglect in this group did not make the developmental outcome any worse, suggesting that prenatal alcohol influences these outcomes independently. Professionals who support families looking after a child with both FASD and a history of neglect should be aware that the behavioral difficulties are likely to be related to prenatal alcohol exposure and not necessarily reflective of parenting quality

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Am Fam Physician. 2019 Aug;100:213-18.

HEALTH MAINTENANCE IN SCHOOL-AGED CHILDREN: PART I. HISTORY, PHYSICAL EXAMINATION, SCREENING, AND IMMUNIZATIONS.

Riley M, Morrison L, McEvoy A.

The goals of the health maintenance visit in school-aged children (five to 12 years) are promoting health, detecting disease, and counseling to prevent injury and future health problems. During the visit, the physician should address patient and parent/caregiver concerns and ask about emergency department or hospital care since the last visit; lifestyle habits (diet, physical activity, daily screen time, secondhand smoke exposure, hours of sleep per night, dental care, safety habits); and school performance. Poor school performance may indicate problems such as learning disabilities, attention-deficit/hyperactivity disorder, or bullying. Previsit questionnaires and psychosocial screening questionnaires are also useful. When performing a physical examination, the physician should be alert for signs of abuse. Children should be screened for obesity (defined as body mass index at or above the 95th percentile for age and sex), and obese children should be referred for intensive behavioral interventions. Although its recommendations are primarily based on expert opinion, the American Academy of Pediatrics recommends screening for hypertension annually, vision and hearing problems approximately every two years, and dyslipidemia once between nine and 11 years of age; regular screening for risk factors related to social determinants of health is also recommended. There is insufficient evidence to recommend routine screening for depression before 12 years of age, but depression should be considered in children younger than 12 years presenting with unexplained somatic symptoms, restlessness, separation anxiety, phobias, or hallucinations. Children living in areas with inadequate levels of fluoride in the water supply (0.6 ppm or less) should receive daily fluoride supplements. Age-appropriate immunizations should be given, as well as any catch-up immunizations

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Am J Addict. 2019 Nov;28:497-502.

DIFFERENTIAL POSTTREATMENT OUTCOMES OF METHYLPHENIDATE FOR SMOKING CESSATION FOR INDIVIDUALS WITH ADHD.

Luo SX, Covey LS, Hu MC, et al.

BACKGROUND AND OBJECTIVES: In a multisite, randomized study (CTN-0029), a 3-month course of Osmotic-Release Oral System Methylphenidate (OROS-MPH) improved smoking cessation in a group of patients with higher baseline severity in Attention-Deficit/Hyperactivity Disorder (ADHD). This treatment, however, worsened smoking cessation outcome in the group with lower baseline ADHD severity. We want to examine whether this differential treatment effect persisted after OROS-MPH was discontinued.

METHODS: We conducted a secondary analysis of the 1-month follow-up data from CTN-0029 after the discontinuation of OROS-MPH (N = 134). Nicotine patch was tapered during this month. We tested whether OROS-MPH had an effect on self-reported 7-day abstinence by week, as well as possible treatment by baseline ADHD severity interactions.

RESULTS: Abstinence diminished overall in time after the end of the treatment. In the high baseline severity group, patients who received OROS-MPH had an advantage in 7-day abstinence at week 15 (40% for OROS-MPH vs 20% for placebo, odds ratio = 2.63, P = .028). In the lower severity group (n = 121), no difference was detected (29% for OROS-MPH vs 32% for placebo, P = 1.00) between the two treatment groups. There was also a significant treatment by baseline ADHD severity interaction (P = .03).

CONCLUSIONS AND SCIENTIFIC SIGNIFICANCE: OROS-MPH promotes abstinence beyond the course of treatment for patients with more severe ADHD, while the paradoxical effects in the lower baseline severity group is not persistent after medication discontinuation. Targeting ADHD in smoking cessation as a comorbidity therefore can have broader impact with more precise patient selection

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Am J Epidemiol. 2020 Jan;189:1-5.

INVITED COMMENTARY: THE DISILLUSIONMENT OF DEVELOPMENTAL ORIGINS OF HEALTH AND DISEASE (DOHAD) EPIDEMIOLOGY.

Gilman SE, Hornig M .

The developmental origins of health and disease (DOHaD) model promises a greater understanding of early development but has left unresolved the balance of risks and benefits to offspring of medication use during pregnancy. Masarwa et al. (Am J Epidemiol. 2018;187(8):1817-1827) conducted a meta-analysis of the association between in utero acetaminophen exposure and risks of attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD). A challenge of meta-analyzing results from observational studies is that summary measures of risk do not correspond to well-defined interventions when the individual studies adjusted for different covariate sets, which was the case here. This challenge limits the usefulness of observational meta-analyses for inferences about etiology and treatment planning. With that limitation understood, Masarwa et al. reported a 20%-30% higher risk of ADHD and ASD following prenatal acetaminophen exposure. Surprisingly, most of the original studies did not report diagnoses of ADHD or ASD. As a result, their summary estimates of risk are not informative about children's likelihood of ADHD and ASD diagnoses. The long-term promise of DOHaD remains hopeful, but more effort is needed in the short-term to critically evaluate observational studies suggesting risks associated with medications used to treat conditions during pregnancy that might have adverse consequences for a developing fetus

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Am J Med Genet A. 2019 Mar;179:334-35.

FIRST RISK GENES IDENTIFIED FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER: AN INTERNATIONAL COLLABORATION HAS FOR THE FI RST TIME IDENTIFI ED GENETIC VARIANTS THAT INCREASE THE RISK OF ADHD.

Anon.

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Am J Med Genet A. 2019 May;179:808-12.

PATIENT WITH ANOMALOUS SKIN PIGMENTATION EXPANDS THE PHENOTYPE OF ARID2 LOSS-OF-FUNCTION DISORDER, A SWI/SNF-RELATED INTELLECTUAL DISABILITY.

Khazanchi R, Ronspies CA, Smith SC, et al.

ARID2 loss-of-function is associated with a rare genetic disorder characterized in 14 reported patients to date. ARID2 encodes a member of the SWItch/sucrose non-fermentable chromatin remodeling complex. Other genes encoding subunits of this complex, such as ARID1A, ARID1B, and SMARCA2, are mutated in association with Coffin-Siris syndrome (CSS) and Nicolaides Baraitser syndrome (NCBRS) phenotypes. Previously reported ARID2 mutations manifested clinically with a CSS-like phenotype including intellectual disability, coarsened facial features, fifth toenail hypoplasia, and other recognizable dysmorphisms. However, heterogeneity exists between previously reported patients with some patients showing more overlapping features with NCBRS. Herein, we present a patient with a novel disease-causing ARID2 loss-of-function mutation. His clinical features included intellectual disability, coarse and dysmorphic facial features, toenail hypoplasia, ADHD, short stature, and delayed development consistent with prior reports. Our patient also presented with previously unreported clinical findings including ophthalmologic involvement, persistent fetal fingertip and toetip pads, and diffuse hyperpigmentary and hypopigmentary changes sparing his face, palms, and soles. The anomalous skin findings are particularly of interest given prior literature outlining the role of ARID2 in melanocyte homeostasis and melanoma. This clinical report and review of the literature is further affirming of the characteristic symptoms and expands the phenotype of this newly described and rare syndrome

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Ann Med -Psychol. 2020;178:303-09.

STUDY OF PARENTAL BEHAVIOR IN THE LINKS BETWEEN ADHD SYMPTOMS AND AGGRESSIVE BEHAVIOR IN CHILDREN BETWEEN 3 AND 6 YEARS OLD.

Meyer E, Michel G.

Introduction: Children's aggressive behaviors have an important economic impact and have a significant impact on the child's and family's development. The literature emphasizes the importance of the association between aggression and deficit disorder of attention and hyperactivity. Principally studied in categorical approach in children over 6 years old, ADHD symptomatology is however present early. The literature also highlights an association between parental behavior and aggressive behavior in young children aged 3 to 6 years. A strong presence of negative parenting behaviors and a low presence of positive parenting behaviors are both associated with the presence of aggressive behavior of children. However, unlike the strength of this association considered in the literature, it seems that parental behaviors account for about 4 to 6 % of the child's aggressive behavior. ADHD is also associated with parental behavior in a bidirectional way. The symptomatology of ADHD would then be associated with a greater presence of negative parenting behaviors and a lower presence of positive parenting behaviors. For all these associations and variables, we find that most studies focus on clinical populations older than 6 years, with a psychopathology approach of aggressiveness (conduct disorder), and with a categorical approach to ADHD without distinction of inattention symptomatology and hyperactivity symptomatology. Our aim is to study the joint influence of positive and negative parental behaviors and symptoms of ADHD or inattention symptomatology or hyperactive behaviors, in a dimensional approach, on the presence of aggressive behaviors in children from 3 to 6 years old.

Methods: Parents of 160 children evaluated aggressive behaviors, inattention symptomatology and hyperactivity symptomatology by a modified version of the Childhood Behavior Questionnaire. Parental behaviors were assessed using a French adaptation of Parenting Practices Scale. The statistical analyzes performed were mainly regressions (simple, multiple and with interactions) according to the negative-binomial law derived from the Poisson's law.

Results: Our analyzes show that the symptoms of ADHD, inattention symptomatology or hyperactivity symptomatology and negative parenting behaviors were associated with aggressive behavior. positive parenting behaviors have not been associated with aggressive behavior. Multiple regression analyzes show that there is partial mediation but no moderation effect. The most explanatory models are those in multiple regression (negative and positive parental behaviors, symptomatology of ADHD or inattention symptomatology or hyperactivity symptomatology) without the interaction's terms.

Conclusion: The presence of aggressive behaviors in children seems to be partly explained by parental behaviors, but it is all the more explained when the child has hyperactivity and inattention symptomatology. Finally, these results show that it is important for a clinician to consider the presence of ADHD symptomatology, even below a diagnosis of ADHD, when a young child exhibits aggressive behaviors and thus take this into account in the therapeutic work undertaken with the child and his family. These results also show the interest of working according to a dimensional approach of aggressive behavior, but also and especially ADHD. Finally, we discuss this involvement in the current debate on the etiology of ADHD

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Ann Neurol. 2019;86:S70.

RISK FACTORS AND COMORBIDITIES IN PEDIATRIC EPILEPSY IN THE SEIZURES AND OUTCOMES STUDY.

Record E, Bumbut A, Kroner B, et al.

Objective: To characterize risk factors and comorbidities in a pediatric epilepsy population, in a major city with diversity and differences in socioeconomic levels.

Methods: SOS-KIDS is a cross-sectional cohort study of pediatric epilepsy patients who live in Washington DC and are evaluated at Children's National. Families were recruited at their child's routine clinic appointment or inpatient visit. Information was extracted from participants' EMR including seizure risk factors, etiology, characteristics, and comorbidities.

Results: Data were collected from 289 participants (47% female, 53% male) and mean age was 7.8 years (2 months to 17 years). 80% were African American, 11% Caucasian, and 9% Hispanic. There are several perinatal risk factors for epilepsy: extreme prematurity (10%), IVH (6.9%), and neonatal seizures (6.9%).

Other risk factors include febrile seizures (16.3%), malformation of cortical development (13.5%), known genetic disorders (8.6%), presumed genetic disorders (10.7%), head injury (5.2%), and CNS infections (1.7%). Numerous participants had documented comorbidities including headaches (14.9%), ADHD (14.2%), intellectual disability (12.8%), autism (8.0%), depression (1.7%), and anxiety (3.5%).
Conclusions: We identified a wide variety of risk factors and etiologies among pediatric epilepsy patients; genetic, structural, or acquired components were similar to previous studies. The documented comorbid medical/psychiatric conditions appear underreported compared to other studies. This may in part derive from underreporting by patients and under-diagnosis by clinicians (especially depression). Future studies will compare EMR documentation and active parental and patient screening. Identification and documentation of comorbidities may be important for improved overall care. This study is supported by the Centers for Disease Control and Prevention

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Ann Neurol. 2019;86:S66-S68.

BEHAVIORAL AND COGNITIVE EFFECTS OF LONG-TERM ADJUNCTIVE BRIVARACETAM IN CHILDREN WITH EPILEPSY: A POOLED INTERIM ANALYSIS OF TWO OPEN-LABEL TRIALS.

Lagae L, Gasalla T, Borghs S, et al.

Objective: Investigate behavioral and cognitive effects of long-term adjunctive brivaracetam (BRV) in children with epilepsy.
Methods: N01263 (NCT00422422) was an open-label trial of adjunctive BRV in children (1 month to <16 years) with epilepsy uncontrolled by 1-3 concomitant AEDs; patients completing dose-escalation could continue to an open-label extension (N01266; NCT01364597). This pooled interim analysis (cut-off: 15 March 2017) investigated changes from N01266 Baseline in the Behavior Rating Inventory of Executive Function (BRIEF; 5-16 years) and Achenbach Child Behavior Checklist (CBCL; 6-18 years) at 2,12, and 24 months. Treatment-emergent adverse events (TEAEs) potentially related to behavior and cognition were assessed for the overall population and patients aged 4 to <16 years with focal seizures (focal 4-16).
Results: Data were obtained from 219 patients (focal 4-16: n=149; Table 1). Small decreases (improvements) were observed in all BRIEF (n=104), and most CBCL (n=129) Tscore subscales (except withdrawn/depressed) from Baseline to 2, 12, and 24 months; most patients were stable (Table 2). TEAE incidences were similar overall and in the focal 4-16 group (Table 1). Overall, 59 (26.9%) patients had a behavioral TEAE, mostly irritability (11.9%) and aggression (5.9%) and mostly occurring during the first 3 treatment months. Overall, 14 (6.4%) patients reported potentially cognition-related TEAEs, mostly ADHD (1.8%) and confusional state (1.4%).
Conclusions: In children on long-term adjunctive BRV, behavior and cognition measures were generally stable over time suggesting a limited impact on behavior and no impact on cognition. Behavioral TEAEs occurred mostly early in therapy; few patients reported cognitive TEAEs. Further investigations are needed

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Ann Neurol. 2019;86:S43.

CLINICAL CHARACTERISTICS OF DYSLEXIA IN CHILDREN.

Kim SK, Kim SH.

Objective: Developmental dyslexia (or specific reading disability) is defined as an unexpected difficulty in accuracy or fluency of reading for an individual chronological age, intelligence, level of education or professional status. In Korea, there is a lack of systematic research on dyslexia but some pediatric psychiatrist and special educator are concerned in dyslexia. The purpose of this study was to investigate the clinical characteristics of patients diagnosed with dyslexia in the developmental disorders clinic.
Methods: From January 2017 to January 2018, of the patients who visited the developmental clinic in Dongtan Sacred Heart Hospital, Hallym University, 8 patients who met the DSM-5 diagnostic criteria of dyslexia were included. Patients' intelligence test, psychological test, learning disability test, reading analyzer test were analyzed.

Results: The mean age was 11.0 -¦ 3.3 years and the male to female ratio was 2.36: 1. Patients with dyslexia were visited for difficulty in learning difficulties and ADHD symptoms. Intelligence was the average point. In the evaluation of learning disability with the test, the average number of learning score was lower than the standard value, and the reading and writing index was the lowest score. In the reading analyzer test, slow reading speed, low comprehension, number of eye fixation and number of eye regression were compared with normal reference point.
Conclusions: When patients with learning difficulty visit the developmental disability clinic, dyslexia should be evaluated and interested

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Ann Neurol. 2019;86:S48.

DIFFERING RELATIONSHIP BETWEEN TASK-RELATED TMS AND EEG MEASURES OF CORTICAL ACTIVATION IN ADHD AND CONTROLS.

Ewen J, Mostofsky S, Horn P, et al.

Objective: Children with ADHD show developmentally abnormal motor function as well as primary motor cortex (M1) physiology measured using Transcranial Magnetic Stimulation (TMS) and EEG. Central alpha-band (mu) event-related desynchronization (ERD) reflects motor cortical activation. Task-related modulation of motor-evoked potentials (MEPs) during TMS is understood to reflect a shift in the balance of inhibitory and excitatory inputs into M1.
Methods: EEG was acquired during right-hand sequential finger-tapping; left-central alpha-ERD was calculated. During a stop-signal reaction-time task, TMS was applied to left M1 with MEP amplitudes measured in the right hand at rest and during task (action selection) states. Mixed model regression was used with MEP amplitudes as the outcome and diagnosis, task-state, pulse type, and ERD as factors.
Results: 14 children with ADHD (8M, mean age=10.7y) and 17 typically developing (TD) controls (13M, mean age=10.9y) participated. TD children showed greater alpha- ERD ($p=0.03$) and greater MEP up-modulation from rest to task states ($p<0.0001$) than did children with ADHD. Further, there was an effect of diagnosis on the association of alpha ERD with MEP up-modulation: for TD, less ERD was associated with greater MEP up-modulation ($p<0.0001$), whereas for ADHD less ERD was associated with less upmodulation ($p<0.0001$) (Fig. 1).
Conclusions: The findings reveal that children with ADHD show a fundamentally different relationship between alpha- ERD-measured M1-cortical activation and cortical activation as measured by task-related MEP up-regulation. Unexpectedly, TDs showed an apparently inverse relationship between task-related changes as assessed with ERD and TMS

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Appl Cogn Psychol. 2020.

IS THE COGMED PROGRAM EFFECTIVE FOR YOUTHS WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER UNDER PHARMACOLOGICAL TREATMENT?

Dentz A, Guay M-C, Gauthier B, et al.

The primary objective of this study was to examine the effects of the Cogmed training program on working memory among youths 7 to 13 years old, with attention deficit/hyperactivity disorder (ADHD) type and comorbidity controlled for. A secondary objective was to examine the generalization of effects to ADHD symptoms, nonverbal reasoning, attentional and executive functions, inhibition, reading comprehension, and mathematical reasoning. Participants were under pharmacological treatment for ADHD combined type and a comorbidity. They were randomized into an experimental group that received the Cogmed program and an active control group that received a low-intensity comparison version of the training. They were evaluated at three time points: 6 weeks prior to intervention onset (T1), immediately prior to onset (T2), and 1 week following intervention completion (T3). Results indicate no significant effect attributable to the Cogmed program. The fact that participants were on medication at the time of training and evaluation normalized their performances and limited the detection of effects. Moreover, cognitive training did not lead to a reduction in ADHD symptoms or to an improvement in the other cognitive functions measured or in academic

performance. The results of this study do not demonstrate the effectiveness of the Cogmed program for youths with ADHD combined type and a comorbidity when they receive the training while under pharmacological treatment

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Arch Gynecol Obstet. 2019 Aug;300:269-77.

LOW-MODERATE PRENATAL ALCOHOL EXPOSURE AND OFFSPRING ATTENTION-DEFICIT HYPERACTIVITY DISORDER (ADHD): SYSTEMATIC REVIEW AND META-ANALYSIS.

San Martin PM, Maravilla JC, Betts KS, et al.

PURPOSE: To evaluate the available evidence on the association between low-to-moderate prenatal alcohol exposure (PAE) and the development of attention-deficit hyperactivity disorder (ADHD) symptoms in the offspring.

METHODS: We systematically reviewed and meta-analysed studies reporting an association between low and/or moderate PAE and offspring ADHD symptoms (attention and/or hyperactivity). Systematic searches were performed in EMBASE, Pubmed, Medline, and PsycINFO and reviewed from selected references. Random effects modelling was conducted to pool adjusted odds ratios (OR) in different alcohol consumption levels (</= 20 g/week, </= 50 g/week, and </= 70 g/week). Stratified analysis by sex per alcohol level was conducted to investigate the difference on OR and the magnitude between-study heterogeneity.

RESULTS: Ten studies were included in the systematic review and six in the meta-analysis. Eight studies found no association and two studies suggested an apparent protective effect of low PAE in hyperactivity/inattention symptoms in boys. These results were confirmed by the meta-analysis showing no association between </= 20 g/week [OR 1.01 (0.68-1.49)], </= 50 g/week [OR 0.94 (0.85-1.03)] and </= 70 g/week [OR 0.94 (0.86-1.02)] and ADHD symptoms, with no evidence of publication bias. Stratified analysis by sex for a PAE </= 50 g/week exposed less risk of ADHD symptoms in boys compared to girls [OR 0.89 (0.83-0.96)].

CONCLUSIONS: We found no increased risk of ADHD symptoms in offspring born to mothers who drank alcohol up to 70 g/week

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Asian J Psychiatr. 2019 Dec;46:44-48.

PATTERNS OF PSYCHIATRIC MORBIDITY AMONG CHILDREN AND ADOLESCENTS PRESENTING TO AN OUTPATIENT CHILD AND ADOLESCENT MENTAL HEALTH SERVICE (CAMHS) IN A TEACHING HOSPITAL IN COLOMBO, SRI LANKA-CHALLENGES AND IMPLICATIONS FOR SERVICE DEVELOPMENT.

Rohanachandra YM.

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Asian J Psychiatry. 2020;51.

ACUTE STRESS, BEHAVIOURAL SYMPTOMS AND MOOD STATES AMONG SCHOOL-AGE CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVE DISORDER DURING THE COVID-19 OUTBREAK.

Zhang J, Shuai L, Yu H, et al.

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Aust New Zealand J Psychiatry. 2020;54:439-40.

WAITING 40 YEARS FOR THE CORRECT DIAGNOSIS: A COMPLEX CASE OF COMORBID NARCOLEPSY AND ADHD.

Weiss D, Kluge M.

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Autism Res. 2019 Apr;12:645-57.

INVESTIGATING THE FACTORS UNDERLYING ADAPTIVE FUNCTIONING IN AUTISM IN THE EU-AIMS LONGITUDINAL EUROPEAN AUTISM PROJECT.

Tillmann J, San Jose CA, Chatham CH, et al.

Individuals with autism spectrum disorder (ASD) exhibit significant impairments in adaptive functioning that impact on their ability to meet the demands of everyday life. A recurrent finding is that there is a pronounced discrepancy between level of cognitive ability and adaptive functioning, and this is particularly prominent among higher-ability individuals. However, the key clinical and demographic associations of these discrepancies remain unclear. This study included a sample of 417 children, adolescents, and adults with ASD as part of the EU-AIMS LEAP cohort. We examined how age, sex, IQ, levels of ASD symptom and autistic trait severity and psychiatric symptomatology are associated with adaptive functioning as measured by the Vineland Adaptive Behavior Scales-Second Edition and IQ-adaptive functioning discrepancies. Older age, lower IQ and higher social-communication symptoms were associated with lower adaptive functioning. Results also demonstrate that older age, higher IQ and higher social-communication symptoms are associated with greater IQ-adaptive functioning discrepancy scores. By contrast, sensory ASD symptoms, repetitive and restricted behaviors, as well as symptoms of attention deficit/hyperactivity disorder (ADHD), anxiety and depression, were not associated with adaptive functioning or IQ-adaptive functioning discrepancy scores. These findings suggest that it is the core social communication problems that define ASD that contribute to adaptive function impairments that people with ASD experience. They show for the first time that sensory symptoms, repetitive behavior and associated psychiatric symptoms do not independently contribute to adaptive function impairments. Individuals with ASD require supportive interventions across the lifespan that take account of social-communicative ASD symptom severity. Autism Res 2019, 12: 645-657. (c) 2019 The Authors. Autism Research published by International Society for Autism Research published by Wiley Periodicals, Inc. LAY SUMMARY: This study investigated key clinical and demographic associations of adaptive functioning impairments in individuals with autism. We found that older age, lower IQ and more severe social-communicative symptoms, but not sensory or repetitive symptoms or co-occurring psychiatric symptoms, are associated with lower adaptive functioning and greater ability-adaptive function discrepancies. This suggests that interventions targeting adaptive skills acquisition should be flexible in their timing and intensity across developmental periods, levels of cognitive ability and take account of social-communicative ASD symptom severity

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Basic and Clinical Pharmacology and Toxicology. 2019;125:100-01.

EFFECTS OF METHYLPHENIDATE IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER: A COMPARISON OF BEHAVIORAL RESULTS AND EVENT-RELATED POTENTIALS.

Ren Y, Pang G, Fang H, et al.

Objective: To investigate the effect of Methylphenidate on the relationship of ERP waveform and behavioral results of children with ADHD pre-and post administration of MPH, this can be primarily used to forecast Methylphenidate effects for the children with ADHD.

Methods: ERP elicited by cued-Continuous Performance Test were recorded pre-and post-administration of MPH in 28 children with ADHD and 28 healthy children, the behavioral performance were collected simultaneously. Based on the behavioral results, the patients were divided into two groups: the good performance group and the poor performance group. Comparing and analyzing the changes of ERP in two ADHD groups pre-and post administration of MPH, and comparing to the control group.

Results: Post administration of MPH, the ADHD good performance group's the amplitude of NOGO-P3 was larger ($P < 0.05$) than that of pre administration of MPH, and was comparable to the control group ($P > 0.05$); No significant differences were found in the amplitude of NOGO-P3 in the poor performance group, they were significantly smaller than that of the control group; The amplitude of NOGO-N2 of two groups did not have significant differences pre-and post administration of MPH, and had no significant differences with the control group. Pre administration of MPH, there was no differences between the good performance group and the poor performance group.

Conclusions: The good performance group, the amplitude of NOGO-P3 was significantly higher, however, the poor performance group had no obvious changes, and the results suggested the amplitude of NOGO-P3

pre-and postadministration of MPH were consistent with the behavioral results. Significance: According to the changes of the amplitudes of NOGO-P3, we can use the cued-CPT to predict the further curative effect of Methylphenidate on the children with ADHD

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Behav Change. 2020.

DOES ACT-GROUP TRAINING IMPROVE COGNITIVE DOMAIN IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER? A SINGLE-ARM, OPEN-LABEL STUDY.

Vanzin L, Crippa A, Mauri V, et al.

This single-arm, open-label study aimed to investigate the efficacy of a cognitive-behavioural group training based on acceptance and commitment therapy (ACT) on cognition in drug-na+»ve children with attention deficit hyperactivity disorder (ADHD). Thirty-six children with ADHD aged 8-13 were invited to participate in the 9-month ACT training programme, which consisted of 26 weekly sessions of group therapy lasting 90 min each. Their parents also received 12 sessions of ACT-based parent training, every 2 weeks. The outcome measure for the present study was the change in the cognitive performance assessed by a battery of computerised task. The cognitive outcome of children receiving ACT-group intervention was compared to that of an external untreated control group of children with ADHD. No significant improvements were observed in any of the cognitive measures. This preliminary study suggests that the 9-month ACT-group training programme might not have positive effects on cognitive difficulties usually occurring in ADHD. Future randomised controlled trials with larger sample sizes are required to shed more light on this issue

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BMC Psychiatry. 2019 Aug;19:249.

DEPRESSION AND ASSOCIATED FACTORS AMONG PRIMARY CAREGIVERS OF CHILDREN AND ADOLESCENTS WITH MENTAL ILLNESS IN ADDIS ABABA, ETHIOPIA.

Minichil W, Getinet W, Derajew H, et al.

BACKGROUND: Mental illnesses among children and adolescents are under-recognized and under-treated problems. Depression is one of today's all-too-silent health crises in caregivers. Although primary caregivers of children and adolescents with mental illness are more frequently depressed, little attention is being given to the problem in Ethiopia. Thus, this study aimed to assess prevalence of depression and associated factors among primary caregivers of children and adolescents with mental illness in Ethiopia.

METHODS: Institution-based cross-sectional study was conducted among primary caregivers of children and adolescents with mental illness in Ethiopia. Systematic random sampling was used to recruit a total of 416 study participants. Patient Health Questionnaire-9 was used to measure depression. After descriptive statistics was conducted, binary logistic regression was employed to carry out bivariate and multivariate analysis.

RESULT: The overall prevalence of depression was 57.6% with 95% CI (53, 62.7). The prevalence of depression among female primary caregivers was 64.6% (n = 181). Female sex (AOR = 2.4, 95% CI: 1.18,4.89), duration of care > 5 years (AOR = 4.2, 95% CI: 2.02,8.70), absence of other caregiver (AOR = 2.7, 95% CI: 1.41,5.34), being mother (AOR = 3.9, 95% CI: 1.90,8.04), autistic spectrum disorder (ASD) (AOR = 4.7, 95% CI: 2.06,10.54) and attention deficit /hyperactivity disorder (ADHD) (AOR = 5.3, 95% CI: 2.14,13.23) diagnosis of children and adolescents and poor social support (AOR = 5.5, 95% CI: 2.04,15.02) were associated with depression.

CONCLUSION: The prevalence of depression among primary caregivers of children and adolescents with mental illness attending treatment in St. Paul's hospital millennium medical college (SPMMC) and Yekatit-12 hospital medical college (Y12HMC) was high. Therefore, it needs to screen and treat depression in primary caregivers of children and adolescents having follow-up at child and adolescent clinics especially for those primary caregivers who are female, mother, gave care for > five years, have no other caregiver, have children diagnosed with ASD and ADHD and have poor social support

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BMC Psychiatry. 2019 Aug;19:237.

PERSONALIZED AT-HOME NEUROFEEDBACK COMPARED WITH LONG-ACTING METHYLPHENIDATE IN AN EUROPEAN NON-INFERIORITY RANDOMIZED TRIAL IN CHILDREN WITH ADHD.

Bioulac S, Purper-Ouakil D, Ros T, et al.

BACKGROUND: Neurofeedback (NF) has gained increasing interest among non-pharmacological treatments for Attention Deficit Hyperactivity Disorder (ADHD). NF training aims to enhance self-regulation of brain activities. The goal of the NEWROFEED study is to assess the efficacy of a new personalized NF training device, using two different protocols according to each child's electroencephalographic pattern, and designed for use at home. This study is a non-inferiority trial comparing NF to methylphenidate.

METHODS: The study is a prospective, multicentre, randomized, reference drug-controlled trial. One hundred seventy-nine children with ADHD, aged 7 to 13 years will be recruited in 13 clinical centres from 5 European countries. Subjects will be randomized to two groups: NF group (Neurofeedback Training Group) and MPH group (Methylphenidate group). Outcome measures include clinicians, parents and teachers' assessments, attention measures and quantitative EEG (qEEG). Patients undergo eight visits over a three-month period: pre-inclusion visit, inclusion visit, 4 "discovery" (NF group) or titration visits (MPH group), an intermediate and a final visit. Patients will be randomized to either the MPH or NF group. Children in the NF group will undergo either an SMR or a Theta/Beta training protocol according to their baselineTheta/Beta Ratio obtained from the qEEG.

DISCUSSION: This is the first non-inferiority study between a personalized NF device and pharmacological treatment. Innovative aspects of Mensia Koala include the personalization of the training protocol according to initial qEEG characteristics (SMR or Theta/Beta training protocols) and an improved accessibility of NF due to the opportunity to train at home with monitoring by the clinician through a dedicated web portal. TRIAL REGISTRATION: NCT02778360 . Date registration (retrospectively registered): 5-12-2016. Registered May 19, 2016

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BMC Psychiatry. 2020;20.

IMPACT OF PERSONALITY ON ADHERENCE TO AND BELIEFS ABOUT ADHD MEDICATION, AND PERCEPTIONS OF ADHD IN ADOLESCENTS.

Emilsson M, Gustafsson P, +ûhnstr+Âm G, et al.

Background: Adherence to attention deficit hyperactivity disorder (ADHD) medication can prevent serious consequences, possibly with lifelong effects. Numerous factors have been observed that influence adherent behaviour, but the impact of personality traits has been inadequately explored. The purpose of this study was to explore the associations between personality traits and adherence to ADHD medication, beliefs about the medication, and perceptions of ADHD.

Method: Adolescents (n = 99) on ADHD medication were administered: Health-Relevant Personality Traits Five-Factor Inventory, Medication Adherence Report Scale, Beliefs about Medicines Specific and Brief Illness Perceptions Questionnaires.

Results: The personality trait Antagonism correlated with adherence behaviour (r = - 0.198, p = 0.005) and perceived personal control of ADHD (r = - 0.269, p = 0.007). Negative Affectivity correlated with beliefs regarding necessity (r = 0.319, p = 0.001), concerns (r = 0.344, p = 0.001), and experienced side effects of medication (r = 0.495, p = 0.001), alongside perceptions regarding duration (r = 0.272, p = 0.007), identity (r = 0.388, p < 0.001), being emotionally affected (r = 0.374, p < 0.01), personal control (r = - 0.287, p = 0.004) and concerns about ADHD (r = 0.465, p < 0.001). Impulsivity correlated with perceived consequences (r = - 0.226, p = 0.0255) and personal control of ADHD (r = - 0.379, p < 0.001). Hedonic Capacity correlated with concerns about medication (r = - 0.218, p = 0.0316) and perceived identification with ADHD (r = - 0.203, p = 0.045).

Conclusion: Personality traits are related to adherence, beliefs about ADHD medicines and perceptions of ADHD. Antagonism is associated with adherence, especially intentional non-adherence, while Negative Affectivity correlates with numerous perceptions of ADHD and beliefs about medications. Personality assessments could be useful in the care and treatment of adolescents with ADHD

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BMJ Evidence-Based Medicine. 2019;24:A8-A9.

UNDERSTANDING THE RELIEF THAT ADHD DIAGNOSES GIVE PARENTS, AND THEN, 'THE CAN OF WORMS'.

Wright GS.

Four in depth case studies of mothers of children diagnosed as having Attention Deficit Hyperactivity Disorder (ADHD) in Australia provides critical insights into the function of diagnoses in alleviating competing tensions for mothers raising young children with behavioural and learning difficulties. The reported initial relief diagnoses brings the mothers implicates particular drivers towards overdiagnosis as mothers actively seek such relief from self and spouse blame. Further, the role of scant subjective screening tests commonly provided to schools by paediatricians and/or psychologists is highlighted as a pivotal factor in questionable 'evidence' commonly utilised to justify a medical solution to behavioural and learning difficulties in young children. In this paper, the arising theme of 'relief ' followed by palpable disappointment in their children 'having been diagnosed as ADHD' as experienced by the mothers is explored in the context of the social processes at work in overdiagnosing ADHD. The findings strongly suggest the importance of 'relief ' as a possible major driver worthy of further exploration in determining the impetus leading to overdiagnoses of ADHD and possibly other conditions relating to mothers and children. Objectives To explore the experience of mothers actively seeking diagnoses of Attention Deficit Hyperactivity Disorder for the problematic children. Method In depth interviews. Case studies. Results Rich data from limited numbers provides arising themes of relief followed by deep disappointment of diagnoses while exposing deep flaws in the diagnostic processes employed. Implications point to risk of the overdiagnoses of ADHD. Conclusions Mothers seeking relief through the achievement of diagnoses were later disappointed because the diagnoses themselves were later seen as having opened a 'can of worms' because the diagnoses were later seen as exacerbating the mothers' problems. Further, the method of obtaining such diagnoses reveals drivers possibly leading to overdiagnosis of ADHD

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BMJ Open. 2019 Mar;9:e026478.

METHODOLOGICAL ADVANTAGES AND DISADVANTAGES OF PARALLEL AND CROSSOVER RANDOMISED CLINICAL TRIALS ON METHYLPHENIDATE FOR ATTENTION DEFICIT HYPERACTIVITY DISORDER: A SYSTEMATIC REVIEW AND META-ANALYSES.

***Krogh HB, Storebo OJ, Faltinsen E, et al*.**

OBJECTIVE: To assess the methodological advantages and disadvantages of parallel and crossover designs in randomised clinical trials on methylphenidate for children and adolescents with attention deficit hyperactivity disorder (ADHD).

DESIGN: Secondary analyses of a Cochrane systematic review.

SETTING AND PARTICIPANTS: We searched relevant databases up to March 2015 and included data from parallel and crossover randomised trials assessing children and adolescents up to 18 years with ADHD.

INTERVENTIONS: Methylphenidate compared with placebo or no-treatment interventions.

PRIMARY AND SECONDARY OUTCOMES: The primary outcomes were teacher-rated ADHD symptoms and serious adverse events. The secondary outcomes were non-serious adverse events.

RESULTS: We included 38 parallel trials (n=5111) and 147 crossover trials (n=7134). When comparing methylphenidate with placebo or no-treatment on ADHD symptoms, we found no differences between the end of parallel trials and the first-period from crossover trials (Chi(2)=1.06, df=1, p=0.30, I(2)=5.5%). We also found no differences when combining the end of first-period crossover trials with the end of parallel trials and comparing them to the end of last-period crossover trials (Chi(2)=3.25, df=1, p=0.07, I(2)=69.2%). We found no differences in serious and non-serious adverse events, and no risk of period and carryover effects. However, only two trials contributed data to the latter analyses.

CONCLUSIONS: Both parallel and crossover trials seem suitable for investigating methylphenidate in children and adolescents with ADHD, with comparable estimates on ADHD symptom severity and adverse events. However, parallel trials might still offer ethical and statistical advantages over crossover trials

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Brain Behav. 2020.

VALIDITY AND ACCURACY OF THE ADULT ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD) SELF-REPORT SCALE (ASRS) AND THE WENDER UTAH RATING SCALE (WURS) SYMPTOM CHECKLISTS IN DISCRIMINATING BETWEEN ADULTS WITH AND WITHOUT ADHD.

Brevik EJ, Lundervold AJ, Haavik J, et al.

Objective: To validate the Adult ADHD Self-Report Scale (ASRS) and the Wender Utah Rating Scale (WURS) in a well-characterized sample of adult attention-deficit/hyperactivity disorder (ADHD) patients and population controls.

Methods: Both the ASRS and the WURS were administered to clinically diagnosed adult ADHD patients (n=646) and to population controls (n=908). We performed principal component analyses (PCA) and calculated receiver operating curves (ROC) including area under the curve (AUC) for the full WURS and ASRS, as well as for the PCA generated factors and the ASRS short screener.

Results: We found an AUC of 0.956 (95% CI: 0.946-0.965) for the WURS, and 0.904 (95% CI: 0.888-0.921) for the ASRS. The ASRS short screener had an AUC of 0.903 (95%CI: 0.886-0.920). Combining the two full scales gave an AUC of 0.964 (95% CI: 0.955-0.973). We replicated the two-factor structure of the ASRS and found a three-factor model for the WURS.

Conclusion: The WURS and the ASRS both have high diagnostic accuracy. The short ASRS screener performed equally well as the full ASRS, whereas the WURS had the best discriminatory properties. The increased diagnostic accuracy may be due to the wider symptom range of the WURS and/or the retrospective childhood frame of symptoms

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Brain Inj. 2020.

SEX, RACE, ADHD, AND PRIOR CONCUSSIONS AS PREDICTORS OF CONCUSSION RECOVERY IN ADOLESCENTS.

Aggarwal SS, Ott SD, Padhye NS, et al.

Objective: Concussions in adolescents are a growing public health concern as the popularity of high school sports increases. The aim of this study was to identify clinical (e.g., prior concussion, migraine history, learning disabilities/attention deficit hyperactivity disorders [ADHD]) and demographic factors (e.g., sex, race, health insurance, mechanism of injury/sport, education) that predict concussion recovery times.

Design: In a retrospective cohort study of adolescents 13–19 years old evaluated for an acute concussion (10 days from injury), recovery times were calculated from the date of concussive injury to the date of clearance to return to play or normal activities.

Results: The sample (N=227) was primarily male (75%), and the median age was 15 years. Predictors of protracted recovery were ADHD (hazard ratio [HR]=.449, 95% confidence interval [CI]=.272-.741, p =.002) and prior concussion (HR=.574, 95% CI=.397-.828, p =.003) in all sex and race groups, while shorter recovery times were predicted by Hispanic and African American race (HR=2.12, 95% CI=1.30–3.46, p =.003), with White females as the reference group.

Conclusions: Further research is needed to examine the role of sex, race, ADHD, and concussion history on concussion outcomes

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Brain Sciences. 2020;10.

SELF-CONCEPT AND INATTENTION OR HYPERACTIVITY□ÇÔ IMPULSIVITY SYMPTOMATOLOGY: THE ROLE OF ANXIETY.

Cueli M, et al.

Attention-deficit/hyperactivity disorder (ADHD) has been associated with low levels of self-concept (academic, emotional, social or physical), although this association can differ in the function of the inattention or hyperactivity–impulsivity symptomatology. Furthermore, the relation between ADHD and self-concept can be mediated or moderated by the levels of anxiety. This work is aimed to examine the differential effect of inattention symptomatology and hyperactivity–impulsivity symptomatology on academic, emotional, social and physical self-concept and the mediating or moderating role of anxiety in this relationship. A total of 167 students (70.7% boys and 29.3% girls) aged between 11 and 16 participated in this study. Students ADHD

symptomatology, self-concept in four areas (academic, emotional, social and physical self-concept) and trait anxiety were measured with the State-Trait Anxiety Inventory for Children. The results indicate that trait anxiety mediates the relationship between inattention and emotional, social and physical self-concept but does not moderate this relationship. Trait anxiety does not mediate or moderate the relationship between hyperactivity-impulsivity symptoms and self-concept. When inattention symptomatology increases, academic self-concept decreases directly, but students' emotional, social and physical self-concept decreases indirectly through trait anxiety

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Child Dev. 2019 Sep;90:e565-e583.

DOES INATTENTION AND HYPERACTIVITY MODERATE THE RELATION BETWEEN SPEED OF PROCESSING AND LANGUAGE SKILLS?

Gooch D, Sears C, Maydew H, et al.

The causal role of speed of processing (SOP) in developmental language disorder (DLD) is unclear given that SOP has been implicated in other neurodevelopmental disorders such as attention-deficit/hyperactivity disorder. This study investigated associations between SOP, language, and inattention/hyperactivity in a U.K. epidemiological cohort (N = 528). Monolingual children from a range of socioeconomic backgrounds were assessed longitudinally; at ages 5-6 (2012/2013) and 7-8 years (2014/2015). Persistent weaknesses in SOP characterized children with DLD but did not predict language longitudinally. Ratings of inattention/hyperactivity moderated the association between SOP and language, indicating that SOP deficits are particularly detrimental for language when coupled with poor attention/hyperactivity. SOP may be a shared risk factor for DLD and inattention/hyperactivity or a general marker of neurodevelopmental disorder

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Child Dev. 2019 Sep;90:e525-e547.

HOSTILE INTENT ATTRIBUTION AND AGGRESSIVE BEHAVIOR IN CHILDREN REVISITED: A META-ANALYSIS.

Verhoef REJ, Alsem SC, Verhulp EE, et al.

To test specific hypotheses about the relation between hostile intent attribution (HIA) and children's aggressive behavior, a multilevel meta-analysis was conducted on 111 studies with 219 effect sizes and 29.272 participants. A positive association between HIA and aggression was found, but effect sizes varied widely between studies. Results suggested that HIA is a general disposition guiding behavior across a broad variety of contexts, whereas the strength of the relation between HIA and aggression depends on the level of emotional engagement. The relation is stronger for more reliable HIA measures, but is not stronger for reactive aggression or co-morbid attention-deficit hyperactivity disorder than for aggression in general. The importance of understanding specific moderators of effect size for theory development is discussed

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Child Neuropsychol. 2019 Jul;25:664-87.

WORKING MEMORY AND BEHAVIORAL INHIBITION IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD): AN EXAMINATION OF VARIED CENTRAL EXECUTIVE DEMANDS, CONSTRUCT OVERLAP, AND TASK IMPURITY.

Tarle SJ, Alderson RM, Patros CHG, et al.

The stop-signal paradigm is the premier metric of behavioral inhibition in contemporary attention-deficit/hyperactivity disorder (ADHD) research. The stop-signal paradigm's choice-reaction time component, however, arguably places greater demands on working memory processes (e.g., controlled-focused attention) relative to alternative inhibition metrics (i.e., go/no-go (GNG) tasks), and consequently obscures conclusions about inhibition and working memory deficits in affected children. The current study, therefore, aimed to determine whether shared variance between stop-signal behavioral inhibition and working memory performance in children with ADHD reflects overlap between the working memory and inhibition constructs or insufficient specificity of the stop-signal paradigm. Fifty-five children (8-12 years) with and without ADHD were administered established phonological (PH) and visuospatial (VS) working memory measures, as well

as stop-signal and GNG tasks that vary with respect to demands on controlled-focused attention. Although working memory and GNG performance each uniquely predicted children's inattention, stop-signal task performance was not a significant predictor of unique variance in inattention, above and beyond variance associated with working memory. Collectively, these findings suggest that performance on the stop-signal task, compared to the GNG task, is confounded by greater demands associated with working memory and consequently reflects an impure estimate of the inhibition construct

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Child Neuropsychol. 2019 Jul;25:617-35.

COGNITIVE PREDICTORS OF PARENT-RATED INATTENTION IN VERY PRETERM CHILDREN: THE ROLE OF WORKING MEMORY AND PROCESSING SPEED.

Retzler J, Johnson S, Groom M, et al.

Inattention is one of the most common neurobehavioral problems following very preterm birth. Attention problems can persist into adulthood and are associated with negative socio-emotional and educational outcomes. This study aimed to determine whether the cognitive processes associated with inattention differ between term-born and very preterm children. Sixty-five children born very preterm (<33+0 weeks' gestation) aged 8-11 years were recruited alongside 48 term-born controls (37 20 +0 weeks' gestation). Both groups included children with a wide spectrum of parent-rated inattention (above average attention to severe inattention) measured as a continuous dimension using the Strengths and Weaknesses of ADHD and Normal-Behavior (SWAN) scale. The children completed tests to assess basic cognitive processes and executive function. A hierarchical multiple regression analysis was implemented to assess which neurocognitive processes explained variance in parent-rated inattention and whether these differed between preterm and term-born children. In both groups, poorer verbal and visuospatial short-term memory and poorer visuospatial working memory independently explained variance in parent-rated inattention. Slower motor processing speed explained variance in inattention among very preterm children only. The cognitive mechanisms associated with parent-rated inattention were predominantly overlapping between groups, but relationships between motor processing speed and inattention were unique to very preterm children. These associations may reflect risk factors for inattention in term and very preterm children. Future research should assess the efficacy of these cognitive processes as potential targets for intervention

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Clin Neuropharmacol. 2019 Nov;42:214-16.

LISDEXAMFETAMINE IN PEDIATRIC BINGE EATING DISORDER: A RETROSPECTIVE CHART REVIEW.

Guerdjikova AI, Blom TJ, Mori N, et al .

OBJECTIVES: The purpose of this retrospective chart review was to evaluate lisdexamfetamine dimesylate (LDX) in the treatment of pediatric binge eating disorder (BED).

METHODS: We examined the clinical records of 25 patients, 12 to 19 years of age, who were prescribed LDX and had a diagnosis of BED between 2014 and 2017.

RESULTS: Binge eating disorder in adolescents was highly comorbid with attention deficit hyperactivity disorder, mood and anxiety disorders, and severe obesity. Fifteen participants reported some level of improvement of their BED symptoms with LDX treatment. Posttreatment body mass index (BMI) percentile was not significantly reduced, and all but 2 participants remained in their same BMI classification. Lisdexamfetamine dimesylate treatment duration was not associated with change in BMI percentile, and the medication was well tolerated.

CONCLUSIONS: Lisdexamfetamine dimesylate may have clinical utility for BED in adolescents, but randomized, placebo-controlled studies of its efficacy, tolerability, and safety in this population are needed

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Clin Neurophysiol. 2019 Oct;130:2005-07.
TRANSCUTANEOUS ELECTRIC CURRENTS TO TARGET THE PERIPHERAL AND CENTRAL NERVOUS SYSTEM IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.
Schutter DJLG, Hunnius S, Rommelse N.

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Clin Neurophysiol. 2019 Oct;130:2008-09.
REPLY TO "TRANSCUTANEOUS ELECTRIC CURRENTS TO TARGET THE PERIPHERAL AND CENTRAL NERVOUS SYSTEM IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER".
McGough JJ, Loo SK, Cook IA.

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Clin Neurophysiol. 2020;131:1332-41.
LONG-TERM EFFECTS OF THETA/BETA NEUROFEEDBACK ON EEG POWER SPECTRA IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.
Janssen TWP, et al.
Objective: Neurofeedback has been proposed as an effective alternative for pharmacological treatment in children with attention-deficit/hyperactivity disorder (ADHD), with potentially long-term and delayed benefits. However, the specificity of such long-term behavioral improvements remains inconclusive and therefore additional research into the neurophysiological effects of neurofeedback is needed. We compared long-term effects of theta/beta neurofeedback (NFB) to methylphenidate (MPH) and physical activity (PA, semi-active control intervention) on electroencephalogram (EEG) power spectra. Based on the vigilance stabilization model, we hypothesized further reductions in theta and alpha power in the NFB compared to the control groups.
Method: EEG power spectra (theta, alpha and beta) during resting and task conditions were recorded at pre-, post-intervention and 6-months follow-up in 67 children, aged 7-13 (NFB: n = 24, MPH: n = 23, or PA: n = 20).
Results: Analyses revealed no power spectra differences at follow-up between MPH and NFB (range p = .165-.905) and PA and NFB (range p = .172 .822).
Conclusions: No evidence was found for the specificity of theta/beta NFB at follow-up.
Significance: This was the first study into long-term neurophysiological effects of theta/beta NFB. Future studies are encouraged to explore both specific and non-specific mechanisms of NFB.
Clinical trials registration: Train Your Brain? Exercise and neurofeedback intervention for ADHD, https://clinicaltrials.gov/show/NCT01363544, Ref. No. NCT01363544

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Compr Psychiatry. 2019 Jul;92:1-6.
THE ETIOLOGY OF ANTISOCIAL PERSONALITY DISORDER: THE DIFFERENTIAL ROLES OF ADVERSE CHILDHOOD EXPERIENCES AND CHILDHOOD PSYCHOPATHOLOGY.
DeLisi M, Drury AJ, Elbert MJ.
Antisocial Personality Disorder (ASPD) is a severe personality disorder with robust associations with crime and violence, but its precise etiology is unknown. Drawing on near-population of federal correctional clients in the Midwestern United States, the current study examined antecedent background factors spanning adverse childhood experiences and childhood psychopathology. Greater adverse childhood experiences were associated with ASPD diagnosis with physical abuse showing associations with ASPD symptoms and sexual abuse with lifetime diagnosis for ASPD. Conduct Disorder was strongly linked to ASPD; however, Oppositional Defiant Disorder and ADHD had null associations. Given the role of environmental factors in the development of ASPD, greater criminological attention should be devoted to understanding how assorted

forms of abuse and neglect coupled with childhood psychopathology contribute to ASPD especially given its linkages to severe criminal offending

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Conf Proc IEEE Eng Med Biol Soc. 2019 Jul;2019:2719-22.

AUDITORY WHITE NOISE AFFECTS LEFT/RIGHT VISUAL WORKING MEMORY IN AN OPPOSITE PATTERN.

Wang R, Ge S, Zommara NM, et al.

Adding auditory white noise (WN) to the environment has been considered to be a promising way to enhance the memory performance of children with attention deficit/hyperactivity disorder (ADHD) but disrupt that of non-ADHD children. To explore the exact mechanism behind WN benefits, we did a bilateral color-memory task with different WN conditions. A bilateral color-square array was displayed on one display. Only one side colors were asked to be remembered in a trial. Our experiment found that the memory accuracy of left visual memory was improved with WN, especially when WN was displayed via left earphone at encoding and maintenance periods. However, the right visual memory showed a reduced performance tendency with WN. Thus, the WN affects left/right visual working memory in an opposite pattern. Using time-frequency analysis, we found an enhanced lower-alpha activity over the left occipitotemporal lobe. We conclude that the induced lower-alpha activity at the left occipitotemporal lobe might be helpful to inhibit information processing of left hemisphere

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Disabil Health J. 2020 Jan;13:100841.

THE ASSOCIATION BETWEEN DISABILITY AND UNINTENTIONAL INJURIES AMONG ADOLESCENTS IN A GENERAL EDUCATION SETTING: EVIDENCE FROM A SWEDISH POPULATION-BASED SCHOOL SURVEY.

Jernbro C, Bonander C, Beckman L.

BACKGROUND: Unintentional injuries are the leading cause of death among adolescents. Adolescents with disabilities may be particularly vulnerable with an increased risk of unintentional injuries.

OBJECTIVE: To study the association between a set of disabilities and unintentional injury risks among adolescents, accounting for comorbidity, subjective disability severity and sex.

METHOD: Cross-sectional data from a Swedish national school survey including 4,741 students (15 and 17-year olds) conducted in 2016 was analyzed using log-binomial generalized linear models.

RESULTS: We found a 33% increased risk of injury the last 12 months and a 53% increased risk of injury leading to hospitalization for adolescents with any disability compared to their peers with no disability. The differences in injury risk were greater for girls than boys. There was a dose-response relationship between disability severity and injury risk. In analyses adjusted for sociodemographic factors and comorbidity, attention-deficit/hyperactivity disorder (ADHD) and epilepsy were associated with an increased risk of injury the last 12 months, risk ratios [RR] were 1.41 (95% Confidence Interval [CI] 1.08-2.97) and 1.79 (95% CI 1.10-1.81) respectively. Autism spectrum disorder was associated with a decreased injury risk the last 12 months (RR=0.43, CI 0.2-0.92). ADHD, mobility impairment and visual impairment were associated with hospitalization due to injury during lifetime.

CONCLUSIONS: There was an increased risk of unintentional injuries for adolescents with disabilities compared to their non-disabled peers, specifically for individuals with ADHD, epilepsy, visual impairment and mobility impairment. Injury prevention strategies may include adapting the physical environment and medical treatment

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Disabil Health J. 2020 Jan;13:100827.

DISABILITY ADVOCACY MESSAGING AND CONCEPTUAL LINKS TO UNDERLYING DISABILITY IDENTITY DEVELOPMENT AMONG COLLEGE STUDENTS WITH LEARNING DISABILITIES AND ATTENTION DISORDERS.

Kreider CM, Luna C, Lan MF, et al.

BACKGROUND: Learning disabilities and attention disorders (LD/AD) are highly prevalent neurodevelopmental conditions that influence developmental trajectories and whose impacts exist throughout the life course. Self-advocacy skills are critical for college students with LD/AD, which are underpinned by understanding of self and one's disability.

OBJECTIVE: This study examined disability advocacy messaging included in projects created by college students with LD/AD, compared patterns in disability messaging to existing disability identity models, and explored changes in disability messaging during receipt of holistic campus-based LD/AD supports.

METHODS: Participants were 52 undergraduates with LD/AD enrolled in a larger study. This one-group analysis involved qualitative exploration of the projects' topical content, use of grounded theory procedures for conceptualizing the data, and quantitative analysis to explore changes over time in disability advocacy messaging.

RESULTS: Participants messaged a broad range of disability-related topics. A five-level theoretical model of disability messaging was created from the textual data. The model evinces parallels to existing disability identity development models. A significant ($p<.01$) positive shift in disability messaging was observed in a comparison of messages from participants' first and last projects submitted over the four-semester period of study involvement.

CONCLUSION: Study findings support conceptual linkages among disability messaging and disability identity development. The resultant continuum model suggests a potential extension of existing disability identity development paradigms. Shifts in disability messaging provide preliminary evidence for potential personal and institutional benefits of engaging college students with LD/AD in disability-focused project creation

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Emotion. 2020.

EVIDENCE AGAINST EMOTION INFERENCE DEFICITS IN CHILDREN.

Wells EL, Groves NB, Day TN, et al.

Inconsistent evidence suggests that pediatric attention deficit/hyperactivity disorder (ADHD) may be associated with impairments in the ability to use context clues to infer the emotion states of others. However, the evidence base for these impairments is comprised of data from laboratory-based tests of emotion inference that may be confounded by demands on nonaffective cognitive processes that have been linked with ADHD. The current study builds on our previous study of facial affect recognition to address this limitation and investigate a potential mechanism underlying children's ability to infer emotion state from context clues. To do so, we used a fully crossed, counterbalanced experimental design that systematically manipulated emotion inference and working memory demands in 77 carefully phenotyped children ages 8-13 (Mage = 10.46, SD = 1.54; 66% Caucasian/Non-Hispanic; 42% female) with ADHD (n = 42) and without ADHD (n = 35). Results of Bayesian mixed-model ANOVAs indicated that using context clues to infer the emotion state of others competed for neurocognitive resources with the processes involved in rehearsing/maintaining information within working memory (BF10 = 1.57 +ù 1019, d = 0.72). Importantly, there was significant evidence against the critical Group +ù Condition interaction for response times (BF01 = 4.93), and no significant evidence for this interaction for accuracy (BF01 = 2.40). In other words, children with ADHD do not infer emotions more slowly than children without ADHD (d = 0.13), and their small magnitude impairment in accuracy (d = 0.30) was attributable to their generally less accurate performance on choice-response tasks (i.e., across both emotion and control conditions). Taken together, the evidence indicates that emotion inference abilities are likely unimpaired in pediatric ADHD and that working memory is implicated in the ability to infer emotion from context for all children-not just children with ADHD

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Encephale. 2020.
MISDIAGNOSIS IN THREE BOYS WITH PREDOMINANTLY HYPERACTIVE ADHD.
Lucchelli JP, Bertschy G.

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Environ Res. 2019 Nov;178:108734.
EFFECTS OF PRENATAL EXPOSURE TO PARTICULATE MATTER AIR POLLUTION ON CORPUS CALLOSUM AND BEHAVIORAL PROBLEMS IN CHILDREN.
Mortamais M, Pujol J, Martinez-Vilavella G, et al.
OBJECTIVE: Air pollution (AP) may affect neurodevelopment, but studies about the effects of AP on the growing human brain are still scarce. We aimed to investigate the effects of prenatal exposure to AP on lateral ventricles (LV) and corpus callosum (CC) volumes in children and to determine whether the induced brain changes are associated with behavioral problems.
METHODS: Among the children recruited through a set of representative schools of the city of Barcelona, (Spain) in the Brain Development and Air Pollution Ultrafine Particles in School Children (BREATHE) study, 186 typically developing participants aged 8-12 years underwent brain MRI on the same 1.5TMR unit over a 1.5-year period (October 2012-April 2014). Brain volumes were derived from structural MRI scans using automated tissue segmentation. Behavioral problems were assessed using the Strengths and Difficulties Questionnaire (SDQ) and the criteria of the Attention Deficit Hyperactivity Disorder DSM-IV list. Prenatal fine particle (PM2.5) levels were retrospectively estimated at the mothers' residential addresses during pregnancy with land use regression (LUR) models. To determine whether brain structures might be affected by prenatal PM2.5 exposure, linear regression models were run and adjusted for age, sex, intracranial volume (ICV), maternal education, home socioeconomic vulnerability index, birthweight and mothers' smoking status during pregnancy. To test for associations between brain changes and behavioral outcomes, negative binomial regressions were performed and adjusted for age, sex, ICV.
RESULTS: Prenatal PM2.5 levels ranged from 11.8 to 39.5mug/m(3) during the third trimester of pregnancy. An interquartile range increase in PM2.5 level (7mug/m(3)) was significantly linked to a decrease in the body CC volume (mm(3)) (beta=-53.7, 95%CI [-92.0, -15.5] corresponding to a 5% decrease of the mean body CC volume) independently of ICV, age, sex, maternal education, socioeconomic vulnerability index at home, birthweight and mothers' smoking status during the third trimester of pregnancy. A 50mm(3) decrease in the body CC was associated with a significant higher hyperactivity subscore (Rate Ratio (RR)=1.09, 95%CI [1.01, 1.17) independently of age, sex and ICV. The statistical significance of these results did not survive to False Discovery Rate correction for multiple comparisons.
CONCLUSIONS: Prenatal exposure to PM2.5 may be associated with CC volume decrease in children. The consequences might be an increase in behavioral problems

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Environ Res. 2019 Nov;178:108679.
ASSOCIATION BETWEEN EARLY LEAD EXPOSURE AND EXTERNALIZING BEHAVIORS IN ADOLESCENCE: A DEVELOPMENTAL CASCADE.
Desrochers-Couture M, Courtemanche Y, Forget-Dubois N, et al.
BACKGROUND: Lead (Pb) exposure is associated with adverse neurological development. Most notably, it has been observed through externalizing behavior symptoms, as observed among Inuit children from northern Quebec. Evidence for a persistent neurological impact of early Pb exposure later in life is however scarce. Pb exposure may initiate a developmental cascade that increases the risk of long-term behavior problems.
OBJECTIVES: Testing for direct associations between childhood Pb concentrations and adolescent externalizing symptoms and substance use, as well as indirect associations through childhood behavior assessments.
METHODS: The study sample is a longitudinal cohort of Inuit children (n=212) followed since birth. Blood Pb concentrations were measured during childhood (median age=11.4 years) and adolescence (median

age=18.5 years). Externalizing/inattentive behavior were teacher-assessed through the Teacher Report Form and the Disruptive Behavior Disorders Rating Scale for children. At the adolescence follow-up, behavior problems were self-reported by filling Achenbach's Youth Self-Report, the Barkley Adult ADHD-IV Rating Scale, and the Diagnostics Interview Schedule for Children. Adolescent substance use was also self-assessed through the DEP-ADO. Direct and indirect associations of child Pb concentrations with adolescent outcomes were tested through mediation models.
RESULTS: Child blood Pb concentrations were not directly associated with any adolescent outcomes. On the contrary, childhood Pb exposure was indirectly associated, through childhood externalizing behavior assessments, with adolescent externalizing behaviors, binge drinking, and cannabis use. These indirect associations held after controlling for adolescents' concurrent Pb blood concentrations.
DISCUSSION: Our results highlight the indirect but lasting effects of child Pb exposure on adolescent behavior problems, and the importance of childhood externalizing behavior in this relationship. Adverse early-life environment put children on a riskier developmental trajectory, increasing their likelihood of lifelong psychological, social and health problems

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Environ Res. 2019 Oct;177:108612.

ASSOCIATION BETWEEN PRENATAL EXPOSURE TO HOUSEHOLD INHALANTS EXPOSURE AND ADHD-LIKE BEHAVIORS AT AROUND 3 YEARS OF AGE: FINDINGS FROM SHENZHEN LONGHUA CHILD COHORT STUDY.

Fang XY, Strodl E, Liu BQ, et al.

BACKGROUND: Prenatal exposure to air pollutants has been suggested as a possible etiologic factor for the occurrence of ADHD or ADHD-like behaviors. But we still lack a comprehensive assessment of household air pollutants exposure on the development of ADHD-like behaviors during childhood.
OBJECT: We aimed to assess whether prenatal household inhalants exposure is associated with preschoolers' ADHD-like behaviors in a nonclinical population.
METHODS: This study used the baseline data of the Longhua Child Cohort Study. During 2015-2017, we recruited 42,983 mothers and their kindergarten-aged children who enrolled at kindergarten in the Longhua district of Shenzhen, to obtain the demographic data and relevant exposure information through self-administrated questionnaire survey. The source of prenatal household inhalants exposure include cooking fumes, environmental tobacco smoke, mosqutio coils, home renovated and indoor burning incense. Logistic and censored least absolute deviations (CLAD) models were used to reveal the association between prenatal exposure to household air pollutants and hyperactive behaviors in child.
RESULTS: We found that exposure to five types of household inhalants during pregnancy were independently associated with an increased risk of child hyperactive behaviors. Moreover, we observed a significant interaction between exposure to environmental tobacco smoke and cooking fumes during gestation on child hyperactive behaviors in CLAD models. We also found a significant joint effect between burning mosquito coils and incense during gestation for child hyperactive behaviors risk both in CLAD and Logistic models. Furthermore, a household inhalants exposure index was used to demonstrate a dose-response relationship between the cumulative effect of exposure to the five household air pollutants and child hyperactivity.
CONCLUSIONS: Our results suggest that prenatal exposure to different household inhalants might increase the risk of children's hyperactive behaviors at around 3 years of age with the presence of interaction effects between some inhalants

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Epilepsia. 2019 May;60:818-29.

EPILEPSY AND SEIZURES IN YOUNG PEOPLE WITH 22Q11.2 DELETION SYNDROME: PREVALENCE AND LINKS WITH OTHER NEURODEVELOPMENTAL DISORDERS.

Eaton CB, Thomas RH, Hamandi K, et al.

OBJECTIVE: The true prevalence of epileptic seizures and epilepsy in 22q11.2 deletion syndrome (22q11.2DS) is unknown, because previous studies have relied on historical medical record review.

Associations of epilepsy with other neurodevelopmental manifestations (eg, specific psychiatric diagnoses) remain unexplored.
METHODS: The primary caregivers of 108 deletion carriers (mean age 13.6 years) and 60 control siblings (mean age 13.1 years) completed a validated epilepsy screening questionnaire. A subsample (n = 44) underwent a second assessment with interview, prolonged electroencephalography (EEG), and medical record and epileptologist review. Intelligence quotient (IQ), psychopathology, and other neurodevelopmental problems were examined using neurocognitive assessment and questionnaire/interview.
RESULTS: Eleven percent (12/108) of deletion carriers had an epilepsy diagnosis (controls 0%, P = 0.004). Fifty-seven of the remaining 96 deletion carriers (59.4%) had seizures or seizurelike symptoms (controls 13.3%, 8/60, P < 0.001). A febrile seizure was reported for 24.1% (26/107) of cases (controls 0%, P < 0.001). One deletion carrier with a clinical history of epilepsy was diagnosed with an additional type of unprovoked seizure during the second assessment. One deletion carrier was newly diagnosed with epilepsy, and two more with possible nonmotor absence seizures. A positive screen on the epilepsy questionnaire was more likely in deletion carriers with lower performance IQ (odds ratio [OR] 0.96, P = 0.018), attention-deficit/hyperactivity disorder (ADHD) (OR 3.28, P = 0.021), autism symptoms (OR 3.86, P = 0.004), and indicative motor coordination disorder (OR 4.56, P = 0.021).
SIGNIFICANCE: Even when accounting for deletion carriers diagnosed with epilepsy, reports of seizures and seizurelike symptoms are common. These may be "true" epileptic seizures in some cases, which are not recognized during routine clinical care. Febrile seizures were far more common in deletion carriers compared to known population risk. A propensity for seizures in 22q11.2DS was associated with cognitive impairment, psychopathology, and motor coordination problems. Future research is required to determine whether this reflects common neurobiologic risk pathways or is a consequence of recurrent seizures

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Eur Child Adolesc Psychiatry. 2020.

SENSORY PROCESSING RELATED TO ATTENTION IN CHILDREN WITH ASD, ADHD, OR TYPICAL DEVELOPMENT: RESULTS FROM THE ELENA COHORT.

Dellapiazza F, Michelon C, Vernhet C, et al.

Autism-spectrum disorder (ASD) and attention-deficit hyperactivity disorder (ADHD) are early neurodevelopmental conditions that share clinical characteristics, raising important issues in clinical diagnosis. We aimed to compare (1) sensory processing in four groups of children: ASD alone, ASD + ADHD, ADHD alone, and typical development (TD) and (2) the association between sensory processing and attention in the three groups with neurodevelopmental disorders. Our sample included 120 children aged from 6 to 12 years divided into four groups: ASD alone (N = 43), ASD + ADHD (N = 18), ADHD alone (N = 28), and TD (N = 31). Atypical sensory processing was more frequent in ASD and/or ADHD than in TD, without a significant difference between ASD and ADHD. However, the variance analysis of attention problems revealed differences between the ADHD and ASD groups. Thus, the rate of atypical sensory processing was comparable between the ASD and ADHD groups, suggesting that further studies are needed to explore atypical SP in all neurodevelopmental disorders

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Eur Child Adolesc Psychiatry. 2020.

ASSOCIATIONS BETWEEN ROAD TRAFFIC NOISE EXPOSURE AT HOME AND SCHOOL AND ADHD IN SCHOOL-AGED CHILDREN: THE TRAILS STUDY.

Zijlema WL, de KY, van K, I, et al.

Environmental noise may play a role in the manifestation and severity of attention deficit/hyperactivity disorder (ADHD) symptoms, but evidence is limited. We investigated the cross-sectional associations between residential and school road traffic noise exposure and ADHD symptoms and diagnosis. The sample included n = 1710, 10-12 year-old children from the TRAILS study in The Netherlands. ADHD symptoms were measured using a DSM-IV based subscale from the Child Behavior Checklist. Children with diagnosed ADHD originated from the clinic-referred cohort. Road traffic noise (Lden) was estimated at the residence

and school level, by model calculation. Risk ratios for ADHD symptoms and ADHD diagnoses, and regression coefficients for symptom severity were estimated separately and simultaneously for residential and school road traffic noise. Adjusted multinomial models with residential road traffic noise showed that residential noise was not associated with ADHD symptoms, but was associated with lower risks for ADHD diagnosis (RR = 0.93; 95% CI 0.89, 0.97). Similar associations were observed for models including school road traffic noise and models including both exposures. No clear exposure response relationship was observed for associations between residential or school noise and ADHD symptom severity. We found no evidence for a harmful association between road traffic noise and ADHD. Associations between noise and lower risks for ADHD were observed only in referred cases with a confirmed ADHD diagnosis and may be due to residual confounding or selection bias. Future studies should focus on residential and school noise exposure, and study associations with ADHD symptoms and diagnosis over time

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Eur J Paediatr Neurol. 2020.

PREVALENCE OF MENTAL DISORDERS IN CHILDREN AND ADOLESCENTS WITH CEREBRAL PALSY: DANISH NATIONWIDE FOLLOW-UP STUDY.

Rackauskaite G, Bilenberg N, Uldall P, et al.

Aim: To compare the prevalence of mental disorders (MDs) in a cohort of children and adolescents with and without cerebral palsy (CP) and to explore whether there is an association between MDs and the Gross Motor Function Classification System (GMFCS) level.

Method: A register-linkage follow-up study of 10- to 16-year children with CP (identified in the Danish National Cerebral Palsy Registry, n = 893), and 2627 children without CP, matched by gender and age. Information on MDs was obtained from the National Patient Registry in Denmark and based on ICD-10-codes. Conditional logistic regression was performed in order to compare the prevalence of MDs.

Results: The prevalence of MDs was significantly higher in children and adolescents with CP (22.4%, CI 19.8-25.2%) compared with controls (6.3%, CI 5.5-7.3%). Intellectual disability was statistically significantly associated with motor function (odds ratio (OR) 4.55, CI 2.81ΓÇô7.36 for GMFCS levels IV-V compared to GMFCS level I), but there were no statistically significant association between motor function and autism spectrum disorders, ADHD or affective disorders.

Interpretation: Our findings emphasize that follow-up of children with CP should include screening for both cognitive dysfunction and other mental disorders. The motor function does not predict the risk of other mental disorders than intellectual disability in children and adolescents with CP

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Evidence-Based Practice in Child and Adolescent Mental Health. 2020;5:102-14.

THE ROLE OF PARENTAL KNOWLEDGE AND ATTITUDES ABOUT ADHD AND PERCEPTIONS OF TREATMENT RESPONSE IN THE TREATMENT UTILIZATION OF FAMILIES OF CHILDREN WITH ADHD.

Breaux R, Waschbusch DA, Marshall R, et al.

The present study examined the impact of parental knowledge and attitudes about attention-deficit/hyperactivity disorder (ADHD), and parental perceptions of treatment response on the utilization of behavioral and pharmacological ADHD treatments, using data from a longitudinal treatment study designed to assess physical growth in children with ADHD. It also explored if these relations were moderated by race/ethnicity. Participants include 230 (74% Hispanic) families of treatment na+»ve children with ADHD (M age=7.56, SD=1.94; 73% male). Families were randomly assigned to receive behavior therapy (BT) or stimulant medication (MED; which also included low dose BT). After 6 months, families whose children still showed at least moderate impairment had access to either treatment for a total of 30 months. Utilization was measured using the number of BT sessions attended and total mg of MED taken over the study period. Families who reported more willingness to use medication for their childΓÇÖs ADHD at baseline were more likely to use MED and less likely to use BT, regardless of race/ethnicity. Parental knowledge about ADHD was only important in predicting BT utilization for White non-Hispanic families. Greater reduction in ADHD symptoms and impairment significantly predicted more MED utilization for Hispanic families. Results highlight

the need to explore multiple parent (e.g., medication willingness) and child (e.g., symptom severity) factors when considering treatment utilization. Results also highlight ethnic differences in which factors affect treatment utilization

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Front Human Neurosci. 2020;14.

EFFICIENCY IN MAGNOCELLULAR PROCESSING: A COMMON DEFICIT IN NEURODEVELOPMENTAL DISORDERS.

Brown AC, Peters JL, Parsons C, et al.

Several neurodevelopmental disorders (NDDs) including Developmental Dyslexia (DD), Autism Spectrum Disorder (ASD), but not Attention Deficit Hyperactive Disorder (ADHD), are reported to show deficits in global motion processing. Such behavioral deficits have been linked to a temporal processing deficiency. However, to date, there have been few studies assessing the temporal processing efficiency of the Magnocellular M pathways through temporal modulation. Hence, we measured achromatic flicker fusion thresholds at high and low contrast in nonselective samples of NDDs and neurotypicals (mean age 10, range 7ΓÇô12 years, n = 71) individually, and group matched, for both chronological age and nonverbal intelligence. Autistic tendencies were also measured using the Autism-Spectrum Quotient questionnaire as high AQ scores have previously been associated with the greater physiological amplitude of M-generated nonlinearities. The NDD participants presented with singular or comorbid combinations of DD, ASD, and ADHD. The results showed that ASD and DD, including those with comorbid ADHD, demonstrated significantly lower flicker fusion thresholds (FFTs) than their matched controls. Participants with a singular diagnosis of ADHD did not differ from controls in the FFTs. Overall, the entire NDD plus control populations showed a significant negative correlation between FFT and AQ scores ($r = 0.269$, $p < 0.02$ $n = 71$). In conclusion, this study presents evidence showing that a temporally inefficient M pathway could be the unifying network at fault across the NDDs and particularly in ASD and DD diagnoses, but not in singular diagnosis of ADHD

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Front Psychiatry. 2020;11.

A PILOT RANDOMIZED CONTROL TRIAL WITH THE PROBIOTIC STRAIN LACTOBACILLUS RHAMNOSUS GG (LGG) IN ADHD: CHILDREN AND ADOLESCENTS REPORT BETTER HEALTH-RELATED QUALITY OF LIFE.

Kumperscak HG, Gricar A, +£len I, et al .

Objectives: This double-blind pilot randomized placebo-controlled trial examined the possible effect of the probiotic strain Lactobacillus rhamnosus GG ATCC53103 (LGG) on symptoms of attention-deficit/hyperactivity disorder (ADHD), health-related quality of life (QoL), and serum levels of cytokines in children and adolescents with ADHD.

Methods: This trial evaluated 32 drug-naive children and adolescents aged between four and 17 years with a diagnosis of ADHD. The study subjects were randomly assigned to either the group that received LGG or the group that received the placebo. Assessments, comprising the ADHD Parent-Report Rating Scale-IV: Home Version; the Child Self-Report and Parent Proxy-Report of the Pediatric Quality of Life InventoryTM (PedsQLTM) 4.0 Generic Core Scale; the Parent Form (CBCL/6-18) and the Teacher Report Form (TRF) of the Child Behavior Checklist (CBCL) for ages 6-18 of the Achenbach System of Empirically Based Assessment (ASEBA); and the serum cytokines; were compared between the groups at the baseline and after 3 months.

Results: Thirty-five participants were randomized, with 32 completing the study (91.4% retention). There was a significant improvement in the PedsQL Child Self-Report Total Score after 3 months of treatment in the probiotic ($p = 0.021$, $d = 0.53$), whereas there was no significant improvement in the placebo group ($p = 0.563$, $d = 0.04$). The results of psychometric parameters assessed by parents and teachers were not so straightforward. There were statistically significant differences in the levels of serum cytokines between the groups after the 3-month treatment period: IL-6 in both the probiotic ($p = 0.004$, $d = 0.73$) and the placebo groups ($p = 0.035$, $d = 0.94$); IL-10 ($p = 0.035$, $d = 0.6$); IL-12 p70 ($p = 0.025$, $d = 0.89$); and TNF-+¦ ($p = 0.046$, $d = 0.64$) in the probiotic group only.

Conclusions: Children and adolescents with ADHD who received LGG supplementation reported better health-related QoL compared to their peers who received the placebo. This suggests that LGG supplementation could be beneficial. But results with psychometric tests conducted by parents and teachers as well as differences in the levels of inflammatory cytokines were ambiguous. Based on these results, we propose some study modifications: a longer observation period (6ΓÇô12 months); inclusion of more children's self-report assessments; recruitment of non-drug naive patients and the possible omission of serum cytokines measurements.
Clinical Trial Registration: Medical Ethics Committee (UKC-MB-KME-19-06/16)

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Front Psychiatry. 2020;11.

RETROSPECTIVE OUTCOME MONITORING OF ADHD AND NUTRITION (ROMAN): THE EFFECTIVENESS OF THE FEW-FOODS DIET IN GENERAL PRACTICE.

Pelsser L, Frankena K, Toorman J, et al.

Introduction: Double-blind placebo-controlled studies investigating the effect of a few-foods diet (FFD) on attention-deficit/hyperactivity disorder (ADHD) have provided consistent evidence that ADHD can be triggered by foods, indicating the existence of a food-induced ADHD subtype. In 2001 the few-foods approach was included in an ADHD treatment protocol. This approach consists of (a) determining, by means of an FFD, whether food is a trigger of ADHD; (b) reintroducing, in FFD responders, foods to assess which foods are incriminated; (c) finally composing a personalised diet eliminating the involved foods only. In the Netherlands the few-foods approach is applied in practice. We aimed to retrospectively assess its effectiveness on ADHD and oppositional defiant disorder (ODD) in real life.
Methods: Data from all children who started the few-foods approach in three specialised healthcare facilities during three consecutive months were included. Behavior was assessed at start and end of the 5-week FFD, using the ADHD Rating Scale and a structured psychiatric interview. Clinical responders (behavioral improvements ΓëÑ40%) proceeded with the reintroduction phase.
Results: Data of 57 children, 27 taking medication and 15 following some elimination diet at start, were available. No differences were noted between parental scores of children with and without medication or some elimination diet at start. 21/27 (78%) children stopped taking medication during the FFD. 34/57 (60%) children were ADHD responders, 20/29 (65%) children meeting ODD criteria were ODD responders. 26/34 (76%) ADHD responders started the reintroduction phase; 14/26 (54%) still participated at six months. Teacher data were available of 18/57 (32%) children. 9/18 (50%) children were ADHD responders.
Conclusion: The FFD, if applied by trained specialists, may lead to clinically relevant reduction of ADHD and ODD symptoms in general practice, and a concomitant decrease of ADHD medication. These results corroborate the existence of an ADHD subgroup with food-induced ADHD. Defining and eliminating the incriminated foods, i.e. the underlying causal triggers, may result in secondary prevention of food-induced ADHD. Research into underlying mechanism(s) is of vital importance: finding an easier method or biomarkers for diagnosing food-induced ADHD and ascertaining the incriminated foods may lead to redundancy of the few-foods approach

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Front Psychiatry. 2020;11.

EXCESSIVE DAYTIME SLEEPINESS MEASUREMENTS IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Bioulac S, Taillard J, Philip P, et al.

Attention deficit hyperactivity disorder (ADHD) is the most commonly diagnosed neurodevelopmental disorder in childhood. It is a heterogeneous disorder in terms of clinical presentation that is probably due to the frequent occurrence of comorbidity. Children with ADHD more frequently report sleep disorders (notably delayed sleep phase syndrome) and excessive daytime sleepiness (EDS) than typically developing children. The aim of this article is to propose a narrative review of the assessment of EDS in the context of ADHD with first a summary of the subjective and objective tools used to measure it. Secondly, perspectives in terms of

electroencephalogram (EEG) markers and neurofeedback are proposed. Then, possibilities for new kinds of evaluation are discussed (virtual reality, ecological momentary assessment, etc.). Lastly, we discuss specific clinical situations with EDS in the context of ADHD as links with narcolepsy, the comorbidity with other psychiatric disorders, and the context of sluggish cognitive tempo

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Front Psychiatry. 2020;11.

EFFECTS OF 16 WEEKS OF METHYLPHENIDATE TREATMENT ON ACTIGRAPH-ASSESSED SLEEP MEASURES IN MEDICATION-NAIVE CHILDREN WITH ADHD.

Solleveld MM, Schrantee A, Baek HK, et al.

Methylphenidate (MPH) improves behavioral symptoms of attention-deficit/hyperactivity disorder (ADHD). Its effects on sleep, however, are insufficiently known, as trials with MPH in medication-naive children were so far restricted to relatively short trial durations. Here, we assessed effects of prolonged MPH treatment on sleep in medication-naive boys in a 16-weeks double-blind, placebo controlled, multicenter clinical trial with immediate-release MPH (ePOD-MPH trial, NTR3103). Seventy-five medication-naive boys, aged 10ΓÇô12 years, were screened for eligibility using ADHD DSM-IV criteria. Sleep was assessed using actigraphy, diaries and questionnaires prior to randomization, in week 8, and 1 week after trial end. Fifty boys (mean age 11.4y, SD 0.9) were randomized to MPH or placebo. Linear mixed model analysis demonstrated a significant time-by-treatment interaction effect (p = 0.007) on sleep efficiency. Post-hoc analyses demonstrated that the two groups did not differ from each other (p = 0.94) during treatment (week 8), but that sleep efficiency was significantly improved in the MPH (p = 0.005), but not placebo group (p = 0.87) 1 week after trial end. The lack of MPH's negative effects on sleep during treatment differ from most previous studies and could be explained by the relatively long trial duration in our study and the medication-naive status of our sample; suggesting that evaluating sleep problems only shortly after treatment onset presents an incomplete picture, because it might not be representative for sleep quality after longer treatment periods. Our findings of improved sleep after trial end could be due to rebound effects or longer-term effects of MPH treatment and therefore require replication.

Clinical Trial Registration: Central Committee on Research Involving Human Subjects (an independent registry, identifier NL34509.000.10) before enrollment of the first subject and The Netherlands National Trial Register, identifier NTR3103

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Genes Brain Behav. 2020.

APPROPRIATENESS OF ARRAY-CGH IN THE ADHD CLINICS: A COMPARATIVE STUDY.

Baccarin M, Picinelli C, Tomaiuolo P, et al.

Attention deficit hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorder with a worldwide prevalence of about 5%. The disorder is characterized by inattentive, hyperactive and impulsive behavior and is often comorbid with other neuropsychiatric conditions. Array comparative genomic hybridization (array-CGH) testing has been proved to be useful to detect chromosomal aberrations in several neuropsychiatric conditions including autism spectrum disorders (ASD) and intellectual disability (ID). The usefulness of array-CGH in the ADHD clinics is still debated and no conclusive evidence has been reached to date. We performed array-CGH in 98 children and adolescents divided in two similarly sized groups according to the clinical diagnosis: (a) one group diagnosed with ADHD as primary diagnosis; (b) the other group in which ADHD was co-morbid with ASD and/or ID. We detected pathogenetic and likely pathogenetic copy number variants (CNVs) in 12% subjects in which ADHD was co-morbid with autism and/or intellectual disability and in 8.5% subjects diagnosed with ADHD as primary diagnosis. Detection of CNVs of unknown clinical significance was similar in the two groups being 27% and 32%, respectively. Benign and likely benign CNVs accounted for 61% and 59.5% in the first and second group, respectively. Differences in the diagnostic yield were not statistically significant between the two groups (P >.05). Our data strongly suggest that array-

CGH (a) is a valuable diagnostic tool to detect clinically significant CNVs in individuals with ADHD even in the absence of comorbidity with ASD and/or ID and (b) should be implemented routinely in the ADHD clinics

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Graefe's Archive for Clinical and Experimental Ophthalmology. 2020.

PUPILLOMETRY MEASUREMENT AND ITS RELATIONSHIP TO RETINAL STRUCTURAL CHANGES IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Aslan MG, Uzun F, et al.

PURPOSE: This study aims to assess the pupillometry measurements of the attention deficit hyperactivity disorder (ADHD) patients and to investigate their correlations with macular and RNFL thickness parameters by comparing the values with a healthy control group.

METHODS: Newly diagnosed ADHD patients in a child and adolescent clinic of a tertiary hospital were consulted in an ophthalmology clinic. All participants had undergone a standard ophthalmological examination including refractometry, best corrected visual acuity, color vision, anterior segment biomicroscopy, fundoscopy, pupillometry, and OCT. All results were compared with a healthy control group at the same age.

RESULTS: The study group consisted of 32 patients and there were 43 children in the control group. Mean pupillary velocities of ADHD patients and control group were 0.60 ± 0.11 mm/s and 0.63 ± 0.11 mm/s, and 0.49 ± 0.12 mm/s and 0.50 ± 0.10 mm/s, for right and left eyes, respectively. The difference was statistically significant for both eyes ($p < 0.05$). Mean RNFL thickness measurements of the study group were 90.69 ± 8.58 μm and 89.63 ± 8.14 μm for right and left eyes, respectively and those were 87.35 ± 7.67 μm and 88.77 ± 7.44 μm, respectively in the healthy group. Correlation between right pupillary velocity and RNFL thickness was statistically significant ($r = 0.339$, $p = 0.003$).

CONCLUSION: Higher pupillary velocity values were observed in both eyes of children with ADHD and that was positively correlated with RNFL measurements of their right eyes.

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Graefe's Archive for Clinical and Experimental Ophthalmology. 2020.

ACCOMMODATIVE RESPONSE IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD): THE INFLUENCE OF ACCOMMODATION STIMULUS AND MEDICATION.

Redondo B, Molina R, Vera J, et al.

Background: There are claims that ocular accommodation differs in children with attention deficit hyperactivity disorder (ADHD) compared to typically developing children. We examined whether the accommodation response in ADHD children is influenced by changing the stimulus to accommodation in an attempt modify the level of attentional engagement or by medication for the condition.

Methods: We measured the accommodative response and pupil diameter using a binocular, open-field autorefractor in non-medicated and medicated children with ADHD (n = 22, mean age = 10.1 ± 2.4 years; n = 19; mean age = 11.0 ± 3.8 years; respectively) and in an age-matched control group (n = 22; mean age = 10.6 ±1.9 years) while participants were asked to maintain focus on (i) a high-contrast Maltese cross, (ii) a frame of a cartoon movie (picture) and (iii) a cartoon movie chosen by the participant. Each stimulus was viewed for 180-ás from a distance of 25-ácm, and the order of presentation was randomised.

Results: Greater lags of accommodation were present in the non-medicated ADHD in comparison to controls ($p = 0.023$, lags of 1.10 ± 0.56 D and 0.72 ± 0.57 D, respectively). No statistically significant difference in the mean accommodative lag was observed between medicated ADHD children (lag of 1.00 ± 0.44D) and controls ($p = 0.104$) or between medicated and non-medicated children with ADHD ($p = 0.504$). The visual stimulus did not influence the lag of accommodation ($p = 0.491$), and there were no significant group-by-stimulus interactions ($p = 0.935$). The variability of accommodation differed depending on the visual stimulus, with higher variability for the picture condition compared to the cartoon-movie ($p < 0.001$) and the Maltese cross ($p = 0.006$). In addition, the variability yielded statistically significant difference for the main effect of time-on-task ($p = 0.027$), exhibiting a higher variability over time. However, no group differences in accommodation variability were observed ($p = 0.935$).

Conclusions: Children with ADHD have a reduced accommodative response, which is not influenced by the stimulus to accommodation. There is no marked effect of medication for ADHD on accommodation accuracy

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Handb Clin Neurol. 2019;166:297-314.

CINGULATE IMPAIRMENTS IN ADHD: COMORBIDITIES, CONNECTIONS, AND TREATMENT.

Vogt BA.

The entire cingulate cortex is engaged in the structure/function abnormalities found in attention-deficit/hyperactivity disorder (ADHD). In ADHD, which is the most common developmental disease, impaired impulse control and cognition often trace to anterior midcingulate cortex (aMCC) in Go/No-go tests, decoding and reading, the Stroop Color and Word Test, and the Wisconsin Card Sorting Test (WCST), with volume deficits in anterior cingulate cortex (ACC) and posterior midcingulate cortex (pMCC). Volumes in pMCC correlate positively with the WCST and negatively with total and nonperseverative errors on the WCST. Activation and connectivity on N-back tests show connections for high and low spatial working memory, but patients have increased activation in PCC and decreased connectivity between MCC and PCC for high load. Students struggle in class due to malfunctioning aMCC, pregenual anterior cingulate cortex (pACC), and dorsal posterior cingulate cortex (dPCC), and to core deficits in response/task switching in aMCC. Gene mutations are found in the DA transporter and DA4 and DA5 receptors. Methylphenidate decreases hyperactivity in aMCC. The DA system is controlled by cholinergic receptors in the daMCC and genetics show nAChR mutations in alpha 3, 4, and 7 receptors. At 25 years, a modified Eriksen flanker/No-go task and voxel-based morphometry (VBM) show prenatal smoking, lifetime smoking at 13 years, and novelty seeking. Prenatal exposure to nicotine exhibits weaker responses in aMCC during cognitive tasks for hyperactivity/impulsiveness but not inattention. AZD1446 (a4beta2 nAChR agonist) improves the Groton Maze task due to high nAChR in dPCC/RSC engaged in spatial orientation. Environmental factors associated with childhood ADHD relate to pesticides, organochlorine, and air pollutants. Network connection segregation shows increased amygdala local nodal, but decreased ACC and PCC connections, reflecting emphasis on local periamygdala connections at the expense of cortical connections. Thus, ADHD children/adolescents respond impulsively to the significance of stimuli without having cortical inhibition. Finally, controls show negative relationships between aMCC and the default mode network, and ADHD compromises this relationship, showing decreased connectivity between ACC and precuneus/PCC

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Indian Journal of Public Health Research and Development. 2020;11:1745-49.

IS THERE AN EFFECT OF SEROTONIN ON ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Setiawati Y, Mukono HJ, Wahyuhadi J, et al.

Background: Attention deficit hyperactivity disorder (ADHD) is a neurobiological disorder with a prevalence of 5%-10% in the world that negatively impacts school behavior and achievement. There have been many studies reveals that attention disorders are caused by the decreased levels of dopamine and norepinephrine neurotransmitter. However, particular concern nowadays are the emotional and behavioral problems. The emotional and behavioral problem is suspected to be caused by the decrease in serotonin level. The aim of this study was to determine the difference in serotonin level between ADHD and non-ADHD children.

Method: This study was an observational case-control study design using random sampling method. Subject of this study was children in Bina Karya Elementary School Surabaya. ADHD severity was assessed using Conners Abreviated Rating Scale. Examination of serotonin levels in blood was done by ELISA method. Informed consent was signed by parents before the study. Data was analyzed using independent T-test.

Results: 44 (23 ADHD and 21 non-ADHD) children from grade 1 to 6 was included in the study. Based on the gender, 13 children were girls and 31 children were boys. Serotonin level in ADHD children was significantly higher than non-ADHD children (2.148 ± 0.94 vs 2.006 -¦ 0.115 ++mol/L; p = 0.0001).

Conclusion: Serotonin level in ADHD children was significantly higher than non-ADHD children

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Int J Environ Res Public Health. 2019 Dec;17.

PARTICULATE MATTER EXPOSURE AND ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN CHILDREN: A SYSTEMATIC REVIEW OF EPIDEMIOLOGICAL STUDIES.

Donzelli G, Llopis-Gonzalez A, Llopis-Morales A, et al.

Attention-deficit/hyperactivity disorder (ADHD) is the most common cognitive and behavioural disorder affecting children, with a worldwide-pooled prevalence of around 5%. Exposure to particulate matter (PM) air pollution is suspected to be associated with autism spectrum disorders and recent studies have investigated the relationship between PM exposure and ADHD. In the absence of any synthesis of the relevant literature on this topic, this systematic review of epidemiological studies aimed to investigate the relationship between the exposure of children to PM and ADHD and identify gaps in our current knowledge. In December 2018, we searched the PubMed and EMBASE databases. We only included epidemiological studies carried out on children without any age limit, measuring PM exposure and health outcomes related to ADHD. We assessed the quality of the articles and the risk of bias for each included article using the Newcastle-Ottawa Scale and the Office of Health Assessment and Translation (OHAT) approach, respectively. The keyword search yielded 774 results. Twelve studies with a total number of 181,144 children met our inclusion criteria, of which 10 were prospective cohort studies and 2 were cross-sectional studies. We subsequently classified the selected articles as high or good quality studies. A total of 9 out of the 12 studies reported a positive association between PM exposure to outdoor air pollution and behavioral problems related to attention. Despite these results, we found a significant degree of heterogeneity among the study designs. Furthermore, 11 studies were judged to be at a probably high risk of bias in the exposure assessment. In conclusion, we opine that further high quality studies are still needed in order to clarify the association between PM exposure and ADHD diagnosis

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Int J Hyg Environ Health. 2020 Jan;223:80-92.

PRENATAL EXPOSURE TO PERFLUOROALKYL SUBSTANCES AND ASSOCIATIONS WITH SYMPTOMS OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND COGNITIVE FUNCTIONS IN PRESCHOOL CHILDREN.

Skogheim TS, Villanger GD, Weyde KVF, et al.

BACKGROUND: Perfluoroalkyl substances (PFASs) are persistent organic pollutants that are suspected to be neurodevelopmental toxicants, but epidemiological evidence on neurodevelopmental effects of PFAS exposure is inconsistent. We investigated the associations between prenatal exposure to PFASs and symptoms of attention-deficit/hyperactivity disorder (ADHD) and cognitive functioning (language skills, estimated IQ and working memory) in preschool children, as well as effect modification by child sex.

MATERIAL AND METHODS: This study included 944 mother-child pairs enrolled in a longitudinal prospective study of ADHD symptoms (the ADHD Study), with participants recruited from The Norwegian Mother, Father and Child Cohort Study (MoBa). Boys and girls aged three and a half years, participated in extensive clinical assessments using well-validated tools; The Preschool Age Psychiatric Assessment interview, Child Development Inventory and Stanford-Binet (5th revision). Prenatal levels of 19 PFASs were measured in maternal blood at week 17 of gestation. Multivariable adjusted regression models were used to examine exposure-outcome associations with two principal components extracted from the seven detected PFASs. Based on these results, we performed regression analyses of individual PFASs categorized into quintiles.

RESULTS: PFAS component 1 was mainly explained by perfluoroheptane sulfonate (PFHpS), perfluorooctane sulfonate (PFOS), perfluorohexane sulfonate (PFHxS) and perfluorooctanoic acid (PFOA). PFAS component 2 was mainly explained by perfluorodecanoic acid (PFDA), perfluoroundecanoic acid (PFUnDA) and perfluorononanoic acid (PFNA). Regression models showed a negative association between PFAS component 1 and nonverbal working memory [beta=-0.08 (CI: -0.12, -0.03)] and a positive association between PFAS component 2 and verbal working memory [beta=0.07 (CI: 0.01, 0.12)]. There were no associations with ADHD symptoms, language skills or IQ. For verbal working memory and PFAS component 2, we found evidence for effect modification by child sex, with associations only for boys. The results of quintile models with individual PFASs, showed the same pattern for working memory as the results in the component regression analyses. There were negative associations between nonverbal working memory and quintiles of PFOA, PFNA, PFHxS, PFHpS and PFOS and positive associations between verbal working

memory and quintiles of PFOA, PFNA, PFDA and PFUnDA, with significant relationships mainly in the highest concentration groups.
CONCLUSIONS: Based on our results, we did not find consistent evidence to conclude that prenatal exposure to PFASs are associated with ADHD symptoms or cognitive dysfunctions in preschool children aged three and a half years, which is in line with the majority of studies in this area. Our results showed some associations between PFASs and working memory, particularly negative relationships with nonverbal working memory, but also positive relationships with verbal working memory. The relationships were weak, as well as both positive and negative, which suggest no clear association - and need for replication

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Int J Mol Sci. 2019 Nov;20.
ENDOGENOUS RETROVIRUSES ACTIVITY AS A MOLECULAR SIGNATURE OF NEURODEVELOPMENTAL DISORDERS.
Balestrieri E, Matteucci C, Cipriani C, et al.
Human endogenous retroviruses (HERVs) are genetic elements resulting from relics of ancestral infection of germline cells, now recognized as cofactors in the etiology of several complex diseases. Here we present a review of findings supporting the role of the abnormal HERVs activity in neurodevelopmental disorders. The derailment of brain development underlies numerous neuropsychiatric conditions, likely starting during prenatal life and carrying on during subsequent maturation of the brain. Autism spectrum disorders, attention deficit hyperactivity disorders, and schizophrenia are neurodevelopmental disorders that arise clinically during early childhood or adolescence, currently attributed to the interplay among genetic vulnerability, environmental risk factors, and maternal immune activation. The role of HERVs in human embryogenesis, their intrinsic responsiveness to external stimuli, and the interaction with the immune system support the involvement of HERVs in the derailed neurodevelopmental process. Although definitive proofs that HERVs are involved in neurobehavioral alterations are still lacking, both preclinical models and human studies indicate that the abnormal expression of ERVs could represent a neurodevelopmental disorders-associated biological trait in affected individuals and their parents

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Int J Neuropsychopharmacol. 2019 Aug;22:531-40.
MAINTENANCE PHARMACOLOGICAL TREATMENT OF JUVENILE BIPOLAR DISORDER: REVIEW AND META-ANALYSES.
Yee CS, Hawken ER, Baldessarini RJ, et al.
BACKGROUND: Guidelines for maintenance treatment of juvenile bipolar disorder rely heavily on evidence from adult studies and relatively brief trials in juveniles, leaving uncertainties about optimal long-term treatment. We aimed to systematically review long-term treatment trials for juvenile bipolar disorder.
METHODS: We analyzed data recovered by a systematic literature search using the PRISMA guidelines statement, through 2018, for peer-reviewed reports on pharmacological treatments for juvenile bipolar disorder lasting >/=24 weeks.
RESULTS: Of 13 reports with 16 trials of 9 treatments (18.8% were randomized and controlled), with 1773 subjects (94.4% BD-I; ages 6.9-15.1 years), lasting 11.7 (6-22) months. Pooled clinical response rates were 66.8% (CI: 64.4-69.1) with drugs vs 60.6% (53.0-66.7) in 3 placebo-control arms. Random-effects meta-analysis of 4 controlled trials yielded pooled odds ratio (OR) = 2.88 ([0.87-9.60], P = .08) for clinical response, and OR = 7.14 ([1.12-45.6], P = .04) for nonrecurrence. Apparent efficacy ranked: combined agents >anticonvulsants >/=lithium >/=antipsychotics. Factors favoring response ranked: more attention deficit/hyperactivity disorder, polytherapy, randomized controlled trial design, nonrecurrence vs response. Adverse events (incidence, 5.50%-28.5%) notably included cognitive dulling, weight-gain, and gastrointestinal symptoms; early dropout rates averaged 49.8%.
CONCLUSIONS: Pharmacological treatments, including anticonvulsants, lithium, and second-generation antipsychotics, may reduce long-term morbidity in juvenile bipolar disorder. However, study number, quality,

and effect magnitude were limited, leaving the status of scientific support for maintenance treatment for juvenile bipolar disorder inconclusive

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Interdisciplinary Toxicology. 2019;12:1-6.

THE PATHWAY OF LEAD THROUGH THE MOTHER'S BODY TO THE CHILD.

Risova V.

Placenta, the organ on which great attention is concentrated during pregnancy, represents an ineffective barrier to the transfer of hazardous heavy metals, mainly lead, into the foetus. The presence of lead in the placenta is an environmental hazard for a person's future. Due to hormonal changes, lead is released during pregnancy into the bloodstream of the mother from deposits in the bones and in the teeth, where it has accumulated for years as a result of a contaminated environment. Since lead is a neurotoxic metal, exposure to lead during prenatal and postnatal development can cause serious neurocognitive damage and hence the development of an Attention Deficit Hyperactivity Disorder (ADHD) in a developing human. Our work provides an overall picture of the "toxic pathway" of lead through the mother's body, the risks arising from its transplacental transfer and its accumulation in the developing foetus as well as effective prevention to protect all newborns

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Int J Dev Neurosci. 2020.

AMPLITUDE OF LOW-FREQUENCY FLUCTUATION OF RESTING-STATE FMRI IN PRIMARY NOCTURNAL ENURESIS AND ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Jiang K, Wang J, Zheng A, et al.

Children with attention deficit hyperactivity disorder (ADHD) and nocturnal enuresis (NE) have similar symptoms, for example, inattention and dysfunction of working memory. We investigate disorder-specific abnormal activity by using the simple resting-state functional magnetic resonance imaging (RS-fMRI) metric amplitude of low-frequency fluctuation (ALFF). About 18 ADHD, NE, and typically developing children were examined by RS-fMRI and the child behavior checklist (CBCL) test. One-way ANOVA were used to compare the ALFF values of the three groups and post hoc was done. We conducted Pearson correlation analysis on the results of the three groups' scales with ALFF values at the discrepant brain areas after then. Significant group effect was found in the bilateral medial prefrontal cortex (MPFC), left inferior temporal gyrus (ITG), left middle temporal gyrus (MTG), cerebellum anterior lobe (CAL), and left inferior parietal lobule (IPL). There was no shared abnormal region for ADHD and NE. Specially, ADHD showed increased ALFF in the bilateral MPFC, left ITG, and CAL and showed decreased ALFF in the left MTG. The children with NE showed increased ALFF in the left IPL. This study reveals the brain mechanism of cognitive changes on ADHD and NE, which provides neuroimaging basis for behavioral differences among different diseases

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International Journal of Environmental Health Research. 2020.

ASSOCIATION BETWEEN EXPOSURE TO AIR POLLUTANTS AND ATTENTION-DEFICIT HYPERACTIVITY DISORDER (ADHD) IN CHILDREN: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Zhang M, Wang C, Zhang X, et al.

Recent studies have reached mixed conclusions regarding the association between exposure to air pollutants and attention-deficit hyperactivity disorder (ADHD). We performed systematic review and meta-analysis to determine whether air pollutants were risk factors for the development of ADHD in children. We systematically searched databases for all relevant studies up to 2 July 2019. Together, the studies indicated that exposure to PAHs (risk ratio (RR): 0.98, 95% confidence interval (CI): 0.82-1.17), NOx (RR: 1.04, 95% CI: 0.94-1.15), and PM (RR: 1.11, 95% CI: 0.93ΓÇô1.33) did not have any material relationship with an increased risk of ADHD. Heterogeneity of study data was low (I2: 2.7%, P =-á0.409) for studies examining PAHs, but was substantial for NOx and PM (I2: 68.4%, P =-.007 and I2: 60.1%, P =0.014, respectively).

However, these results should be interpreted with caution since the number of epidemiological studies investigating this issue were limited

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Int J Environ Res Public Health. 2020;17.

RELATIONSHIP BETWEEN HEALTH-RELATED QUALITY OF LIFE AND PHYSICAL ACTIVITY IN CHILDREN WITH HYPERACTIVITY.

Gallego-Mandez J, Perez-Gomez J, Calzada-Rodriguez JI, et al.

The main purpose of this paper was to evaluate the relationship between health-related quality of life (HRQoL) and the frequency of physical activity in Spanish children aged 8 to 14 years with attention deficit hyperactivity disorder (ADHD). Sample selection was performed using the data obtained from the children's questionnaire of the National Health Survey of Spain 2017 that is carried out with the children's parents, and that had an initial size of 6106 participants. After the application of the inclusion and exclusion criteria, the sample size was reduced to 496 subjects. Results show significant differences between the different levels of physical activity frequency, as well as a positive correlation of the average between HRQoL and ADHD. In conclusion, the practice of physical activity may contribute to the improvement of HRQoL in children with ADHD, possibly achieving greater benefits at higher levels of physical activity practice

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International Journal of Language & Communication Disorders. 2020 Mar;55:231-42.

THE ROLE OF LINGUISTIC AND COGNITIVE FACTORS IN EMOTION RECOGNITION DIFFICULTIES IN CHILDREN WITH ASD, ADHD OR DLD.

Ohtonen P, et al.

Background Many children with neurodevelopmental disorders such as autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD) or developmental language disorder (DLD) have difficulty recognizing and understanding emotions. However, the reasons for these difficulties are currently not well understood.

Aims To compare the emotion recognition skills of children with neurodevelopmental disorders as well as those children's skills with the skills of their typically developing (TD) age peers. Also, to identify the role of underlying factors in predicting emotion recognition skills.

Methods & Procedures The 6-10 year old children (n = 50) who participated in the study had either ASD, ADHD or DLD and difficulties recognizing emotions from face and/or in voice. TD age peers (n = 106) served as controls. Children's skills were tested using six forced choice tasks with emotional nonsense words, meaningful emotional sentences, the FEFA 2 test, photographs, video clips and a task in which facial expressions and tones of voice had to be matched. Expressive vocabulary, rapid serial naming, auditory and visual working memory and Theory of Mind skills were explored as possible explanatory factors of the emotion recognition difficulties of the diagnosed children.

Outcomes & Results Children with ASD, ADHD or DLD did not significantly differ from each other in their linguistic or cognitive skills. Moreover, there were only minor differences between children with these diagnoses in recognizing facial expressions and emotional tone of voice and matching the two. The only significant difference was that children with ADHD recognized facial expressions in photographs better than children with DLD. The participants with diagnoses scored significantly lower than the controls in all but one emotion recognition tasks presented. According to the linear regression analysis, first order Theory of Mind skills predicted the delay relative to typical development in the recognition of facial expressions in the FEFA 2 test, and expressive vocabulary and working memory skills together predicted the delay in the recognition of emotions in the matching task.

Conclusions & Implications Children with ASD, ADHD or DLD showed very similar emotion recognition skills and were also found to be significantly delayed in their development of these skills. Some predictive factors related to linguistic and cognitive skills were found for these difficulties. Information about impaired

emotion recognition and underlying linguistic and cognitive skills helps to select intervention procedures. Without this information, therapy might unnecessarily focus on only symptoms

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Ir Med J. 2019 Sep;112:989.
PC/DC: POLICE CONTACT WITH DISTRESSED CHILDREN.
McNicholas F, Rooney L, Holme I.

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Iran J Med Sci. 2020;45:100-09.
WORKING MEMORY DEFICITS AND ITS RELATIONSHIP TO AUTISM SPECTRUM DISORDERS.
Rabiee A, Vasaghi-Gharamaleki B, Samadi SA, et al.
Background: There is a wealth of research done in developed countries on the investigation of the working memory (WM) performance in people with high-functioning Autism Spectrum Disorders (ASD) (IQ>70), with different reported findings. There is a dearth of similar studies in developing countries. In addition, the findings suggest that WM is possibly influenced by culture. The present study investigated WM performance and its relationship with the symptoms of ASD and Attention Deficit Hyperactivity Disorder (ADHD).
Methods: The present study is a cross-sectional comparative study between two groups of participants with high-functioning ASD, aged 8-16 years (n=30) and typically developing (n=30). This study was conducted in 2016-2017 in Tehran (Iran). The Multivariate Analyses of Variance (MANOVA) was used to compare the between-group differences on WM tasks. In addition, Pearson's correlation coefficient was used to examine the relationship between the ASD and ADHD symptoms with WM performance. The data were statistically analyzed using the Statistical Package for the Social Sciences (SPSS), version 16.
Results: It was found that in general, WM was impaired in the people with ASD. Unexpectedly, in the present study, two subscales of Social interaction and Stereotyped Behaviors of the Gilliam Autism Rating Scale-Second Edition showed a significant positive correlation respectively with a score of two WM tasks, i.e. Visual Digit Span and Digit Span Forward.
Conclusion: These results showed that WM was impaired in individuals with ASD and that could have implications for intervention, but it is necessary that therapists be careful in choosing the appropriate tasks for intervention

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J Altern Complement Med. 2020 Mar;26:239-46.
SELF-MANAGEMENT INTERVENTION FOR ATTENTION AND EXECUTIVE FUNCTIONS USING EQUINE-ASSISTED OCCUPATIONAL THERAPY AMONG CHILDREN AGED 6-14 DIAGNOSED WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER.
Gilboa Y, Helmer A.
Background: Attention deficit/hyperactivity disorder (ADHD), characterized by inattention, hyperactivity, and impulsivity, is currently one of the most common diagnoses given to children. Children with ADHD have a unique cognitive profile that involves difficulties in executive functions (EFs) and in the self-management system of the brain, and are at higher risk for educational failure, social and emotional difficulties, and high risk behavior.
Objectives: The purpose of this study was to examine the effectiveness of self-management intervention for attention and executive functions using equine-assisted occupational therapy (STABLE-OT) for school-aged children with ADHD.
Design: A pre-post design was used in the intervention. Setting/location: The study was conducted at two riding school stables is Israel. Subjects: Twenty-five 6-14-year-old children (3 girls, 22 boys, age: 7.8-12.3 years, M = 9.41 +/- 1.75) diagnosed with ADHD participated in a therapeutic equestrian riding intervention.
Intervention: The intervention included structured 45-min sessions for 12 weeks, while integrating child- and family-centered strategy acquisition and immediate feedback principles.

Outcome measures: Their EF and occupational performance were evaluated pre- and post-intervention, using The Behavior Rating Inventory of Executive Function (BRIEF) and the Canadian Occupational Performance Measure (COPM).
Results: Results showed a significant improvement in EF, as reflected by statistically significant decreases in the Global Executive Composite (GEC; t = 2.801; p = 0.01), metacognitive index (t = 3.873; p = 0.001), working memory (t = 2.476; p = 0.021), monitor (t = 2.359; p = 0.027), and initiation (t = 3.204; p = 0.004) subscales of the BRIEF questionnaire. A statistically (p < 0.001) and clinically significant improvement was also found in the COPM performance and satisfaction scales.
Conclusions: This study provides key preliminary evidence supporting the effectiveness of an individual equine-assisted OT intervention for children with ADHD. It constitutes an initial step toward clinical implementation of such therapeutic approaches, and is expected to spark further research in this area

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J Am Acad Child Adolesc Psychiatry. 2019 Apr;58:398-400.
EDITORIAL: TIME TO WAKE UP: APPRECIATING THE ROLE OF SLEEP IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.
Arns M, Vollebregt MA.
We spend approximately a third of our lives sleeping, and many DSM-IV and DSM-5 disorders have sleep problems listed as diagnostic features and are often considered "comorbidities." However, very little is known about the role sleep problems play in the etiology of psychiatric disorders such as attention-deficit/hyperactivity disorder (ADHD)

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J Atten Disord. 2019 Jan;23:140-48.
PSYCHOTROPIC TREATMENT PATTERN IN MEDICAID PEDIATRIC PATIENTS WITH CONCOMITANT ADHD AND ODD/CD.
Liu X, Shah V, Kubilis P, et al.
OBJECTIVE: To describe psychotropic treatment pattern and evaluate the association of socio-demographic factors and psychotropic combination therapy in children with ADHD and oppositional defiant disorder/conduct disorder (ODD/CD).
METHOD: This is a cross-sectional drug utilization study based on Medicaid fee-for-service programs in 26 U.S. states (1999-2006). Children aged 4 to 18 with concomitant ADHD and ODD/CD were included. We calculated the prevalence of psychotropic drugs and used logistic regression to evaluate the role of socio-demographic factors in psychotropic combination therapy.
RESULTS: We identified 121,740 children with ADHD and ODD/CD (140,777 person-years). The period prevalence of "no psychotropic therapy," psychotropic monotherapy, and psychotropic dual therapy was 38.1%, 44.7%, and 9.0%, respectively. The most common drug class was stimulants. Whites, males, and children in foster care were more likely to use psychotropic combination therapy. State-level variation was observed.
CONCLUSION: "No psychotropic therapy" and stimulants dominate treatment choices in children with ADHD and ODD/CD. Socio-demographic characteristics are associated with combination psychotropic therapy

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J Atten Disord. 2019 Jan;23:121-34.
THE EFFECT OF CITICOLINE SUPPLEMENTATION ON MOTOR SPEED AND ATTENTION IN ADOLESCENT MALES.
McGlade E, Agoston AM, DiMuzio J, et al.
OBJECTIVE: This study assessed the effects of citicoline, a nutraceutical, on attention, psychomotor function, and impulsivity in healthy adolescent males.
METHOD: Seventy-five healthy adolescent males were randomly assigned to either the citicoline group (n = 51 with 250 or 500 mg citicoline) or placebo (n = 24). Participants completed the Ruff 2&7 Selective

Attention Test, Finger Tap Test, and the Computerized Performance Test, Second Edition (CPT-II) at baseline and after 28 days of supplementation.
RESULTS: Individuals receiving citicoline exhibited improved attention (p = 0.02) and increased psychomotor speed (p = 0.03) compared with those receiving placebo. Higher weight-adjusted dose significantly predicted increased accuracy on an attention task (p = 0.01), improved signal detectability on a computerized attention task (p = 0.03), and decreased impulsivity (p = 0.01).
DISCUSSION: Adolescent males receiving 28 days of Cognizin(R) citicoline showed improved attention and psychomotor speed and reduced impulsivity compared to adolescent males who received placebo

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J Atten Disord. 2019 Jan;23:135-39.
HIGH FAMILIAL CORRELATION IN METHYLPHENIDATE RESPONSE AND SIDE EFFECT PROFILE .
Gazer-Snitovsky M, Brand-Gothelf A, Dubnov-Raz G, et al.
OBJECTIVE: To examine whether a familial tendency exists in clinical response to methylphenidate.
METHOD: Nineteen pairs of siblings or parent-child stimulant-naive individuals with ADHD were prescribed methylphenidate-immediate release, and were comprehensively evaluated at baseline, Week 2, and Week 4, using the ADHD Rating Scale IV, Clinical Global Impression Scale, and the Barkley Side Effects Rating Scale.
RESULTS: We found significant intraclass correlations in family member response to methylphenidate-immediate release and side effect profile, including emotional symptoms and loss of appetite and weight.
CONCLUSION: Family history of response to methylphenidate should be taken into account when treating ADHD

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J Atten Disord. 2019 Jan;23:173-80.
DIFFERENCES IN PSYCHIATRIC PROBLEMS AND CRIMINALITY BETWEEN INDIVIDUALS TREATED WITH CENTRAL STIMULANTS BEFORE AND AFTER ADULTHOOD.
Rasmussen K, Palmstierna T, Levander S.
OBJECTIVE: The evidence for central stimulant (CS) treatment in ADHD is strong in some respects but not with respect to unselected clinical material and long-term effects over the life course cycle. The objective of this study was to explore differences in vocational, psychiatric, and social impairment, including crime and substance abuse, among adults with ADHD, treated or not, with CS drugs before age 18.
METHOD: A clinical population of men (N = 343) and women (N = 129) seeking CS treatment as adults was assessed within a specific program for such treatment. Clinical information and data collected by structured instruments were available.
RESULTS: Previously CS-treated persons had a lower frequency of problems (alcohol/substance abuse, criminality), and of certain psychiatric disorders (depressive, anxiety and personality ones). Most differences were substantial.
CONCLUSION: The study supports the assumption that CS treatment during childhood/adolescence offers some protection against the development of a range of problems known to characterize adult ADHD patients

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J Atten Disord. 2019 Jan;23:163-72.
CARDIOVASCULAR SAFETY OF CONCOMITANT USE OF ATYPICAL ANTIPSYCHOTICS AND LONG-ACTING STIMULANTS IN CHILDREN AND ADOLESCENTS WITH ADHD.
Bali V, Kamble PS, Aparasu RR.
OBJECTIVE: This study examined cardiovascular safety of concomitant use of long-acting stimulants (LAS) and atypical antipsychotics (AAP) in children and adolescents with Attention Deficit Hyperactivity Disorder (ADHD).

METHOD: The study used 2004-2007 IMS LifeLink claims data involving 6- to 16-year-old children with ADHD and at least one LAS prescription from July 2004 to December 2006. Time-dependent Cox regression analysis was performed to evaluate the risk of cardiovascular disease (CVD) events due to concomitant use of LAS and AAP.
RESULTS: The analytical cohort consisted of 37,903 children: 538 (1.9%) used LAS and AAP concurrently and the rest used LAS monotherapy. Time-dependent Cox regression analysis revealed no difference in CVD risk among concomitant users of LAS and AAP (hazard ratio = 1.19; 95% confidence interval = [0.60, 2.53]) when compared with users of LAS monotherapy.
CONCLUSION: Concomitant use of LAS and AAP was not associated with risk of CVD events in ADHD patients when compared with LAS monotherapy

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J Atten Disord. 2019 Jan;23:181-88.
THE INFLUENCE OF HYPERACTIVITY, IMPULSIVITY, AND ATTENTION PROBLEMS ON SOCIAL FUNCTIONING IN ADOLESCENTS AND YOUNG ADULTS WITH FRAGILE X SYNDROME.
Chromik LC, Quintin EM, Lepage JF, et al.
OBJECTIVE: Individuals with fragile X syndrome (FXS) present primarily with cognitive and social deficits in addition to symptoms of ADHD. The relationship between symptoms of ADHD, cognitive functioning, and social skills has never been explicitly studied.
METHOD: Here, we analyzed both longitudinal (n = 70; Time 1: ages 6-18; Time 2: ages 15-26) and cross-sectional (n = 73; Time 2 only) data using hierarchical linear regression to assess how global intellectual functioning (IQ) and symptoms of ADHD influence social functioning in individuals with FXS.
RESULTS: We found that ADHD symptoms at Times 1 and 2 consistently predict social functioning in both males and females with FXS at Time 2.
CONCLUSION: Our results suggest that addressing ADHD symptoms in childhood may have positive, long-term effects on the social functioning of adolescents and young adults with FXS

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J Child Adolesc Ment Health. 2019 Dec;31:214-23.
PREVALENCE AND PATTERNS OF MENTAL DISORDERS AMONG PRIMARY SCHOOL AGE CHILDREN IN GHANA: CORRELATES WITH ACADEMIC ACHIEVEMENT.
Kusi-Mensah K, Donnir G, Wemakor S, et al.
Background: There is limited data on the prevalence of child and adolescent mental health disorders (CAMHD) in Ghana. Recent reports suggest a decline in academic achievement in basic education. This paper sought to determine the prevalence of CAMHD in Ghanaian primary school children and to draw correlates with academic achievement.
Methods: We conducted a pilot cross-sectional survey of 303 grade 3 pupils aged 7-15 years in the city of Kumasi. The Child Behaviour Checklist (CBCL) and Kiddie-Schedule for Affective Disorders and Schizophrenia (K-SADS-PL) were used to assess for CAMHD in 2016, and data on performance in examinations over the prior academic year were analysed.
Results: Overall, current prevalence of CAMHD was 7.25%, with depressive disorder = 1.31%, anxiety disorders = 1%, attention deficit hyperactivity disorder (ADHD) = 1.64%, conduct disorder = 1.97%, and intellectual disability = 1%. Co-morbid disorders, such as seizure disorder (1%), were also noted. There was a greater prevalence of CAMHD in public schools (11.6%) compared to private schools (0.7%), with $p < 0.001$. Even when adjusted for other factors, children with CAMHD had a lower average academic score by 10.5 units ($p < 0.001$). Thus, having a dual diagnosis was most predictive of academic underachievement.
Conclusions: The results of this study document the prevalence of CAMHD in Ghana for the first time and shows correlates with academic underachievement

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J Child Adolesc Psychiatr Nurs. 2019 Feb;32:6-15.

PERCEPTION ON FAMILY SUPPORT AND PREDICTORS' OF SATISFACTION WITH THE HEALTHCARE SERVICE AMONG FAMILIES OF CHILDREN AND ADOLESCENTS WITH SERIOUS MENTAL ILLNESSES WHO ARE IN ACTIVE PSYCHIATRIC TREATMENT.

Svavarsdottir EK, Gisladottir M, Tryggvadottir GB.

PROBLEM: Little is known about the factors related to satisfaction with healthcare services among families of children with serious mental illness who were in active psychiatry treatment.

METHODS: A cross-sectional study was conducted to explore perceived family support, illness beliefs, and families' satisfaction with healthcare services. Sixty-eight families of children with anxiety, depression, attention-deficit/hyperactivity disorder, eating disorders, and autism/Asperger's syndrome participated. Data were collected from March 2015 to December 2016.

FINDINGS: Illness beliefs and perceived family support explained 23% of the variance in family satisfaction with the healthcare service.

CONCLUSION: Family interventions need to specifically focus on the families' satisfaction with healthcare services and on utilizing the family support network, offering emotional support, and exploring illness beliefs

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J Child Psychol Psychiatry. 2019 Jan;60:16-29.

RESEARCH REVIEW: TEST-RETEST RELIABILITY OF STANDARDIZED DIAGNOSTIC INTERVIEWS TO ASSESS CHILD AND ADOLESCENT PSYCHIATRIC DISORDERS: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Duncan L, Comeau J, Wang L, et al.

BACKGROUND: A better understanding of factors contributing to the observed variability in estimates of test-retest reliability in published studies on standardized diagnostic interviews (SDI) is needed. The objectives of this systematic review and meta-analysis were to estimate the pooled test-retest reliability for parent and youth assessments of seven common disorders, and to examine sources of between-study heterogeneity in reliability.

METHODS: Following a systematic review of the literature, multilevel random effects meta-analyses were used to analyse 202 reliability estimates (Cohen's kappa =) from 31 eligible studies and 5,369 assessments of 3,344 children and youth.

RESULTS: Pooled reliability was moderate at = .58 (CI 95% 0.53-0.63) and between-study heterogeneity was substantial (Q = 2,063 (df = 201), p < .001 and I(2) = 79%). In subgroup analysis, reliability varied across informants for specific types of psychiatric disorder (= .53-.69 for parent vs. = .39-.68 for youth) with estimates significantly higher for parents on attention deficit hyperactivity disorder, oppositional defiant disorder and the broad groupings of externalizing and any disorder. Reliability was also significantly higher in studies with indicators of poor or fair study methodology quality (sample size <50, retest interval <7 days).

CONCLUSIONS: Our findings raise important questions about the meaningfulness of published evidence on the test-retest reliability of SDIs and the usefulness of these tools in both clinical and research contexts. Potential remedies include the introduction of standardized study and reporting requirements for reliability studies, and exploration of other approaches to assessing and classifying child and adolescent psychiatric disorder

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J Clin Child Adolesc Psychol. 2019 Mar;48:316-31.

LATENT CLASS PROFILES OF ANXIETY SYMPTOM TRAJECTORIES FROM PRESCHOOL THROUGH SCHOOL AGE.

Kertz SJ, Sylvester C, Tillman R, et al.

Anxiety typically arises early in childhood and decreases during school age. However, little is known about the earlier developmental course of anxiety in preschool, especially in at risk children, posing a clinically important problem. Given that anxiety in youth has a chronic course for some and also predicts later development of other mental health problems, it is important to identify factors early in development that may predict chronic anxiety symptoms. At-risk children (oversampled for depression) and caregivers completed 6 assessment waves beginning at preschool age (between 3-5.11 years of age) up through 6.5 years later.

Growth mixture models revealed 4 distinct trajectories: 2 stable groups (high and moderate) and 2 decreasing groups (high and low). Important to note, the high stable anxiety group had greater baseline depression and social adversity/risk, higher average maternal depression over time, and poorer average social functioning over time compared to the high decreasing group. The high decreasing group also had greater externalizing/attention deficit hyperactivity disorder scores than the low decreasing group. Children with anxiety in early childhood who also experience high depression, social adversity/risk, maternal depression, and poor social functioning may be at risk for chronic symptoms over time

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J Clin Child Adolesc Psychol. 2019 May;48:423-39.

PSYCHOMETRIC PROPERTIES OF ADHD SYMPTOMS IN TODDLERS.

Brown HR, Harvey EA.

The purpose of this study is to examine the psychometric properties of the 18 Diagnostic and Statistical Manual of Mental Disorders (DSM) symptoms of attention deficit/hyperactivity disorder (ADHD) in 2-year-old children. ADHD is typically diagnosed in elementary school, but research suggests that many children with ADHD first show symptoms during the toddler years. An important first step in identifying toddlers who are at high risk for developing ADHD is to better understand the properties of DSM symptoms of ADHD in young children. Parents of 2-year-old children (N = 434; 240 boys, 194 girls; M = 29.07 months, SD = 3.42) across the United States were recruited online through Amazon's Mechanical Turk to complete surveys about their children's ADHD symptoms and temperament. Confirmatory factor analysis showed that 2- and 3-factor models fit well. All but one verbal hyperactive/impulsive symptom loaded highly on their respective factors. Relations between ADHD symptoms and temperament traits provided some support for convergent and divergent validity of the symptoms. Finally, item response theory analyses showed that items showed moderate to high levels of discrimination between toddlers with high and low levels of ADHD symptoms. Psychometric properties in 2-year-old children were generally comparable to those in older children, with similar factor structure, good reliability and validity, and good though somewhat lower discrimination, particularly for verbal symptoms. The study provides support for conducting prospective studies to determine whether these symptoms have utility for identifying at-risk toddlers

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J Clin Psychiatry. 2020 Apr;81.

EFFICACY AND SAFETY OF GUANFACINE EXTENDED-RELEASE IN THE TREATMENT OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN ADULTS: RESULTS OF A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY.

Iwanami A, Saito K, Fujiwara M, et al.

OBJECTIVE: To assess guanfacine extended-release (GXR) efficacy and safety in adults with attention-deficit/hyperactivity disorder (ADHD).

METHODS: This phase 3, double-blind, placebo-controlled study (conducted between October 2016 and July 2017) included Japanese patients aged >/= 18 years with ADHD (DSM-5). Patients received GXR (n = 101) or placebo (n = 100) titrated from 2 mg/d to 4-6 mg/d (dose-optimization; 5 weeks), followed by 4-6 mg/d (dose-maintenance; 5 weeks), then tapered doses to 2 mg/d (2 weeks). Primary endpoint was change from baseline in total score on the Japanese version of the ADHD-Rating Scale IV with adult prompts (ADHD-RS-IV) at week 10. Other measures were ADHD-RS-IV subscales, Clinical Global Impression-Improvement scale (CGI-I) and Patient Global Impression-Improvement scale (PGI-I) (percentage of patients very much improved/much improved), treatment-emergent adverse event (TEAE) incidences, and TEAEs leading to discontinuation.

RESULTS: Compared with placebo, there was statistically significantly greater improvement in ADHD-RS-IV total score reduction with GXR (least squares mean +/- SE: GXR vs placebo, -11.55 +/- 1.10 vs -7.27 +/- 1.07; P = .0005; effect size 0.52). There were significantly greater improvements in GXR for ADHD-RS-IV inattention (-7.39 +/- 0.79 vs -4.89 +/- 0.76; P = .0032) and hyperactivity-impulsivity (-3.84 +/- 0.54 vs -2.10 +/- 0.52; P = .0021) subscale scores, CGI-I scores (48.1% vs 22.6%; P = .0007), and PGI-I scores (25.3%

vs 11.8%; P = .0283). More patients in the GXR versus the placebo group reported TEAEs (81.2% vs 62.0%) and discontinued due to TEAEs (19.8% vs 3.0%). The main TEAEs in the GXR group were somnolence, thirst, blood pressure decrease, nasopharyngitis, postural dizziness, and constipation; most TEAEs were mild to moderate in severity.
CONCLUSIONS: In Japanese adults with ADHD, GXR improved ADHD symptoms without any major safety concerns

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J Int Neuropsychol Soc. 2018 Jan;24:91-103.
CROSS-DISORDER COGNITIVE IMPAIRMENTS IN YOUTH REFERRED FOR NEUROPSYCHIATRIC EVALUATION.
Doyle AE, Vuijk PJ, Doty ND, et al.
OBJECTIVES: Studies suggest that impairments in some of the same domains of cognition occur in different neuropsychiatric conditions, including those known to share genetic liability. Yet, direct, multi-disorder cognitive comparisons are limited, and it remains unclear whether overlapping deficits are due to comorbidity. We aimed to extend the literature by examining cognition across different neuropsychiatric conditions and addressing comorbidity.
METHODS: Subjects were 486 youth consecutively referred for neuropsychiatric evaluation and enrolled in the Longitudinal Study of Genetic Influences on Cognition. First, we assessed general ability, reaction time variability (RTV), and aspects of executive functions (EFs) in youth with non-comorbid forms of attention-deficit/hyperactivity disorder (ADHD), mood disorders and autism spectrum disorder (ASD), as well as in youth with psychosis. Second, we determined the impact of comorbid ADHD on cognition in youth with ASD and mood disorders.
RESULTS: For EFs (working memory, inhibition, and shifting/ flexibility), we observed weaknesses in all diagnostic groups when participants' own ability was the referent. Decrements were subtle in relation to published normative data. For RTV, weaknesses emerged in youth with ADHD and mood disorders, but trend-level results could not rule out decrements in other conditions. Comorbidity with ADHD did not impact the pattern of weaknesses for youth with ASD or mood disorders but increased the magnitude of the decrement in those with mood disorders.
CONCLUSIONS: Youth with ADHD, mood disorders, ASD, and psychosis show EF weaknesses that are not due to comorbidity. Whether such cognitive difficulties reflect genetic liability shared among these conditions requires further study

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J Int Neuropsychol Soc. 2018 Jan;24:1-10.
SOCIOECONOMIC STATUS AND RACE OUTPERFORM CONCUSSION HISTORY AND SPORT PARTICIPATION IN PREDICTING COLLEGIATE ATHLETE BASELINE NEUROCOGNITIVE SCORES.
Houck Z, Asken B, Clugston J, et al.
OBJECTIVES: The purpose of this study was to assess the contribution of socioeconomic status (SES) and other multivariate predictors to baseline neurocognitive functioning in collegiate athletes.
METHODS: Data were obtained from the Concussion Assessment, Research and Education (CARE) Consortium. Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT) baseline assessments for 403 University of Florida student-athletes (202 males; age range: 18-23) from the 2014-2015 and 2015-2016 seasons were analyzed. ImPACT composite scores were consolidated into one memory and one speed composite score. Hierarchical linear regressions were used for analyses.
RESULTS: In the overall sample, history of learning disability (beta=-0.164; p=.001) and attention deficit-hyperactivity disorder (beta=-0.102; p=.038) significantly predicted worse memory and speed performance, respectively. Older age predicted better speed performance (beta=.176; p<.001). Black/African American race predicted worse memory (beta=-0.113; p=.026) and speed performance (beta=-.242; p<.001). In football players, higher maternal SES predicted better memory performance (beta=0.308; p=.007); older age predicted better speed performance (beta=0.346; p=.001); while Black/African American race predicted worse speed performance (beta=-0.397; p<.001).

CONCLUSIONS: Baseline memory and speed scores are significantly influenced by history of neurodevelopmental disorder, age, and race. In football players, specifically, maternal SES independently predicted baseline memory scores, but concussion history and years exposed to sport were not predictive. SES, race, and medical history beyond exposure to brain injury or subclinical brain trauma are important factors when interpreting variability in cognitive scores among collegiate athletes. Additionally, sport-specific differences in the proportional representation of various demographic variables (e.g., SES and race) may also be an important consideration within the broader biopsychosocial attributional model. (JINS, 2018, 24, 1-10)

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J Learn Disabil. 2019 Jan;52:15-30.

A Cognitive Dimensional Approach to Understanding Shared and Unique Contributions to Reading, Math, and Attention Skills.

Child AE, Cirino PT, Fletcher JM, et al.

Disorders of reading, math, and attention frequently co-occur in children. However, it is not yet clear which cognitive factors contribute to comorbidities among multiple disorders and which uniquely relate to one, especially because they have rarely been studied as a triad. Thus, the present study considers how reading, math, and attention relate to phonological awareness, numerosity, working memory, and processing speed, all implicated as either unique or shared correlates of these disorders. In response to findings that the attributes of all three disorders exist on a continuum rather than representing qualitatively different groups, this study employed a dimensional approach. Furthermore, we used both timed and untimed academic variables in addition to attention and activity level variables. The results supported the role of working memory and phonological awareness in the overlap among reading, math, and attention, with a limited role of processing speed. Numerosity was related to the comorbidity between math and attention. The results from timed variables and activity level were similar to those from untimed and attention variables, although activity level was less strongly related to cognitive and academic/attention variables. These findings have implications for understanding cognitive deficits that contribute to comorbid reading disability, math disability, and/or attention-deficit/hyperactivity disorder

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J Manag Care Spec Pharm. 2019 Dec;25:1340-48.

Characterization of Chronic Multiclass Psychotropic Polypharmacy and Psychotherapy in Foster Care Youth in a State Medicaid Population.

Keast SL, Tidmore LM, Shropshire D, et al.

BACKGROUND: Foster youth have higher rates of psychotropic medication use and concurrent multiclass psychotropic polypharmacy compared with nonfoster youth. However, less is known about the extent of multiclass psychotropic polypharmacy after adjusting for patient factors associated with psychotropic medication use

OBJECTIVES: To (a) compare psychotropic medication use and psychotherapy use by youth in foster care to those not in foster care in the Oklahoma Medicaid population across various sociodemographic and clinical factors, and (b) determine if patient-related characteristics are associated with high levels of concurrent multiclass psychotropic polypharmacy.

METHODS: This cross-sectional, retrospective analysis was conducted using paid prescription, outpatient, and inpatient Oklahoma Medicaid administrative claims from calendar year 2016. Foster youth and adolescents aged 20 years or younger were identified (n = 9,325) and compared with the general Oklahoma Medicaid population of the same age (n = 639,868). Descriptive statistics highlight baseline demographic and clinical differences between the 2 groups. Multivariable logistic regression was used to determine if covariates were associated with concurrent multiclass psychotropic polypharmacy. A subgroup analysis of foster youth taking at least 1 psychotropic medication was also performed to determine factors associated with the highest level of concurrent multiclass psychotropic polypharmacy.

RESULTS: Foster care was associated with higher odds of concurrent multiclass psychotropic polypharmacy regardless of presence of psychotherapy. Among the subgroup of foster youth taking at least 1 psychotropic medication, attention deficit hyperactivity disorder medications were the most commonly prescribed medication class, followed by antidepressants and anxiolytics when use was not chronic. However, at the highest level of chronic multiclass psychotropic polypharmacy (4-5 chronic concurrent medications), antipsychotics rose to the top, and anxiolytics were the least likely to be prescribed. Overall, the foster care population had the highest proportion of individuals with concurrent multiclass psychotropic polypharmacy (9.2% vs. 1.9%, P < 0.0001). The highest level of chronic multiclass psychotropic polypharmacy was more likely to occur in males (OR = 1.66, 95% CI = 1.40-1.96) and patients living in group homes (OR = 4.13, 95% CI = 2.02-8.44) or foster homes (OR = 1.66, 95% CI = 1.25-2.19). Being overweight or obese was associated with an 83% higher odds of being at the highest level of concurrent multiclass psychotropic polypharmacy (95% CI = 1.27-2.64).
CONCLUSIONS: Despite higher psychotherapy use, high rates of psychotropic medication use and concurrent multiclass psychotropic polypharmacy in foster youth remain a concern for policymakers. Patterns observed at different levels of concurrent multiclass psychotropic polypharmacy may be key to identifying youth who require additional monitoring. Future research exploring factors associated with higher levels of psychotropic concurrent multiclass psychotropic polypharmacy in foster youth can lead to actionable interventions and important policy changes.
DISCLOSURES: This project was funded through the CHIP Health Services Initiative. Keast, Tidmore, and Lambert report contractual employment for the Oklahoma Health Care Authority. Nesser is an employee of the Oklahoma Health Care Authority, and Shropshire is an employee of the Oklahoma Department of Human Services. Keast discloses unrelated research grant funding from AbbVie, Amgen, Otsuka, and Purdue Pharma. Tidmore discloses unrelated research grant funding from Amgen and Otsuka. The remaining authors have no relevant disclosures or conflicts of interest to declare. Posters based on this study were presented at AMCP Nexus 2017; October 16-19, 2017; Grapevine, TX, and at the AMCP Annual Meeting 2018; April 23-26, 2018; Boston, MA

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J Pediatr Psychol. 2019 Jun;44:527-29.
JPP STUDENT JOURNAL CLUB COMMENTARY: TECHNOLOGY USE AND SLEEP IN ADOLESCENTS WITH AND WITHOUT ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.
Micsinszki SK, Stremler R.

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J Transl Med. 2019 Mar;17:77.
PEDIATRIC SLEEP DISTURBANCES AND TREATMENT WITH MELATONIN.
Esposito S, Laino D, D'Alonzo R, et al.
BACKGROUND: There are no guidelines concerning the best approach to improving sleep, but it has been shown that it can benefit the affected children and their entire families. The aim of this review is to analyse the efficacy and safety of melatonin in treating pediatric insomnia and sleep disturbances.
MAIN BODY: Sleep disturbances are highly prevalent in children and, without appropriate treatment, can become chronic and last for many years; however, distinguishing sleep disturbances from normal age-related changes can be a challenge for physicians and may delay treatment. Some published studies have shown that melatonin can be safe and effective not only in the case of primary sleep disorders, but also for sleep disorders associated with various neurological conditions. However, there is still uncertainty concerning dosing regimens and a lack of other data. The dose of melatonin should therefore be individualised on the basis of multiple factors, including the severity and type of sleep problem and the associated neurological pathology.
CONCLUSIONS: Melatonin can be safe and effective in treating both primary sleep disorders and the sleep disorders associated with various neurological conditions. However, there is a need for further studies aimed

at identifying the sleep disordered infants and children who will benefit most from melatonin treatment, and determining appropriate doses based on the severity and type of disorder

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JAMA Psychiatry. 2020.

ASSOCIATION OF MENTAL DISORDER IN CHILDHOOD AND ADOLESCENCE WITH SUBSEQUENT EDUCATIONAL ACHIEVEMENT.

Dalsgaard S, McGrath J, et al.

Importance: Onset of mental disorders during childhood or adolescence has been associated with underperformance in school and impairment in social and occupational life in adulthood, which has important implications for the affected individuals and society.

Objective: To compare the educational achievements at the final examination of compulsory schooling in Denmark between individuals with and those without a mental disorder.

Design, Setting, and Participants: This population-based cohort study was conducted in Denmark and obtained data from the Danish Civil Registration System and other nationwide registers. The 2 cohorts studied were (1) all children who were born in Denmark between January 1, 1988, and July 1, 1999, and were alive at age 17 years (n = 629622) and (2) all children who took the final examination at the end of ninth grade in both Danish and mathematics subjects between January 1, 2002, and December 31, 2016 (n = 542 500). Data analysis was conducted from March 1, 2018, to March 1, 2019.

Exposures: Clinical diagnosis by a psychiatrist of any mental disorder or 1 of 29 specific mental disorders before age 16 years.

Main Outcomes and Measures: Taking the final examination at the end of ninth grade and mean examination grades standardized as z scores with differences measured in SDs (standardized mean grade difference).

Results: Of the total study population (n = 629622; 306209 female and 323413 male), 523312 individuals (83%) took the final examination before 17 years of age and 38001 (6%) had a mental disorder before that age. Among the 542500 individuals (274332 female and 268168 male), the mean (SD) age was 16.1 (0.33) years for the females and 16.2 (0.34) years for the males. Among the 15843 female and 22158 male students with a mental disorder, a lower proportion took the final examination (0.52; 95% CI, 0.52-0.53) compared with individuals without a mental disorder (0.88; 95% CI, 0.88-0.88). Mental disorders affected the grades of male individuals (standardized mean grade difference,-0.30; 95% CI,-0.32 to-0.28) more than the grades of their female peers (standardized mean grade difference,-0.24; 95% CI,-0.25 to-0.22) when compared with same-sex individuals without mental disorders. Most specific mental disorders were associated with statistically significantly lower mean grades, with intellectual disability associated with the lowest grade in female and male students (standardized mean grade difference,-1.07 [95% CI,-1.23 to-0.91] and-1.03 [95% CI,-1.17 to-0.89]; P =.76 for sex differences in the mean grades). Female and male students with anorexia nervosa achieved statistically significantly higher grades on the final examination (standardized mean grade difference, 0.38 [95% CI, 0.32-0.44] and 0.31 [95% CI, 0.11-0.52]; P =.54 for sex differences in the mean grades) compared with their peers without this disorder. For those with anxiety, attachment, attention-deficit/hyperactivity, and other developmental disorders, female individuals attained relatively lower standardized mean grades compared with their male counterparts.

Conclusions and Relevance: Results of this study suggest that, in Denmark, almost all mental disorders in childhood or adolescence may be associated with a lower likelihood of taking the final examination at the end of ninth grade; those with specific disorders tended to achieve lower mean grades on the examination; and female, compared with male, individuals with certain mental disorders appeared to have relatively more impairment. These findings appear to emphasize the need to provide educational support to young people with mental disorders.

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J Abnorm Child Psychol. 2020 May;48:661-72.

RACIAL DIFFERENCES BETWEEN BLACK PARENTS' AND WHITE TEACHERS' PERCEPTIONS OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER BEHAVIOR.

Kang S, Harvey EA.

Previous research suggests there may be racial differences in how adults rate children's ADHD behavior. Differences in perceptions of Black parents and White teachers could have implications for ADHD diagnosis of Black children. This study compared ADHD ratings of Black parents to White teachers, and examined factors that may explain racial differences. Participants included 71 Black parents (65 women, 6 men; Mage=33.92) and 60 White teachers (41 women, 19 men; Mage=33.60), as well as a comparison group of 65 White parents (49 women, 16 men; Mage=36.83). Participants watched video clips of children in classrooms and rated ADHD behaviors and ADHD likelihood. They then completed questionnaires regarding beliefs about ADHD stigma, verve (movement expressiveness), experiences with racial discrimination, and racial attitudes. White teachers rated Black boys ADHD behaviors and their likelihood of having ADHD higher than Black parents. White teachers with more negative racial attitudes toward African Americans gave higher ADHD behavior and likelihood ratings to Black boys than did teachers with less negative racial attitudes. Across all participants, ADHD stigma beliefs and verve were not related to ratings of Black boys. Black parents with more experiences with racial discrimination gave higher ratings to Black boys ADHD behaviors. Research is necessary to further explain the mechanisms by which discrepancies in ratings of Black boys ADHD behaviors exist between Black and White adults to inform culturally sensitive assessment and diagnosis of ADHD in Black children

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J Abnorm Child Psychol. 2020 May;48:647-60.

WHICH "WORKING" COMPONENTS OF WORKING MEMORY AREN'T WORKING IN YOUTH WITH ADHD?

Fosco WD, Kofler MJ, Groves NB, et al.

Despite replicated evidence for working memory deficits in youth with ADHD, no study has comprehensively assessed all three primary working subcomponents of the working memory system in these children. Children ages 8-13 with (n=45) and without (n=41) ADHD (40% female; Mage=10.5; 65% Caucasian/Non-Hispanic) completed a counterbalanced battery of nine tasks (three per construct) assessing working memory reordering (maintaining and rearranging information in mind), updating (active monitoring of incoming information and replacing outdated with relevant information), and dual-processing (maintaining information in mind while performing a secondary task). Detailed analytic plans were preregistered. Bayesian t-tests indicated that, at the group level, children with ADHD exhibited significant impairments in working memory reordering (BF10=4.64—105; d=1.34) and updating (BF10=9.49; d=0.64), but not dual-processing (BF01=1.33; d=0.37). Overall, 67%-71% of youth with ADHD exhibited impairment in at least one central executive working memory domain. Reordering showed the most ADHD-related impairment, with 75% classified as below average or impaired, and none demonstrating strengths. The majority of children with ADHD (52%-57%) demonstrated average or better abilities in the remaining two domains, with a notable minority demonstrating strengths in updating (8%) and dual-processing (20%). Notably, impairments in domain-general central executive working memory, rather than individual subcomponents, predicted ADHD severity, suggesting that common rather than specific working memory mechanisms may be central to understanding ADHD symptoms. These impairment estimates extend prior work by providing initial evidence that children with ADHD not only exhibit heterogeneous profiles across cognitive domains but also exhibit significant heterogeneity within subcomponents of key cognitive processes

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J Affective Disord. 2020;269:94-100.

PRENATAL ALCOHOL EXPOSURE AND RISK OF ATTENTION DEFICIT HYPERACTIVITY DISORDER IN OFFSPRING: A RETROSPECTIVE ANALYSIS OF THE MILLENNIUM COHORT STUDY.

Jm M, Fj J, Gm M, et al.

Objective: To investigate the relationship between prenatal maternal alcohol consumption and the risk of attention deficit hyperactivity disorder (ADHD), the strengths and difficulties questionnaire (SDQ) score and abnormal hyperactivity score in seven-year-old children.

Methods: This study is a retrospective analysis of the Millennium Cohort Study (MCS). Questionnaires were used to gather data on gestational alcohol consumption when children were 9 months old and neurodevelopmental outcomes in offspring at 7 years of age (N = 13,004). Alcohol consumption was classified into never, light, moderate and heavy. Crude and adjusted logistic regression models were used for data analysis.

Results: The total number of women who reported drinking alcohol in pregnancy (the light, moderate and heavy drinking group) was 3916 (30.1%). No significant association was found between light, moderate or heavy gestational alcohol consumption and ADHD (adjusted odds ratio [aOR] for light = 0.80, 95% confidence interval [CI] = [0.53,1.22], aOR for moderate = 0.83, [0.40, 1.74]; aOR for heavy = 1.27, [0.54, 2.98]); for abnormal SDQ score (aOR for light = 0.94, [0.78,1.13], aOR for moderate = 0.70, [0.49,1.00]; aOR for heavy = 1.08, [0.70, 1.66]); for abnormal Hyperactivity score (aOR for light = 1.02, [0.89,1.17]; aOR for moderate = 1.05, [0.82, 1.34]; aOR for heavy = 0.90, [0.62, 1.32]), in offspring.

Conclusion: Light, moderate or heavy antenatal alcohol consumption was not associated with an increased susceptibility to ADHD or behavioural outcomes in this study. However, due to the limited number of cases we cannot rule out an increased risk of ADHD in relation to heavy alcohol consumption

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J Autism Dev Disord. 2020.

ATYPICAL DEVELOPMENT OF ATTENTIONAL CONTROL ASSOCIATES WITH LATER ADAPTIVE FUNCTIONING, AUTISM AND ADHD TRAITS.

Hendry A, Jones EJH, Bedford R, et al.

Autism is frequently associated with difficulties with top-down attentional control, which impact on individuals mental health and quality of life. The developmental processes involved in these attentional difficulties are not well understood. Using a data-driven approach, 2 samples (N = 294 and 412) of infants at elevated and typical likelihood of autism were grouped according to profiles of parent report of attention at 10, 15 and 25 months. In contrast to the normative profile of increases in attentional control scores between infancy and toddlerhood, a minority (7-9%) showed plateauing attentional control scores between 10 and 25 months. Consistent with pre-registered hypotheses, plateaued growth of attentional control was associated with elevated autism and ADHD traits, and lower adaptive functioning at age 3-áyears

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J Autism Dev Disord. 2020.

A DEVELOPMENTAL STUDY OF MATHEMATICS IN CHILDREN WITH AUTISM SPECTRUM DISORDER, SYMPTOMS OF ATTENTION DEFICIT HYPERACTIVITY DISORDER, OR TYPICAL DEVELOPMENT.

Bullen JC, Swain LL, Zajic M, et al.

This study examined mathematics achievement in school-aged children with autism spectrum disorder (ASD), symptoms of attention-deficit/hyperactivity disorder (ADHD), or typical development (TD) over a 30-month period and the associations between cognitive and reading abilities with mathematics achievement in children with ASD. Seventy-seven children with ASD without intellectual disability (ASD-WoID), 39 children with ADHD, and 43 children with TD participated in this study. The results revealed that the ASD-WoID and ADHD samples displayed significant and comparable delays in problem solving and calculation abilities.

Lower VIQ was related to lower math achievement across all subgroups. The ASD-WoID sample differed from comparison samples in terms of their pattern of mathematical achievement and the role of cognitive abilities in the development of mathematics competence

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J Child Adolesc Psychopharmacol. 2020;30:137-47.

PRE-EXISTING COMORBID EMOTIONAL SYMPTOMS MODERATE SHORT-TERM METHYLPHENIDATE ADVERSE EFFECTS IN A RANDOMIZED TRIAL OF CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Froehlich TE, Brinkman WB, Peugh JL, et al.

Objective: We sought to ascertain whether baseline anxiety/depression and oppositional defiant disorder (ODD) symptoms impacted the experience of short-term methylphenidate (MPH) adverse effects (AEs) in 7- to 11-year-old children with attention-deficit/hyperactivity disorder (ADHD) (n = 171) undergoing a double-blind MPH crossover trial.

Method: The Vanderbilt ADHD Diagnostic Parent Rating Scale measured baseline child anxiety/depression and ODD symptomology. The parent-completed Pittsburgh Side Effect Rating Scale assessed the AEs of anxiety, sadness, and irritability at baseline, on placebo, and on three MPH dosages. For each AE, we evaluated comorbidity main effects, dose main effects, and comorbidity dose interactions.

Results: Baseline anxiety/depression +ù dose and ODD +ù dose interactions were significant for the AEs of anxiety, sadness, and irritability. Compared with premedication baseline, these AEs attenuated on MPH for children with initially higher comorbidity symptoms, whereas those with initially lower comorbidity symptoms tended toward no change or increasing AE levels.

Conclusion: Premedication anxiety/depressive and ODD symptoms may be important predictors of short-term MPH emotional AEs

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J Child Adolesc Psychopharmacol. 2020;30:177-88.

INDOLE TRYPTOPHAN METABOLISM AND CYTOKINE S100B IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: DAILY FLUCTUATIONS, RESPONSES TO METHYLPHENIDATE, AND INTERRELATIONSHIP WITH DEPRESSIVE SYMPTOMATOLOGY.

Fernandez-Lopez, Molina-Carballo A, Cubero-Millaín I, et al.

Background: Indole tryptophan metabolites (ITMs), mainly produced at the gastrointestinal level, participate in bidirectional gut-brain communication and have been implicated in neuropsychiatric pathologies, including attention-deficit/hyperactivity disorder (ADHD).

Method: A total of 179 children, 5-14 years of age, including a healthy control group (CG, n = 49), and 107 patients with ADHD participated in the study. The ADHD group was further subdivided into predominantly attention deficit (PAD) and predominantly hyperactive impulsive (PHI) subgroups. Blood samples were drawn at 20:00 and 09:00 hours, and urine was collected between blood draws, at baseline and after 4.63 -¦ 2.3 months of methylphenidate treatment in the ADHD group. Levels and daily fluctuations of ITM were measured by tandem mass spectrometer, and S100B (as a glial inflammatory marker) by enzyme-linked immunosorbent assay. Factorial analysis of variance (Stata 12.0) was performed with groups/subgroups, time (baseline/after treatment), hour of day (morning/evening), and presence of depressive symptoms (DS; no/yes) as factors.

Results: Tryptamine and indoleacetic acid (IAA) showed no differences between the CG and ADHD groups. Tryptamine exhibited higher evening values ($p < 0.0001$) in both groups. No changes were associated with methylphenidate or DS. At baseline, in comparison with the rest of study sample, PHI with DS+ group showed among them much greater morning than evening IAA ($p < 0.0001$), with treatment causing a 50% decrease ($p = 0.002$). Concerning indolepropionic acid (IPA) MPH was associated with a morning IPA decrease and restored the daily profile observed in the CG. S100B protein showed greater morning than evening concentrations ($p = 0.001$) in both groups.

Conclusion: Variations in ITM may reflect changes associated with the presence of DS, including improvement, among ADHD patients

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J Child Adolesc Psychopharmacol. 2020;30:198-200.
ALLERGIC REACTION TO MEDICATION AFTER YEARS OF TAKING IT: WHAT TO DO NEXT?
Mavrides N, Coffey BJ.

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J Child Psychol Psychiatry. 2020 May;61:575-83.
DO SLUGGISH COGNITIVE TEMPO SYMPTOMS IMPROVE WITH SCHOOL-BASED ADHD INTERVENTIONS? OUTCOMES AND PREDICTORS OF CHANGE.
Smith ZR, Langberg JM.
Background Sluggish cognitive tempo (SCT) is a construct that includes symptoms of slowness, excessive daydreaming, and drowsiness. SCT is often comorbid with attention-deficit/hyperactivity disorder (ADHD), and SCT symptoms are associated with significant academic impairment above the influence of ADHD. Despite the overlap between ADHD and SCT and associated impairments, no studies have evaluated how evidence-based psychosocial interventions for adolescents with ADHD impact symptoms of SCT.
Methods This study examined whether SCT symptoms improved in a sample of 274 young adolescents with ADHD who were randomly assigned to an organizational skills intervention, homework completion intervention, or to a waitlist control. SCT intervention response was evaluated broadly in all participants and, specifically, for participants in the clinical range for SCT symptom severity at baseline. Change in ADHD symptoms of inattention, executive functioning, and motivation were examined as potential predictors of improvement in SCT.
Results The two intervention groups were collapsed together for analyses because there were no significant differences in change in SCT symptoms. Multilevel modeling results indicate that parent-reported SCT symptoms significantly decreased when comparing the intervention group to waitlist control (d = .410). For adolescents with parent-reported clinical levels of SCT, the decrease in symptoms was more pronounced (d = .517). Self-reported SCT symptoms produced null results, though effect size calculations showed small improvement for the full sample (d = .313) and for the high. SCT group (d = .384). Change in behavior regulation executive functioning (d = .247), metacognitive executive functioning (d = .346), and inattention (d = .230) predicted change in parent-reported SCT symptoms.
Conclusions Although not specifically designed to decrease SCT symptoms, the ADHD interventions evaluated in this study resulted in significant improvements in parent-reported SCT with small to moderate effect sizes. Clinical implications and future directions are discussed, including development of interventions for adolescents with high levels of SCT

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Journal of Clinical Medicine. 2020;9.
EXECUTIVE FUNCTIONS AND EMOTION REGULATION IN ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND BORDERLINE INTELLECTUAL DISABILITY.
Predescu E, Sipos R, Costescu CA, et al.
The main objective of this study is to investigate the multiple relations and to determine the differences between executive functions (EFs), emotion regulation, and behavioral and emotional problems in children with attention-deficit/hyperactivity disorder (ADHD), borderline intellectual disability (ID), and typical development (TD). The sample included 85 children aged 6 to 11 years, 42 with typical development (TD), 27 with ADHD, and 16 with borderline ID. The results emphasized a positive correlation between adaptive emotion regulation strategies and EFs, and no significant relations between the maladaptive emotion regulation strategies and EFs. In addition, the executive function of planning correlated negatively with anxiety, ADHD symptoms, and conduct problems. The performance of both clinical groups regarding EFs

was significantly lower than that of the TD group, and they differed significantly from each other only on visual attention. The presence of oppositional-defiant and conduct problems was higher in both clinical groups than in the TD group, and more anxiety symptoms were reported in children with ADHD. This study supports the idea that emotion regulation, Efs, and clinical symptoms are interconnected. It also profiles the deficits in cognitive functioning and emotion regulation in two clinical groups, thus helping future intervention programs

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Journal of Comprehensive Pediatrics. 2020;11.

ASSOCIATION OF CELIAC DISEASE WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Honar N, Barkhordarian M, Ghanizadeh A, et al.

Background: The association of the celiac disease with attention deficit hyperactivity disorder (ADHD) is unclear.

Objectives: The current study aimed to examine this relationship and the prevalence of the celiac disease in ADHD patients.

Methods: From 2016 to 2018, we tested 99 patients aged 4 to 18 years with ADHD diagnosed with clinical interviews for serum IgA and anti-tissue transglutaminase (anti-tTG) antibody for the diagnosis of celiac disease.

Results: There was no IgA deficiency in our patients. The prevalence of positive anti-tTG antibody-IgA test was 6.06%, all in boys. The ADHD children with positive test results were significantly heavier and more well-nourished. There was no association between ADHD severity serum anti-tTG antibody positivity.

Conclusions: The prevalence of celiac serology was higher in ADHD children than in the general population. Among all symptoms of celiac disease and ADHD, only was body mass index significantly higher in patients with positive serology

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Journal of Marital and Family Therapy. 2020 Apr;46:289-303.

AN INTERNATIONAL EXAMINATION OF THE EFFECTIVENESS OF FUNCTIONAL FAMILY THERAPY (FFT) IN A DANISH COMMUNITY SAMPLE.

Vardanian MM, Scavenius C, Granski M, et al.

Youth behavior problems have increased in prevalence in Scandinavian countries. Functional Family Therapy (FFT) has been shown to be an effective intervention across diverse populations and international contexts. The current study examines the effectiveness of FFT within a Danish-community sample in a pre-post comparison design and includes 687 families. Observed outcomes included both parent- and/or youth-reported domains of youth behavior, family dysfunction, school attendance and performance, and substance use. Significant improvements were found in youth behavior, family functioning, and school-related outcomes (e.g., like of school and truancy) despite experiencing a 60% attrition rate in our sample postintervention. This study provides evidence for the effectiveness of FFT on a wide scale in a Scandinavian context, adding to previous research that supports the transportability of this intervention

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J Pediatr Endocrinol Metab. 2020.

PSYCHIATRIC VIEW FOR DISORDERS OF SEX DEVELOPMENT: A 12-YEAR EXPERIENCE OF A MULTIDISCIPLINARY TEAM IN A UNIVERSITY HOSPITAL.

Entark PB, Uzbaran B, et al.

Psychiatric consultation is important in the follow-up of disorders of sex development (DSD) patients. In this study, we aimed to present the 12-year psychiatric follow-up data of the patients who were referred by Ege University Medical Faculty DSD Multidisciplinary Team and followed up in Child and Adolescent Psychiatry. Psychiatric data of 118 patients, who were followed by the DSD multidisciplinary team between 2007 and 2019, were reviewed retrospectively. The psychiatric diagnoses of the patients were evaluated according to semi-structured interview form Schedule for Affective Disorders and Schizophrenia for School-Age

Children/Present and Lifetime Turkish Version. The mean age of the 118 cases was 13.21 years (-¦7.18). Endocrine diagnoses of the cases were 46 XX DSD in 35 (29.6%), 46 XY DSD in 81 (68.7%), and chromosome disorders in 2 (1.7%). There was at least psychiatric diagnosis in 36 (30.5%) cases. The most common psychiatric diagnosis was attention deficit and hyperactivity disorder (ADHD) (n = 18, 15.3%). ADHD was most common in congenital adrenal hyperplasia (n = 4, 22.4%) and androgen synthesis defects (ASD) (n = 4, 22.4%); depression was most common in complete gonadal dysgenesis and ASD (n = 3, 23.1%); and mental retardation was most common in ASD (n = 3, 37.5%). In order to provide a healthy perspective for cases with DSD, it is important to make a psychiatric evaluation and to share observations and clinical findings in regular team meetings

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J Pediatr Urol. 2020.

EFFECTS OF METHYLPHENIDATE ON THE LOWER URINARY TRACT IN PATIENTS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER AND WITHOUT VOIDING DYSFUNCTION.

Olcucu MT, Kilic HT, Yildirim K, et al.

Background: Attention deficit hyperactivity disorder (ADHD) is characterised by a range of symptoms, such as excessive mobility, difficulty in maintaining attention and inadequate impulse control. Methylphenidate (MPH) is widely prescribed as a treatment for ADHD. In the literature, studies investigating the effects of MPH on the lower urinary tract (LUT) are limited.

Objective: The aim of the study was to evaluate MPH-induced LUT symptoms (LUTSs) in patients with ADHD without a diagnosis of voiding dysfunction (VD).

Study design: After ethical committee approval, volunteers aged 7-17 y were divided into two groups, with group 1 composed of individuals diagnosed with ADHD but not VD and group 2 (control) composed of healthy individuals. Lower urinary tract symptoms and quality of life, in addition to uroflowmetry test results and postvoiding residual volume (PVRV), were evaluated in both groups at baseline and again 4 wk later. The individuals in group 1 were treated with MPH after baseline screening. The dysfunctional voiding scoring system questionnaire was used for scoring LUTSs. Postvoiding residual volume was measured by ultrasound. Bladder capacity (BC) was calculated as the sum of voided volume (VV) and PVRV. The means of the maximum flow rate (Q max), mean flow rate (Q mean), VV, PVRV and BC were recorded.

Results: After exclusions, there were 43 participants in group 1 and 39 participants in group 2. There was no significant difference between the mean age of groups (p = 0.727). Compared with the baseline, VV and BC increased significantly in group 1 (p = 0.001 and p = 0.002, respectively) at the 4-wk follow-up. There was no significant difference in these parameters in group 2. Discussion: This study demonstrated that VV and BC increased after MPH treatment in patients with ADHD without a diagnosis of VD. The mechanism underlying this effect is unclear, but it may be associated with dopaminergic and noradrenergic effects.

Conclusion: The findings of the present study can inform further studies on the mechanism underlying the effect of MPH on the LUT. In a future study, the authors suggest evaluating the effects of MPH in a urodynamic study in patients with ADHD diagnosed with VD. [Table presented]

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J Psychiatry Neurosci. 2020;45:134-41.

QUANTITATIVE TRACTOGRAPHY REVEALS CHANGES IN THE CORTICOSPINAL TRACT IN DRUG-NA+»VE CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Bu X, Yang C, Liang K, et al.

Background: The specific role of the corticospinal tract with respect to inattention and impulsive symptoms in children with attention-deficit/hyperactivity disorder (ADHD) has been explored in the past. However, to our knowledge, no study has identified the exact regions of the corticospinal tract that are affected in ADHD. We aimed to determine comprehensive alterations in the white matter microstructure of the corticospinal tract and underlying neuropsychological substrates in ADHD.

Methods: We recruited 38 drug-na+»ve children with ADHD and 34 typically developing controls. We employed a tract-based quantitative approach to measure diffusion parameters along the trajectory of the corticospinal tract, and we further correlated alterations with attention and response inhibition measures.
Results: Compared with controls, children with ADHD demonstrated significantly lower fractional anisotropy and higher radial diffusivity at the level of cerebral peduncle, and higher fractional anisotropy at the level of the posterior limb of the internal capsule in the right corticospinal tract only. As well, increased fractional anisotropy in the posterior limb of the internal capsule was negatively correlated with continuous performance test attention quotients and positively correlated with reaction time on the Stroop Colour Word Test; increased radial diffu-sivity in the right peduncle region was positively correlated with omissions in the Stroop test. Limitations: The sample size was rela-tively small. Moreover, we did not consider the different subtypes of ADHD and lacked sufficient power to analyze subgroup differences. Higher-order diffusion modelling is needed in future white matter studies.
Conclusion: We demonstrated specific changes in the right corticospinal tract in children with ADHD. Correlations with measures of attention and response inhibition underscored the functional im-portance of corticospinal tract disturbance in ADHD

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J Psychopathol Behav Assess. 2020.
SEX DIFFERENCES IN EXTERNALIZING AND INTERNALIZING SYMPTOMS IN ADHD, AUTISM, AND GENERAL POPULATION SAMPLES.
Mayes SD, Castagna PJ, Waschbusch DA.
Oppositional behavior, irritability, and aggression are common in autism and ADHD-Combined presentation (but less frequent in ADHD-Inattentive), and children with autism are at high risk for anxiety. No study has compared sex differences in externalizing and internalizing symptoms between ADHD-Combined, ADHD-Inattentive, autism, and general population samples. The samples comprised 1436 children with autism (with or without ADHD), 1056 with ADHD without autism, and 665 from the general population, 2ΓÇô17-áyears. Nine externalizing, four internalizing, and nine somatic symptoms rated by mothers on the Pediatric Behavior Scale did not differ significantly between girls and boys in the autism, ADHD-Combined, and ADHD-Inattentive samples. In the general population, boys had more externalizing problems than girls (particularly hyperactivity, inattention, and aggression), whereas anxiety, depression, and somatic complaints did not differ, with the exception of more stomachaches in girls. The finding that boys have more externalizing problems than girls in the general population has implications for interpreting rating scales. Raw score to standard score conversions for most scales are based on general population sex- and age-specific norms. Therefore, standard scores mask sex differences, and the same standard score for a girl and a boy is not equivalent. A boy must have more severe externalizing problems to earn the same elevated standard score as a girl. When making diagnostic and treatment decisions, clinicians should take into consideration both symptom raw scores (e.g., ΓÇ£often a problemΓÇØ reflecting symptom severity and the DSM threshold for clinical significance) and standard scores (symptom severity adjusted for sex and age effects)

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J Am Acad Child Adolesc Psychiatry. 2020.
RELATIVE AGE AND ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: DATA FROM THREE EPIDEMIOLOGICAL COHORTS AND A META-ANALYSIS.
Caye A, Petresco S, de Barros AJD, et al.
Objective: To investigate the effect of relatively younger age on attention-deficit/hyperactivity disorder (ADHD) symptoms and diagnosis through three population-based cohorts and a meta-analysis.
Method: This study included participants of three community-based cohorts in Brazil: 1993 Pelotas Cohort (N = 5,249), 2004 Pelotas Cohort (N = 4,231), and Brazilian High-Risk Study for Psychiatric Disorders (HRC study) (N = 2,511). We analyzed the effect of relatively younger age on ADHD symptoms and diagnosis. For the meta-analysis, we searched MEDLINE, PsycINFO, and Web of Science from inception through December 25, 2018. We selected studies that reported measures of association between relative immaturity

and an ADHD diagnosis. We followed the Meta-analysis Of Observational Studies in Epidemiology guidelines. The protocol for meta-analysis is available on PROSPERO (CRD42018099966).
Results: In the meta-analysis, we identified 1,799 potentially eligible records, from which 25 studies including 8,076,570 subjects (164,049 ADHD cases) were analyzed with their effect estimates. The summarized relative risk of an ADHD diagnosis was 1.34 (95% confidence interval 1.26-1.43, p < .001) for children born in the first 4 months of the school year (relatively younger). Heterogeneity was high (I2 = 96.7%). Relative younger age was associated with higher levels of ADHD symptoms in the 1993 Pelotas Cohort (p = .003), 2004 Pelotas Cohort (p = .046), and HRC study (p = .010).
Conclusion: Children and adolescents who are relatively younger compared with their classmates have a higher risk of receiving an ADHD diagnosis. Clinicians should consider the developmental level of young children when evaluating ADHD symptoms

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Medicina (B Aires). 2020;80 Suppl 2:63-66.

MEASUREMENT OF THE THETA / BETA RATIO WITH THE QUANTIFIED ELECTROENCEPHALOGRAM IN ATTENTION-DEFICIT HYPERACTIVITY DISORDERS.

Ortiz P, Mulas F, Sanchez A, et al.

Theta-Beta (T / B) ratio of the quantified electroencephalogram (EEGQ) in patients with attention deficit hyperactivity disorder (ADHD) constitutes a characteristic EEG variable of the primary disorder with an overall accuracy of 89%. The objective of this study was to measure the T/B ratio in a sample of patients with ADHD and the effects of the treatment with psychostimulants and non-psychostimulants on the T/B ratio. The sample consisted of 85 children between 6 and 18 years (68 males and 17 females) with the diagnosis of the inattentive and combined subtype of ADHD, according to the criteria of the DSM-V. An EEGQ was performed with measurement of the T/B ratio before and after 6 months of treatment with psychostimulant and non-psychostimulant drugs. Both groups were compared using the Wilcoxon signed range test for related samples. The results showed that 86% of the cases had a T/B ratio above the normal values for the age of them. The reduction in the T/B ratio was statistically significant in the group of patients treated with psychostimulants. The reduction of non-psychostimulants was not significant. In conclusion, we confirmed the high T/B ratio in patients with ADHD. Psychostimulant drugs decrease the elevated T/B ratio in patients with ADHD after 6 months of treatment

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Medicina (B Aires). 2020;80 Suppl 2:58-62.

CLINICAL FEATURES OF THE ATTENTIONAL DEFICIT AND HYPERACTIVITY DISORDER IN EPILEPSY.

Venegas V, De Pablo JM, Olbrich C.

Epilepsy and attention deficit and hyperactivity disorder (ADHD) are frequent conditions in pediatrics. Their association is frequent and complex, often sharing psychiatric comorbidity. Patients who present epilepsy and ADHD, show equal frequency in both genders, with the inattentive type, as predominant presentation. Cognitive deficit increases the risk of associating ADHD in patients with epilepsy. There is not enough evidence for other risk factors, however there is enough information that allows to ant icipate its presence in some types of epilepsy, with neuropsychological models that evidence the underlying network dysfunction. The relationship with frequency and seizure control, electroencephalographic alterations and antiepileptic drugs (AEDs) is also reviewed. Recommendations to reduce adverse effects of AEDs are described. The diagnosis must therefore be based on suspicion, through clinical instruments and assessments of cognitive functioning. Multimodal treatment is also recommended in patients with ADHD with and without epilepsy. Psych stimulants can be used safely. The quality of life of the patients and their families is affected, so it is advisable for them to be supported by a specialized team that could provide education, early assessment and therapy. If they are omitted, the consequences can be negative at school, social environment and emotional development, which could be relevant and become persistent

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Medicina (B Aires). 2020;80 Suppl 2:76-79.

ATTENTION-DEFICIT/HYPERACTIVITY DISORDER AND SUBSTANCE ABUSE. SCIENTIFIC EVIDENCE.

Teran PA.

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental alteration of biological basis that started in childhood may persist during adolescence-youth and, despite what was believed until not many years ago, also in adulthood up to 50-60% of those affected, producing a significant clinical and psychosocial deterioration. In spite of being a syndrome easily identifiable by the triad: inattention, hyperactivity and impulsivity that characterizes it, in clinical practice there are different circumstances that hinder and complicate its diagnosis and treatment. One of the most significant is the presence, both in childhood and adulthood, of other comorbid mental disorders. It is from adolescence-youth when together with ADHD we can detect the presence of personality, mood and anxiety disorders and especially the use of several substances. The evidences existing until now show how the comorbidity of ADHD and substance use disorder influence the evolutionary course of both, complicating the approach, the treatment and, therefore, aggravating the final prognosis. The difficulties in their approach and the scarcity of treatment options make us underline the importance of preventive treatment in the infantile stage, starting from psychoeducation programs focused on the vulnerability of these patients to substances and the consequences associated with consumption

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Nervenarzt. 2020.

ATTENTION DEFICIT HYPERACTIVITY DISORDER IN CHILDHOOD AND ADOLESCENCE: CURRENT STATE OF RESEARCH.

Hange A, Hohmann S, Millenet S, et al.

Background: Attention deficit hyperactivity disorder (ADHD), defined by the core symptoms impulsiveness, inattention and motor hyperactivity, is one of the most common neurodevelopmental disorders beginning in early childhood. Objective: This article reviews the current state of research on the epidemiology, etiology, diagnostics and therapeutic interventions for ADHD in children and adolescents.

Methods: A selective literature search was carried out in PubMed with reference to the German S3 clinical guidelines on ADHD in children, adolescents and adults.

Results and conclusion: The epidemiological prevalence of ADHD in children is estimated to be 5.3%. The etiology is complex and heterogeneous and a-áhigh percentage of the phenotypic variance can be explained by genetic influences. The challenge of ADHD diagnostics is to exclude differential diagnoses while simultaneously identifying common coexisting psychiatric conditions. Treatment recommendations depend on the severity of symptoms. In severe ADHD pharmacotherapy should be considered as the first line intervention. Psychostimulants (various methylphenidate and amphetamine preparations) and the non-stimulants atomoxetine and guanfacine are approved in Germany for treatment of ADHD in children and adolescents. In milder cases as well as in preschool children, psychosocial interventions (including behavioral psychotherapy) are often sufficient

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NeuroImage Clin. 2020;26.

HETEROGENEITY OF EXECUTIVE FUNCTION REVEALED BY A FUNCTIONAL RANDOM FOREST APPROACH ACROSS ADHD AND ASD.

Cordova M, Shada K, Demeter DV, et al.

Background: Those with autism spectrum disorder (ASD) and/or attention-deficit-hyperactivity disorder (ADHD) exhibit symptoms of hyperactivity and inattention, causing significant hardships for families and society. A potential mechanism involved in these conditions is atypical executive function (EF). Inconsistent findings highlight that EF features may be shared or distinct across ADHD and ASD. With ADHD and ASD each also being heterogeneous, we hypothesized that there may be nested subgroups across disorders with shared or unique underlying mechanisms.

Methods: Participants (N = 130) included adolescents aged 7ΓÇô16 with ASD (n = 64) and ADHD (n = 66). Typically developing (TD) participants (n = 28) were included for a comparative secondary sub-group

analysis. Parents completed the K-SADS and youth completed an extended battery of executive and other cognitive measures. A two stage hybrid machine learning tool called functional random forest (FRF) was applied as a classification approach and then subsequently to subgroup identification. We input 43 EF variables to the classification step, a supervised random forest procedure in which the features estimated either hyperactive or inattentive ADHD symptoms per model. The FRF then produced proximity matrices and identified optimal subgroups via the infomap algorithm (a type of community detection derived from graph theory). Resting state functional connectivity MRI (rs-fMRI) was used to evaluate the neurobiological validity of the resulting subgroups.

Results: Both hyperactive (Mean absolute error (MAE) = 0.72, Null model MAE = 0.8826, (t(58) = Γêæ4.9, p < .001) and inattentive (MAE = 0.7, Null model MAE = 0.85, t(58) = Γêæ4.4, p < .001) symptoms were predicted better than chance by the EF features selected. Subgroup identification was robust (Hyperactive: Q = 0.2356, p < .001; Inattentive: Q = 0.2350, p < .001). Two subgroups representing severe and mild symptomology were identified for each symptom domain. Neuroimaging data revealed that the subgroups and TD participants significantly differed within and between multiple functional brain networks, but no consistent severity patterns of over or under connectivity were observed between subgroups and TD.

Conclusion: The FRF estimated hyperactive/inattentive symptoms and identified 2 distinct subgroups per model, revealing distinct neurocognitive profiles of Severe and Mild EF performance per model. Differences in functional connectivity between subgroups did not appear to follow a severity pattern based on symptom expression, suggesting a more complex mechanistic interaction that cannot be attributed to symptom presentation alone

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Neurology: Clinical Practice. 2018;8:403-11.

SPORT CONCUSSION AND ATTENTION DEFICIT HYPERACTIVITY DISORDER IN STUDENT ATHLETES: A COHORT STUDY.

Iaccarino MA, Fitzgerald M, Pulli A, et al.

Background Attention deficit hyperactivity disorder (ADHD) is associated with impulsive behavior and inattention, making it a potential risk factor for sport-related concussion (SRC). The objectives of this study were to determine whether ADHD is an antecedent risk factor for SRC and whether ADHD complicates recovery from SRC in youth athletes.

Methods Student athletes with a history of SRC were evaluated for the presence of ADHD using diagnostic interview and to determine whether ADHD symptoms began before or after SRC. Concussion-specific measures of concussive symptoms and cognitive function were compared in SRC + ADHD and SRC + No ADHD groups to assess SRC recovery between groups.

Results ADHD was overrepresented in youth with SRC compared with population rates. ADHD was found to be an antecedent risk factor for SRC, with age at ADHD onset earlier than the date of SRC. Student athletes with SRC and ADHD reported more concussive symptoms compared with athletes without ADHD and were more likely to have a history of greater than one concussion.

Conclusions The results of this study support our hypothesis that ADHD is an antecedent risk factor for SRC and may contribute to a more complicated course of recovery from SRC. Future research should focus on determining whether screening, diagnosis, and treating ADHD in youth athletes may prevent SRC. Providers that care for youth athletes with ADHD should be aware of the vulnerabilities of this population toward SRC and its complications

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Neurophotonics. 2020;7.

DISRUPTED FUNCTIONAL BRAIN CONNECTIVITY NETWORKS IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER: EVIDENCE FROM RESTING-STATE FUNCTIONAL NEAR-INFRARED SPECTROSCOPY.

Wang M, Hu Z, Liu L, et al.

Significance: Attention-deficit/hyperactivity disorder (ADHD) is the most common psychological disease in childhood. Currently, widely used neuroimaging techniques require complete body confinement and motionlessness and thus are extremely hard for brain scanning of ADHD children.

Aim: We present resting-state functional near-infrared spectroscopy (fNIRS) as an imaging technique to record spontaneous brain activity in children with ADHD. Approach: The brain functional connectivity was calculated, and the graph theoretical analysis was further applied to investigate alterations in the global and regional properties of the brain network in the patients. In addition, the relationship between brain network features and core symptoms was examined.

Results: ADHD patients exhibited significant decreases in both functional connectivity and global network efficiency. Meanwhile, the nodal efficiency in children with ADHD was also found to be altered, e.g., increase in the visual and dorsal attention networks and decrease in somatomotor and default mode networks, compared to the healthy controls. More importantly, the disrupted functional connectivity and nodal efficiency significantly correlated with dimensional ADHD scores.

Conclusions: We clearly demonstrate the feasibility and potential of fNIRS-based connectome technique in ADHD or other neurological diseases in the future

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Neuropsychiatr Enfance Adolesc. 2020.

COGNITIVE REMEDIATION FOR THE INCLUSION OF CHILDREN AND ADOLESCENTS WITH NEURODEVELOPMENTAL AND/OR EMOTIONAL DISORDERS.

Doyen C, Renou S, Burnouf I, et al.

Background: Cognitive remediation is a brief and focused therapeutic approach for adults, children or adolescents with cognitive impairments as observed in psychiatric disorders. Executive functioning, social cognition and attention are the main dimensions trained with specific programs. Metacognition is also targeted and contributes to a better quality of life and to better adaptation in daily life. For children and adolescents the objective of cognitive remediation is to maintain the subject in his or her ecological environment (family, school, leisure). Neuropsychological dimensions, such as executive functions, attention, and social cognition are the targets of varied programs. Cognitive remediation helps to avoid over-handicap and may prevent some emotional and behavioral complications. The scientific background for cognitive remediation consists of studies involving the schizophrenic population, and cerebral plasticity is the basis of the theory. Different steps are described by researchers, distinguishing cognitive training (step 1) and adaptation in daily life (step 4). Cognitive training is a bottom-up approach, and daily life adaptation is a top-down approach as described by neuropsychological theories. For adults with schizophrenia, cognitive remediation acts on specific neuropsychological dimensions of hypofrontality. For children and adolescents presenting neurodevelopmental disorders such as autism or ADHD, attention, flexibility and inhibition are targets for therapy. And for emotional disorders such as anxiety, or for depressive disorders, even if there is a paucity of programs and studies, we have the knowledge that attentional bias as identified by cognitive-behavioral therapies can be modified. Despite this knowledge for emotional disorders there are insufficient studies about the validation of the cognitive remediation approach for children and adolescents.

Method: A special cognitive remediation program was developed by Alice Medalia for adults with schizophrenia. We thus developed a program for adolescents with ASD or ADHD. It is administered through an outpatient platform which associates computerized sessions of cognitive remediation and bridging groups that help adolescents to generalize the cognitive benefits of those sessions to daily life. Adolescents receive medical, psychological and neuropsychological evaluation at the beginning of the program, and benefits are evaluated at the end of the program. Thirty sessions are proposed, and each session has a mean duration of 75 mn: 40 mn of cognitive exercises and 35 mn of bridging group. The objective of the bridging group is the generalization of the cognitive exercises to daily life. During each session, the computerized program adjusts to the young subject's performances. The therapist gives support in order to provide a positive learning experience.

Results: Adolescents reported feeling more motivated, confident and competent as a result of participating in the program. Cognitive remediation facilitates inclusion of young people in their ecological environment, such as school.
Conclusions: Cognitive remediation is a brief and focused approach which is supported by the cerebral plasticity hypothesis. The optimization of executive functions, cognitive and social-cognitive dimensions is an objective that can be applied to many psychiatric disorders in children and adolescents. It is a promising tool for treating these young subjects even if more studies on its efficacy are needed

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NeuroRegulation. 2019;6:220-21.

PILOT STUDY OF THE EFFICACY OF MOBILE NEUROFEEDBACK FOR ATTENTION-DEFICIT/HYPERACTIVITY DISORDER (ADHD).

Doniger GM, Kaddan A.

Background. Neurofeedback is commonly regarded as an adjunctive treatment for ADHD, and randomized controlled trials have shown significant benefit attributable to this intervention (Arns, Ridder, Strehl, Breteler, & Coenen, 2009; Lofthouse, Arnold, Hersch, Hurt, & DeBeus, 2012; Micoulaud-Franchi et al., 2014). The present study is a controlled trial to evaluate the specific benefit of neurofeedback training using Myndlift, a clinician-guided wearable, mobile neurofeedback system.
Methods. Nineteen participants (all male, ages 8-15) diagnosed with ADHD were recruited. The intervention group (n = 12) engaged in theta/beta neurofeedback training three to four times per week for 9 weeks, totaling an average of 21 sessions per participant. The control group (n = 7) did not receive any treatment during the 9-week period. Participants in both groups were assessed with a computerized continuous performance test (CPT; MOXO, Neuro Tech Solutions Ltd.) before and after the 9-week period. During the CPT, participants were to respond to target stimuli and ignore nontarget stimuli in the presence of visual and auditory distracters. Outcomes were age-and gender-adjusted z-scores for overall (total) performance, attention, timeliness, impulsivity, and hyperactivity. The CPT assessment report indicated a performance level for each obtained score as follows: good (1), standard (2), weak (3), or difficulty in performance (4). The report further classified performance levels 1-3 as "within the norm" and performance level 4 as "outside the norm."
Results. Sixteen participants completed the study (n = 10 in the intervention group; n = 6 in the control group). The intervention group showed significant improvement in overall performance, attention, inhibition, and hyperactivity ($p < .008$). In contrast, the control group did not show significant improvement. Change from 0 to 9 weeks was significantly greater in the intervention group for overall performance and attention ($p = .030$). Overall performance level was improved for 90% of neurofeedback participants as compared with 34% of controls. Knowledge of whether the participant was assigned to the intervention or control group improved prediction of change in overall CPT performance level by 70% ($p < .001$). For all outcomes, a greater percentage of participants in the intervention group improved in performance level compared with controls. Change in performance level was significantly greater for the intervention group compared with controls for overall performance ($p = .018$) and attention ($p = .048$). For all outcomes, median change in performance level for the passive control group was 0, reflecting no change. Finally, compared with controls, more participants were reclassified as "within the norm" following neurofeedback. The difference was most salient for overall performance-8 of the 10 neurofeedback participants were reclassified as normal compared with one of the six control participants.
Conclusions. This controlled study provides encouraging evidence for the efficacy of the Myndlift home-based clinician-guided neurofeedback system. In a small cohort of children with ADHD, a 9-week neurofeedback training protocol consistently improved performance on objective measures of ADHD symptomatology. Follow-up randomized controlled trials including active control conditions in larger cohorts are needed to further establish the efficacy of the tool

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NeuroRegulation. 2019;6:198.

OUTCOMES OF DOUBLE-BLIND RANDOMIZED CLINICAL TRIAL OF NEUROFEEDBACK FOR ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

deBeus R.

Objective. To determine whether neurofeedback (NF) has a lasting and specific benefit on inattention in attention-deficit/hyperactivity disorder (ADHD) beyond artifact inhibition and other nonspecific effects such as advice on sleep hygiene, nutrition, coaching, etc. Unblinded randomized clinical trials (RCTs) have shown encouraging results, but small blinded, flawed RCTs have not.

Method. Children age 7-10 (age 8.4-¦1.14 years; 78% male, 76% Caucasian, 13% Latino, 8% African American, 4% Asian) at two sites were randomly assigned in a 3:2 ratio to 38 sessions of active neurofeedback (three times per week) using the Lubar-Monastra method to downtrain theta-beta ratio (TBR) vs. sham neurofeedback of equal duration, frequency, and intensity. Primary outcome (parent-and teacher-rated inattentive symptoms) was analyzed by a linear mixed model with time, treatment, time X treatment interaction, site, and site X treatment interaction entered.

Results. 329 children were screened, resulting in 144 randomized, with 142 in the intent-to-treat analysis. Children were diagnosed as inattentive (36%) or combined type (64%) ADHD; 69% had comorbid diagnoses (50% oppositional defiant disorder, 21% internalizing disorders). There were 10 (7%) dropouts from treatment. Treatment fidelity was good (98% by trainer report, 84% by independent fidelity rater). Across treatment arms, there were 94 adverse events possibly related to treatment (e.g., eye pain, irritability, oppositionality, crying, self-injury, headache, depression, skin irritation). Blinded guesses as to sham treatment assignment were correct 7% of the time by children, 24% by trainers, and 25% by parents. Substantial improvements on the primary outcome measure, parent-and teacher-rated inattention, were found, with a large pre-and posttreatment effect size (d = 1.1); 60% of the children responded to treatment, and, most importantly, clinical benefit appears to be maintained at 13-month follow-up. However, these benefits were seen in both groups and not significantly different between the neurofeedback and control group at treatment end. Nonetheless, preliminary results at 13-month follow-up demonstrate the neurofeedback group showed further improvements on inattention, whereas the control group remained stable with a medium effect size between-group difference. Complete statistical results on the full sample at 13-month follow-up will be presented.

Conclusion. The multimodal nature of the treatment-including supportive coaching, advice on sleep hygiene and nutrition, and practice focusing on a nonentertaining screen-likely contributed to the control group's large improvement, resulting in the lack of short-term difference. In fact, some evidence was found that the control condition might not have been fully inert, since some above-chance-level learning was observed in the control group, although that could not explain all the observed benefit for controls. Further analyses and study will have to focus on explaining the good response in the control group; however, preliminary results suggest a medium specific delayed "sleeper" effect of NF at 13-month follow-up

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NeuroRegulation. 2019;6:219-20.

NEUROFEEDBACK: PERFORMANCE-BASED PROFILE CHANGES IN THE ADHD-AFFLICTED BRAIN.

Anzalone C, Bridges R, Decker S.

While current prevalence rates for ADHD vary, it is estimated to affect five to eight percent of the general population across the lifespan (Goldstein, 2011). Though the characteristics of the disorder may change across development, symptoms of ADHD often continue to impair multiple functional domains of daily living. Individuals with behavioral symptoms of ADHD often show deficits on performance-based measures (for a review see Woods, Lovejoy, & Ball, 2002). Implementing compensatory strategies is the primary practice to improve overall prognosis. Since there is no cure for ADHD, interventions that target neural mechanisms of ADHD, other than psychiatric drugs, are in desperate need. Research has clearly demonstrated the utility of EEG in diagnostic clinical evaluations for many neurological dysfunctions (Croona, Kihlgren, Lundberg, Eeg-Olofsson, & Eeg-Olofsson, 1999; Leach, Stephen, Salveta, & Brodie, 2006; McGonigal, Oto, Russell, Greene, & Duncan, 2002; Mormann, Lehnertz, David, & Elger, 2000; Thatcher, Walker, Gerson, & Geisler, 1989). A new area of research, neurofeedback (NF), extends the functionality of EEG into a method of treatment. NF is one method that shows promise in treating neurodevelopmental conditions because it

purportedly directly impacts brain functioning. Many research studies have generally supported the efficacy of NF for the treatment of neurodevelopmental disabilities in learning or attention (i.e., Breteler, Arns, Peters, Giepmans, & Verhoeven, 2010; Gevensleben et al., 2009; Walker, 2010). Although research studies support the use of neurofeedback, most published studies have methodological limitations. Namely, the American Academy of Pediatrics (2011) listed NF as promising but in need of more research. The current study uses a randomized control research design with a placebo (or sham) condition for the treatment of children with learning and attention problems. By overcoming the methodological limitations of past research, this study will provide a better understanding of the effectiveness of NF. The goal of this study is to test the effects of NF in college students who experience functional impairment as a result of ADHD, with the underlying hypothesis that students in the NF condition will demonstrate greater improvement on performance-based measures (i.e., CPT, BG-II, and WJ III subtests) than students in the sham condition. Participants included 16 college undergraduates who were documented as having a diagnosis of ADHD. Each potential participant completed a baseline qEEG; using the Neuroguide symptoms checklist, only those students who exhibited qEEG abnormalities consistent with ADHD were permitted to continue in the study (N = 16). Treatment effects will be assessed by examining the changes in performance on the neurocognitive measures (i.e., CPT, BG-II, and WJ III subtests) between the baseline and posttreatment assessments. We expect to see significant improvements between pre-and post-NF cognitive measures in the treatment group, but stable performance in the sham group. Should significant changes be observed after receiving NF training, we will conclude that NF has the potential to improve cognitive functioning in college students with ADHD, and thus postulate that NF may be a viable treatment option to improve the prognosis for individuals afflicted with ADHD

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Neuroscience Research. 2020.

NEUROPHYSIOLOGICAL DIFFERENCES BETWEEN ADHD AND CONTROL CHILDREN AND ADOLESCENTS DURING THE RECOGNITION PHASE OF A WORKING MEMORY TASK.

Rodriguez-Martinez EI, Arjona VA, et al.

Impairment of executive functions including attention and working memory (WM) have been proposed as an important feature of Attention Deficit and Hyperactivity Disorder (ADHD). During the recognition phase of a delayed match-to-sample test (DMTS) a reduced N2pc component, related to the attentional selection of the memorized item and a reduced distractor positivity (Pd), related to the processing suppression of distractors are expected in ADHD subjects. For the purpose of the study, twenty-nine ADHD subjects diagnosed with a structured interview and the DuPaul questionnaire, were included in the study. Thirty-four control subjects were recruited from public schools and matched by age (from 6 to 17 years old) and gender with the ADHD group. Reaction times (RTs), errors, and Event Related Potentials (ERPs) were obtained in a DMTS task during the recognition phase in correct trials. RTs and errors were higher in ADHD subjects compared to the control group. Specifically, errors were much higher in ADHD than in controls. The cluster mass permutation statistics showed a significant N2pc component in both groups during the recognition phase, but a significant Pd component was present only in controls. The present results suggest that in correct trials ADHD children use the same neural resources to select the memorized item from WM with similar efficacy than controls, although a lower Pd suggests a difficulty in suppressing distractors

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Neurotoxicol Teratol. 2019 Nov;76:106834.

EXPERIENCE DURING ADOLESCENCE SHAPES BRAIN DEVELOPMENT: FROM SYNAPSES AND NETWORKS TO NORMAL AND PATHOLOGICAL BEHAVIOR.

Dow-Edwards D, MacMaster FP, Peterson BS, et al.

Adolescence is a period of dramatic neural reorganization creating a period of vulnerability and the possibility for the development of psychopathology. The maturation of various neural circuits during adolescence depends, to a large degree, on one's experiences both physical and psychosocial. This occurs through a process of plasticity which is the structural and functional adaptation of the nervous system in response to environmental demands, physiological changes and experiences. During adolescence, this adaptation

proceeds upon a backdrop of structural and functional alterations imparted by genetic and epigenetic factors and experiences both prior to birth and during the postnatal period. Plasticity entails an altering of connections between neurons through long-term potentiation (LTP) (which alters synaptic efficiency), synaptogenesis, axonal sprouting, dendritic remodeling, neurogenesis and recruitment (Skaper et al., 2017). Although most empirical evidence for plasticity derives from studies of the sensory systems, recent studies have suggested that during adolescence, social, emotional, and cognitive experiences alter the structure and function of the networks subserving these domains of behavior. Each of these neural networks exhibits heightened vulnerability to experience-dependent plasticity during the sensitive periods which occur in different circuits and different brain regions at specific periods of development. This report will summarize some examples of adaptation which occur during adolescence and some evidence that the adolescent brain responds differently to stimuli compared to adults and children. This symposium, "Experience during adolescence shapes brain development: from synapses and networks to normal and pathological behavior" occurred during the Developmental Neurotoxicology Society/Teratology Society Annual Meeting in Clearwater Florida, June 2018. The sections will describe the maturation of the brain during adolescence as studied using imaging technologies, illustrate how plasticity shapes the structure of the brain using examples of pathological conditions such as Tourette's' syndrome and attention deficit hyperactivity disorder, and a review of the key molecular systems involved in this plasticity and how some commonly abused substances alter brain development. The role of stimulants used in the treatment of attention deficit hyperactivity disorder (ADHD) in the plasticity of the reward circuit is then described. Lastly, clinical data promoting an understanding of peer-influences on risky behavior in adolescents provides evidence for the complexity of the roles that peers play in decision making, a phenomenon different from that in the adult. Imaging studies have revealed that activation of the social network by the presence of peers at times of decision making is unique in the adolescent. Since normal brain development relies on experiences which alter the functional and structural connections between cells within circuits and networks to ultimately alter behavior, readers can be made aware of the myriad of ways normal developmental processes can be hijacked. The vulnerability of developing adolescent brain places the adolescent at risk for the development of a life time of abnormal behaviors and mental disorders

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NeuroToxicology. 2019 Jul;73:1-7.

THE EFFECTS OF MANGANESE EXPOSURE FROM DRINKING WATER ON SCHOOL-AGE CHILDREN: A SYSTEMATIC REVIEW.

Iyare PU.

The aim of this study was to analyse the published literature on the potential effects of manganese exposure from drinking water on school-age children, with emphasis on cognitive, and neurodevelopment and behavioural effects. A systematic review of up-to-date scientific evidence published from 2006 to 2017 was conducted using Science Direct. A further search was carried out using PubMed and Web of Science. A total of 21 studies were reviewed and categorised into 12 cognitive and 9 neurodevelopment and behavioural effects. The most utilised cognitive test was the Wechsler Intelligence Scale for Children (WISC) or some subtests from it. 10 of the 12 studies on cognitive effects reported an adverse effect of manganese exposure from drinking water on children. 3 out of the 9 studies on neurodevelopment and behavioural effects reported that manganese exposure from drinking water was associated with poorer neurobehavioural performances in school children. 4 others implied the presence of some sex-specific associations with manganese exposure. 1 study suggested that children suffering from attention deficit hyperactivity disorder (ADHD) may be more susceptible to manganese exposure. Another study suggested that manganese was a beneficial nutrient as well as a neurotoxicant. Regardless of the limitations of the studies analysed, the adverse effects of manganese exposure from drinking water on school-aged children is sufficiently demonstrated. Further investigation into the subject to address inconsistencies in existing studies is recommended

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Nord J Psychiatry. 2020 Feb;74:96-104.

EVALUATION OF A NEW MODEL FOR ASSESSMENT AND TREATMENT OF UNCOMPLICATED ADHD - EFFECT, PATIENT SATISFACTION AND COSTS.

Wernersson R, Johansson J, Andersson M, et al.

Aim: Attention-deficit/hyperactivity disorder (ADHD) is the most common diagnosis within child- and adolescent psychiatry. Waiting lists and delayed care are major issues. The aim was to evaluate if standardized care (SC) for assessment and treatment of uncomplicated ADHD would reduce resource utilization and increase satisfaction with preserved improvement within the first year of treatment.
Method: Patients 6-12 years with positive screen for uncomplicated ADHD at the brief child and family phone interview (BCFPI), a routine clinical procedure, were triaged to SC. The control group consisted of patients diagnosed with ADHD in 2014 and treated as usual. BCFPI factors at baseline and follow-up after one year and resource utilization were compared.
Results: Patients improved in ADHD symptoms (Cohen's d = 0.78, p < 0.001), child function (Cohen's d = 0.80, p < 0.001) and in family situation (Cohen's d = 0.61, p < 0.001) without group differences. Parents of SC patients participated more often in psychoeducational groups (75.5 vs. 49.5%, p < 0.001). SC had shorter time to ADHD diagnosis (8.4 vs. 15.6 weeks, p = 0.01) and to medication (24.6 vs. 32.1 weeks, p = 0.003). SC families were more satisfied with the waiting time (p = 0.01), otherwise there were no differences in satisfaction between the groups. Families of SC patients had fewer visits (4.7 vs. 10.8, p < 0.001) but used the same number of phone calls (6.3 vs. 6.2, p = 0.71). Costs were 55% lower.
Conclusions: A SC for ADHD can markedly reduce costs with preserved quality. As resources are limited, child psychiatry would benefit from standardization

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Nord J Psychiatry. 2020.

MAPPING FACTORS FACILITATING RESILIENCE IN MOTHERS□ÇÔPOTENTIAL CLINICAL RELEVANCE FOR CHILDREN WITH ADHD.

Darling RP, Bilenberg N, Kirubakaran R, et al.

Background: Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common neurobiological disorders in childhood. Maternal resilience has been linked to treatment outcome in child ADHD. However, not much is known about factors that may facilitate maternal resilience.
Aim: The aim of this study was to explore factors potentially facilitating resilience in mothers to children with ADHD. Method: The current study was part of a naturalistic observational study. 64 mothers to children diagnosed with ADHD completed a set of questionnaires and a short protocol including demographic and psychosocial items. Correlation matrix were estimated for each of the scores to establish the relationship between them.
Results: We found significant negative correlations between maternal self-reported attachment style and self-reported resilience and between self-reported ADHD-symptoms and resilience-score.
Conclusion: The findings indicate that selected factors in maternal functioning may contribute to development of resilience, which may in turn be a factor of importance in parenting

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Pediatr Res. 2019 Jan;85:234-41.

CHILDREN'S LOW-LEVEL PESTICIDE EXPOSURE AND ASSOCIATIONS WITH AUTISM AND ADHD: A REVIEW.

Roberts JR, Dawley EH, Reigart JR.

Pesticides are chemicals that are designed specifically for the purpose of killing or suppressing another living organism. Human toxicity is possible with any pesticide, and a growing body of literature has investigated possible associations with neurodevelopmental disorders. Attention deficit disorder with or without hyperactivity (ADHD) and autism spectrum disorder (ASD) are two of these specific disorders that have garnered particular interest. Exposure to toxic chemicals during critical windows of brain development is a biologically plausible mechanism. This review describes the basic laboratory science including controlled pesticide dosing experiments in animals that supports a mechanistic relationship in the development of

ADHD and/or ASD. Epidemiological relationships are also described for low-level pesticide exposure and ADHD and/or ASD. The available evidence supports the hypothesis that pesticide exposure at levels that do not cause acute toxicity may be among the multifactorial causes of ADHD and ASD, though further study is needed, especially for some of the newer pesticides

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Pediatrics. 2020 Jan;145.

IDENTIFICATION, EVALUATION, AND MANAGEMENT OF CHILDREN WITH AUTISM SPECTRUM DISORDER.

Hyman SL, Levy SE, Myers SM.

Autism spectrum disorder (ASD) is a common neurodevelopmental disorder with reported prevalence in the United States of 1 in 59 children (approximately 1.7%). Core deficits are identified in 2 domains: social communication/interaction and restrictive, repetitive patterns of behavior. Children and youth with ASD have service needs in behavioral, educational, health, leisure, family support, and other areas. Standardized screening for ASD at 18 and 24 months of age with ongoing developmental surveillance continues to be recommended in primary care (although it may be performed in other settings), because ASD is common, can be diagnosed as young as 18 months of age, and has evidenced-based interventions that may improve function. More accurate and culturally sensitive screening approaches are needed. Primary care providers should be familiar with the diagnostic criteria for ASD, appropriate etiologic evaluation, and co-occurring medical and behavioral conditions (such as disorders of sleep and feeding, gastrointestinal tract symptoms, obesity, seizures, attention-deficit/hyperactivity disorder, anxiety, and wandering) that affect the child's function and quality of life. There is an increasing evidence base to support behavioral and other interventions to address specific skills and symptoms. Shared decision making calls for collaboration with families in evaluation and choice of interventions. This single clinical report updates the 2007 American Academy of Pediatrics clinical reports on the evaluation and treatment of ASD in one publication with an online table of contents and section view available through the American Academy of Pediatrics Gateway to help the reader identify topic areas within the report

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Pediatrics. 2020 Feb;145.

HEALTH CARE SUPERVISION FOR CHILDREN WITH WILLIAMS SYNDROME.

Morris CA, Braddock SR.

This set of recommendations is designed to assist the pediatrician in caring for children with Williams syndrome (WS) who were diagnosed by using clinical features and with chromosome 7 microdeletion confirmed by fluorescence in situ hybridization, chromosome microarray, or multiplex ligation-dependent probe amplification. The recommendations in this report reflect review of the current literature, including previously peer-reviewed and published management suggestions for WS, as well as the consensus of physicians and psychologists with expertise in the care of individuals with WS. These general recommendations for the syndrome do not replace individualized medical assessment and treatment

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Pharmacoepidemiol Drug Saf. 2019 Mar;28:288-95.

MATERNAL AND NEONATAL OUTCOMES AFTER EXPOSURE TO ADHD MEDICATION DURING PREGNANCY: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Jiang HY, Zhang X, Jiang CM, et al.

PURPOSE: Attention-deficit/hyperactivity disorder (ADHD) medications are used by increasing numbers of reproductive-age women. The safety of these medications during pregnancy has not been well described.

METHODS: A systematic review and meta-analysis was performed to evaluate the adverse maternal and neonatal outcomes associated with exposure to ADHD medication during pregnancy. The PubMed and Embase databases were searched to identify potential studies for inclusion.

RESULTS: Eight cohort studies that estimated adverse maternal or neonatal outcomes associated with exposure to ADHD medication during pregnancy were included. Exposure to ADHD medication was associated with an increased risk of neonatal intensive care unit (NICU) admission compared with no exposure at any time (risk ratio (RR) 1.88; 95% confidence interval (CI), 1.7-2.08) and compared with women with exposure either before or after pregnancy (RR 1.38; 95% CI, 1.23-1.54; P < 0.001). Exposure to methylphenidate (MPH) was marginally associated with an increased risk for cardiac malformation (RR 1.27; 95% CI, 0.99-1.63; P = 0.065) compared with no exposure. However, exposure to ADHD medication was not associated with an increased risk for other adverse maternal or neonatal outcomes. This analysis was limited by the small number of studies included and the limited adjustments for the possible confounders in the studies.
CONCLUSIONS: Exposure to ADHD medication during pregnancy does not appear to be associated with adverse maternal or neonatal outcomes. Given the few studies included, further larger, prospective studies that control for important confounders are needed to verify our findings

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Pharmacotherapy. 2019 Jun;39:636-44.
PATIENT-LEVEL MEDICATION REGIMEN COMPLEXITY IN AN ADOLESCENT AND ADULT POPULATION WITH AUTISM SPECTRUM DISORDERS.
Barnette DJ, Hanks C, Li W, et al.
BACKGROUND: Adults with autism spectrum disorder (ASD) frequently experience polypharmacy. However, there is limited understanding of how to quantify medication complexity in this vulnerable population. OBJECTIVES: This study examined medication administration difficulty using the Medication Regimen Complexity Index (MRCI) tool in adolescents and adults with ASD. The outcomes compared the mean total MRCI score with the medication count, described MRCI contributions for over-the-counter medication (OTC), and compared MRCI scores by patient characteristics.
METHODS: This was a retrospective chart review of patients aged 7-45 years (mean = 20.1) enrolled in a primary care ASD transitions program. Each patient's listed medications were counted and then scored using the validated MRCI tool.
RESULTS: For the 142 patients studied, mean total MRCI was 14.6 +/- 14.6 (range 0-89) and mean medication count was 6.3 +/- 5.4 (range 0-38). For patients on 0-4 medications (66 of 142; 46.5%), the mean MRCI was 5.5 +/- 4.2, 5-9 medications (50 of 142; 35.2%) the mean MRCI was 15.2 +/- 6.8, and 10-38 medications (26 of 142; 18.3%) the mean MRCI was 36.5 +/- 18.9 (p<0.001). Sixty percent (85 of 142) reported OTC use, which contributed 26.6% to the mean total MRCI. Reported benzodiazepine (mean MRCI 25.8 +/- 17.2), antiepileptic (mean MRCI 23.7 +/- 16.9), antipsychotic (mean MRCI 19.7 +/- 15.9), or antidepressant (mean MRCI 17.0 +/- 14.8) use received higher MRCI scores compared to nonuse (p<0.001 for all except antidepressants [p=0.004]). Total MRCI did not differ significantly by age group, sex, or attention-deficit-hyperactivity disorder (ADHD) medication use (stimulant or nonstimulant).
CONCLUSIONS: Medication regimen complexity in adolescents and adults with ASD was increased significantly for individuals taking >/= 5 medications. Central nervous system agent use, other than ADHD therapy, identified patients with higher regimen complexity. The related clinical effects of these findings warrant further investigation

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Psychiatr Serv. 2019 Feb;70:123-29.
OUTCOMES OF A STATEWIDE LEARNING COLLABORATIVE TO IMPLEMENT MENTAL HEALTH SERVICES IN PEDIATRIC PRIMARY CARE.
Baum RA, King MA, Wissow LS.
OBJECTIVE: Mental health concerns are common in pediatric primary care, but practitioners report low levels of comfort managing them. A primary care intervention addressing organizational and individual factors was developed to improve the management of common mental health conditions.

METHODS: Twenty-nine practices participated in a statewide learning collaborative over 18 months. On-site training was used to teach communication and brief intervention skills and develop an organizational context supportive of mental health. Clinician confidence was measured pre- and postintervention. Medicaid claims data were used to estimate the intervention's effects on identification of mental health conditions and prescribing practices.
RESULTS: Mean clinician confidence scores increased by 20% (95% confidence interval [CI]=15% to 25%), from 2.92 at baseline to 3.55 postintervention. In the first month of the preintervention year, 6.65% of patients with an office visit had at least one visit for a mental health condition, rising to 9% postintervention; this trend was driven by detection and treatment of attention-deficit hyperactivity disorder (ADHD). Rates of prescribing ADHD medication to patients with visits for ADHD increased by 0.12 percentage points per month (CI=0.02 to 0.22, p=0.022). Rates of prescribing second-generation antipsychotics to all patients with office visits decreased by 0.014 percentage points per month (CI=-.03 to -.00, p=0.028), relative to preintervention trends.
CONCLUSIONS: This study suggests that a multicomponent intervention addressing individual staff and organizational factors together can promote identification and treatment of child mental health conditions in primary care. Future research is required to better understand the core components, impact on health outcomes, and sustainability

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Psychiatr Invest. 2020;17:256-61.

SERUM GALECTIN-3 LEVELS IN CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Isik U, Kilic F, Demirda A, et al.

Objective Attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder with underlying pathogenesis and etiological factors not fully understood. We assumed that galectin-3, which is also linked with inflammatory responses, may play an important role in the ethiopathogenesis of ADHD. In this study, we aimed to investigate whether serum galectin-3 levels are related to ADHD in childhood.
Methods The current study consisted of 35 treatment-naive children with ADHD and 35 control subjects. The severities of ADHD and conduct disorder symptoms were assessed via parent-and teacher-rated questionnaires. The severity of anxiety and depression symptoms of the children were determined by the self-report scale. Venous blood samples were collected and serum galectin-3 levels were measured.
Results The ADHD group had significantly higher serum Galectin-3 levels than the control group. To control confounding factors, including age, sex, and BMI percentile, one-way analysis of covariance (ANCOVA) test was also performed. Analyses revealed a significantly higher serum log-Galectin-3 levels in children with ADHD compared to controls. No association was found between the mean serum galectin-3 levels and sociodemographic characteristics and clinical test scores, except the oppositional defiant behavior scores.
Conclusion Our research supports the hypothesis that serum levels of galectin-3 might be related to ADHD

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Psychiatry Res. 2019 Nov;281:112574.

ADHD AND SUBTHRESHOLD SYMPTOMS IN CHILDHOOD AND LIFE OUTCOMES AT 40 YEARS IN A PROSPECTIVE BIRTH-RISK COHORT.

Schiavone N, Virta M, Leppamaki S, et al.

We investigated ADHD symptoms and life outcomes in adulthood and their association with childhood ADHD and subthreshold symptoms in a prospectively followed cohort with perinatal risks. We identified participants with childhood ADHD (cADHD, n=37), subthreshold symptoms defined as attention problems (cAP, n=64), and no ADHD or cAP (Non-cAP, n=217). We compared the groups and a control group with no perinatal risks (n=64) on self-reported ADHD symptoms, executive dysfunction, and life outcomes in adulthood. At age 40, 21.6% of the cADHD, 6.3% of the cAP, 6.0% of the Non-cAP group, and 1.6% of the controls reached a screener cutoff for possible ADHD. The cADHD group had lower educational level, more ADHD symptoms and executive dysfunction, and higher rates of drug use than the other groups. Childhood ADHD associated

with perinatal risks persists into midlife whereas childhood subthreshold ADHD symptoms in this cohort were not associated with negative outcomes in adulthood

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Psychiatry Res. 2019 Oct;280:112501.

CLINICAL DIFFERENCES BETWEEN PATIENTS WITH PEDIATRIC BIPOLAR DISORDER WITH AND WITHOUT A PARENTAL HISTORY OF BIPOLAR DISORDER.

Ramos BR, Librenza-Garcia D, Zortea F, et al.

Pediatric Bipolar Disorder (PBD) is a highly heritable condition responsible for 18% of all pediatric mental health hospitalizations. Despite the heritability of this disorder, few studies have assessed potential differences in the clinical manifestation of PBD among patients with a clear parental history of BD. Additionally, while recent studies suggest that attentional deficits are a potential endophenotypic marker of PBD, it is unclear whether heritability is a relevant contributor to these symptoms. In order to address this gap, the present study assessed 61 youth with PBD (6-17 years old), corresponding to 27 offspring of BD patients, and 31 PBD patients without a parental history of the disorder. All standardized assessments, including the K-SADS-PL-W were performed by trained child and adolescent psychiatrists. We performed a logistic multivariate model using the variables of ADHD, rapid cycling, and lifetime psychosis. Rates of ADHD comorbidity were significantly higher among PBD patients who had a parent with BD. Furthermore, PBD patients who had a parent with BD showed a trend toward significance of earlier symptom onset. PBD offspring did not show increased rates of suicide attempts, rapid cycling, or psychosis. Given these findings, it appears that PBD patients who have a parent with BD may represent a distinct endophenotype of the disorder. Future longitudinal and larger studies are required to confirm our findings

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Psychiatry Res. 2019 Dec;282:112631.

INATTENTION, EMOTION DYSREGULATION AND IMPAIRMENT AMONG URBAN, DIVERSE ADULTS SEEKING PSYCHOLOGICAL TREATMENT.

O'Neill S, Rudenstine S.

Emotion dysregulation is commonly reported among adults with Attention-Deficit/Hyperactivity Disorder. This study examined whether inattention and/or hyperactivity/impulsivity directly affect functional impairment, or whether they do so indirectly by decreasing emotion regulation capabilities. An ethnically, racially and socioeconomically diverse sample of clients seeking treatment at a low-fee outpatient mental health clinic were recruited [N=177, male n=59, 33.3%, mean (SD) age=28.54 (8.41) years]. Participants completed measures of inattention, hyperactivity/impulsivity, emotion regulation and impairment at intake. Inattention was more strongly related to emotion regulation and impairment than hyperactivity/impulsivity. Hayes' PROCESS was used to test for significant indirect effects. More severe inattention was associated with less emotional clarity, which in turn was associated with worse Interpersonal Relationship difficulties; more severe inattention was associated with less access to emotion regulation strategies and poorer emotional clarity, which in turn were associated with greater Symptom Distress; and inattention was directly associated with impairment at school and work. In addition to treating inattention, clinicians should focus on emotion regulation deficits. Specifically, working with individuals to improve identification and labeling of emotions, develop strategies to reduce the intensity of their negative emotions, and feel more confident that they have these tools at their disposable may help to reduce impairment

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Psychiatry Res. 2020;288.

SYMPTOM SCORES AND MEDICATION TREATMENT PATTERNS IN CHILDREN WITH ADHD VERSUS AUTISM.

Mayes SD, Waxmonsky JG, Baweja R, et al.

Most children with autism have ADHD, and children with ADHD-Combined and children with autism have high rates of irritable, oppositional, and aggressive behavior. Despite similar symptoms, prescribing practices

may differ between autism and ADHD, which has not been examined in a single study. 1407 children with autism and 1036 with ADHD without autism, 2ΓÇô17 years, were compared with 186 typical peers. Symptom scores were maternal Pediatric Behavior Scale ratings in eight areas (ADHD, oppositional/aggressive, irritable/angry, anxious, depressed, and social, writing, and learning problems). Psychotropics were prescribed to 38.0% with ADHD-Combined, 33.3% with autism, and 20.2% with ADHD-Inattentive, most often an ADHD medication (22.1% stimulant, 2.3% atomoxetine), antipsychotic (7.8%), SSRI (5.5%), and alpha agonist (4.9%). ADHD medications were more often prescribed than other medications in all diagnostic groups. Compared to autism, children with ADHD-Combined were more likely to be prescribed an ADHD medication, whereas antipsychotics and SSRIs were more likely to be prescribed in autism than in ADHD-Combined. Children with ADHD-Inattentive were least impaired and least likely to be medicated. More severely impaired children were more often medicated regardless of diagnosis. Symptom scores were far worse for treated and untreated children with ADHD and with autism than for typical peers

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Psychoanalytic Psychology. 2020.

FROM JACKSON POLLOCK TO PSYCHIC BLADES: CLIMBING THE SEMIOTIC LADDER IN WORKING WITH CHILDREN WITH ATTENTION-DEFICIT/HYPERACTIVITY DISORDER.

Sapountzis I.

Psychodynamic psychotherapy has not been considered to be the treatment of choice for children with an attention-deficit/hyperactivity disorder (ADHD) diagnosis. In fact, as Gilmore (2000) and Salomonsson (2004) have pointed out, psychoanalysts are reluctant to accept children with such symptom presentation for treatment. Over the past 15 years, however, a number of articles have offered a better understanding of the subjective states of children with ADHD and provided evidence that psychoanalytic- and psychodynamic-based interventions can be effective in reducing many of the symptoms children with ADHD display while also increasing their capacity to reflect on their own experiences and the mental states of others

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Psychol Med. 2019 May;49:1079-88.

DO NATURAL EXPERIMENTS HAVE AN IMPORTANT FUTURE IN THE STUDY OF MENTAL DISORDERS?

Thapar A, Rutter M.

There is an enormous interest in identifying the causes of psychiatric disorders but there are considerable challenges in identifying which risks are genuinely causal. Traditionally risk factors have been inferred from observational designs. However, association with psychiatric outcome does not equate to causation. There are a number of threats that clinicians and researchers face in making causal inferences from traditional observational designs because adversities or exposures are not randomly allocated to individuals. Natural experiments provide an alternative strategy to randomized controlled trials as they take advantage of situations whereby links between exposure and other variables are separated by naturally occurring events or situations. In this review, we describe a growing range of different types of natural experiment and highlight that there is a greater confidence about findings where there is a convergence of findings across different designs. For example, exposure to hostile parenting is consistently found to be associated with conduct problems using different natural experiment designs providing support for this being a causal risk factor. Different genetically informative designs have repeatedly found that exposure to negative life events and being bullied are linked to later depression. However, for exposure to prenatal cigarette smoking, while findings from natural experiment designs are consistent with a causal effect on offspring lower birth weight, they do not support the hypothesis that intra-uterine cigarette smoking has a causal effect on attention-deficit/hyperactivity disorder and conduct problems and emerging findings highlight caution about inferring causal effects on bipolar disorder and schizophrenia

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Psychol Med. 2019 May;49:1185-94.

THE DEVIL IS IN THE DETAIL: EXPLORING THE INTRINSIC NEURAL MECHANISMS THAT LINK ATTENTION-DEFICIT/HYPERACTIVITY DISORDER SYMPTOMATOLOGY TO ONGOING COGNITION.

Vatansever D, Bozhilova NS, Asherson P, et al.

BACKGROUND: Attention-deficit/hyperactivity disorder (ADHD) is a developmental condition that profoundly affects quality of life. Although mounting evidence now suggests uncontrolled mind-wandering as a core aspect of the attentional problems associated with ADHD, the neural mechanisms underpinning this deficit remains unclear. To that extent, competing views argue for (i) excessive generation of task-unrelated mental content, or (ii) deficiency in the control of task-relevant cognition.

METHODS: In a cross-sectional investigation of a large neurotypical cohort (n = 184), we examined alterations in the intrinsic brain functional connectivity architecture of the default mode (DMN) and frontoparietal (FPN) networks during resting state functional magnetic resonance imaging in relation to ADHD symptomatology, which could potentially underlie changes in ongoing thought within variable environmental contexts.

RESULTS: The results illustrated that ADHD symptoms were linked to lower levels of detail in ongoing thought while the participants made more difficult, memory based decisions. Moreover, greater ADHD scores were associated with lower levels of connectivity between the DMN and right sensorimotor cortex, and between the FPN and right ventral visual cortex. Finally, a combination of high levels of ADHD symptomology with reduced FPN connectivity to the visual cortex was associated with reduced levels of detail in thought.

CONCLUSIONS: The results of our study suggest that the frequent mind-wandering observed in ADHD may be an indirect consequence of the deficient control of ongoing cognition in response to increasing environmental demands, and that this may partly arise from dysfunctions in the intrinsic organisation of the FPN at rest

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Psychol Med. 2019 Mar;49:590-97.

MAPPING THE NEUROANATOMIC SUBSTRATES OF COGNITION IN FAMILIAL ATTENTION DEFICIT HYPERACTIVITY DISORDER.

Muster R, Choudhury S, Sharp W, et al.

BACKGROUND: While the neuroanatomic substrates of symptoms of attention deficit hyperactivity disorder (ADHD) have been investigated, less is known about the neuroanatomic correlates of cognitive abilities pertinent to the disorder, particularly in adults. Here we define the neuroanatomic correlates of key cognitive abilities and determine if there are associations with histories of psychostimulant medication.

METHODS: We acquired neuroanatomic magnetic resonance imaging data from 264 members of 60 families (mean age 29.5; s.d. 18.4, 116 with ADHD). Using linear mixed model regression, we tested for associations between cognitive abilities (working memory, information processing, intelligence, and attention), symptoms and both cortical and subcortical volumes.

RESULTS: Symptom severity was associated with spatial working memory (t = -3.77, p = 0.0002), processing speed (t = -2.95, p = 0.004) and a measure of impulsive responding (t = 2.19, p = 0.03); these associations did not vary with age (all p > 0.1). Neuroanatomic associations of cognition varied by task but centered on prefrontal, lateral parietal and temporal cortical regions, the thalamus and putamen. The neuroanatomic correlates of ADHD symptoms overlapped significantly with those of working memory (Dice's overlap coefficient: spatial, p = 0.003; verbal, p = 0.001) and information processing (p = 0.02). Psychostimulant medication history was associated with neither cognitive skills nor with a brain-cognition relationships.

CONCLUSIONS: Diagnostic differences in the cognitive profile of ADHD does not vary significantly with age; nor were cognitive differences associated with psychostimulant medication history. The neuroanatomic substrates of working memory and information overlapped with those for symptoms within these extended families, consistent with a pathophysiological role for these cognitive skills in familial ADHD

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Psychol Med. 2019 Apr;49:881-90.

ASSESSING RISK OF NEURODEVELOPMENTAL DISORDERS AFTER BIRTH WITH OXYTOCIN: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Lonfeldt NN, Verhulst FC, Strandberg-Larsen K, et al.

Experts have raised concerns that oxytocin for labor induction and augmentation may have detrimental effects on the neurodevelopment of children. To investigate whether there is the reason for concern, we reviewed and evaluated the available evidence by searching databases with no language or date restrictions up to 9 September 2018. We included English-language studies reporting results on the association between perinatal oxytocin exposure and any cognitive impairment, psychiatric symptoms or disorders in childhood. We assessed the quality of studies using the Newcastle-Ottawa Quality Assessment Scales. Independent risk estimates were pooled using random-effects meta-analyses when at least two independent datasets provided data on the same symptom or disorder. Otherwise, we provided narrative summaries. Two studies examined cognitive impairment, one examined problem behavior, three examined attention-deficit/hyperactivity disorder (ADHD) and seven focused on autism spectrum disorders (ASD). We provided narrative summaries of the studies on cognitive impairment. For ADHD, the pooled risk estimate was 1.17; 95% confidence interval (CI) 0.77-1.78, based on a pooled sample size of 5 47 278 offspring. For ASD, the pooled risk estimate was 1.10; 95% CI 1.04-1.17, based on 8 87 470 offspring. Conclusions that perinatal oxytocin increases the risks of neurodevelopmental problems are premature. Observational studies of low to high quality comprise the evidence-base, and confounding, especially by the genetic or environmental vulnerability, remains an issue. Current evidence is insufficient to justify modifying obstetric guidelines for the use of oxytocin, which state that it should only be used when clinically indicated

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Psychol Med. 2019 Apr;49:940-51.

DEVELOPMENTAL CHANGES OF NEUROPSYCHOLOGICAL FUNCTIONING IN INDIVIDUALS WITH AND WITHOUT CHILDHOOD ADHD FROM EARLY ADOLESCENCE TO YOUNG ADULTHOOD: A 7-YEAR FOLLOW-UP STUDY.

Lin YJ, Gau SS.

BACKGROUND: Our knowledge about the developmental change of neuropsychological functioning in attention-deficit/hyperactivity disorder (ADHD) is limited. This prospective longitudinal study examined the changes in neuropsychological functions and their associations with the changes of ADHD symptoms across the developmental stages from early adolescence to young adulthood.

METHODS: We followed up 53 individuals diagnosed with the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) ADHD during childhood (mean age 12.77 years at time 1, 19.81 years at time 2) and 50 non-ADHD controls (mean age 12.80 years at time 1, 19.36 years at time 2) with repeated psychiatric interviews at two time points to confirm ADHD and other psychiatric diagnoses. Neuropsychological functions with high- and low-executive demands, measured by the Cambridge Neuropsychological Testing Automated Battery (CANTAB) at two time points, were compared.

RESULTS: Both groups showed improvements in all neuropsychological tasks except reaction time in the ADHD group. Despite having a greater improvement in spatial working memory (SWM) than controls, individuals with ADHD still performed worse in various neuropsychological tasks than controls at follow-up. Better baseline intra-dimension/extra-dimension shift and parental occupation predicted fewer ADHD symptoms at follow-up independent of baseline ADHD symptoms. The degree of ADHD symptom reduction was not significantly linearly correlated to the magnitude of neuropsychological function improvement.

CONCLUSION: Individuals with ADHD and controls had parallel developments in neuropsychological functioning, except a catch-up in SWM in ADHD. Almost all neuropsychological functions herein were still impaired in ADHD at late adolescence/young adulthood. There may be a threshold (i.e. non-linear) relationship between neuropsychological functioning and ADHD symptoms

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Psychol Med. 2020 Apr;50:973-80.

MATERNAL HALF-SIBLING FAMILIES WITH DISCORDANT FATHERS: A CONTRASTIVE DESIGN ASSESSING CROSS-GENERATIONAL PATERNAL GENETIC TRANSMISSION OF ALCOHOL USE DISORDER, DRUG ABUSE AND MAJOR DEPRESSION.

Kendler KS, Ohlsson H, Sundquist J, et al.

Background We introduce and apply an elegant, contrastive genetic-epidemiological design Maternal Half-Sibling Families with Discordant Fathers â€“ to clarify cross-generational transmission of genetic risk to alcohol use disorder (AUD), drug abuse (DA) and major depression (MD).

Method Using Swedish national registries, we identified 73 108 eligible pairs of reared together maternal half-siblings and selected those whose biological fathers were discordant for AUD, DA and MD, and had minimal contact with the affected father. We examined differences in outcome in half-siblings with an affected v. unaffected father.

Results For AUD, DA and MD, the HR (95% confidence intervals) for the offspring of affected v. unaffected fathers were, respectively, 1.72 (1.61; 1.84), 1.55 (1.41; 1.70) and 1.51 (1.40; 1.64). Paternal DA and AUD, but not MD, predicted risk in offspring for attention deficit hyperactivity disorder, conduct disorder, and poor educational performance and attainment. Offspring of affected v. unaffected fathers had poorer pregnancy outcomes, with the effect strongest for DA and weakest for MD. A range of potential biases and confounders were examined and were not found to alter these findings substantially.

Conclusion Reared together maternal half-siblings differ in their paternal genetic endowment, sharing the same mother, family, school and community. They can help clarify the nature of paternal genetic effects and produce results consistent with other designs. Paternal genetic risk for DA and AUD have effects on offspring educational achievement, child and adult psychopathology, and possibly prenatal development. The impact of paternal genetic risk for MD is narrower in scope

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Psychoneuroendocrinology. 2019 May;103:130-36.

TESTOSTERONE TO CORTISOL RATIO AND AGGRESSION TOWARD ONE'S PARTNER: EVIDENCE FOR MODERATION BY PROVOCATION.

Manigault AW, Zoccola PM, Hamilton K, et al.

BACKGROUND: Consistent with the dual-hormone hypothesis, the combination of high testosterone levels and low cortisol levels has been linked to increased dominant and aggressive behaviors. However, recent research indicates that this association is weaker or even reversed following provocation. It is also unclear whether the association between testosterone/cortisol and aggression is similar for men and women and for those with and without attention-deficit/hyperactivity disorder (ADHD).

METHODS: Using data from a larger project examining ADHD in the context of romantic relationships, the current study tested the dual-hormone hypothesis in 32 heterosexual young adult couples who engaged in a conflict discussion and a competitive reaction time task in the laboratory. Aggressive behavior was indexed by greater noise blast intensity toward one's partner during the competitive reaction time task. Two potential sources of provocation were examined: 1) affective responses to a conflict discussion task preceding the competitive reaction time task, and 2) whether participants received/did not receive a noise blast before the first two trials of the competitive reaction time task. Salivary testosterone and cortisol were assessed three times throughout the laboratory session, and the ratio of testosterone to cortisol output across the session (T/C AUCg ratio) was calculated.

RESULTS: Consistent with the dual-hormone hypothesis, greater AUCg T/C ratios were associated with greater aggression. Further, T/C ratio-aggression associations were weaker under provoked conditions but did not differ as a function of sex or ADHD status.

CONCLUSIONS: Results provide support for the dual-hormone hypothesis and suggest that provocation may be an important moderator of the T/C-aggression relationship

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Psychooncology. 2019 Oct;28:1995-2001.

PEDIATRIC BONE MARROW TRANSPLANTATION: PSYCHOPATHOLOGIC FEATURES IN RECIPIENTS ALONG WITH SIBLINGS.

Erden S, Kuskonmaz BB, Cetinkaya DU, et al.

OBJECTIVE: To analyze the development of psychopathology in recipients along with their donor and nondonor siblings and the relationship with the bone marrow transplantation (BMT) process.

METHODS: All children were interviewed using the Kiddie Schedule for Affective Disorders and Schizophrenia to assess psychopathology. The depression and anxiety symptoms and self-esteem of children and adolescents were evaluated using the Children's Depression Inventory, State-Trait Anxiety Inventory for Children, State-Trait Anxiety Inventory, and Rosenberg Self-Esteem Scale.

RESULTS: In this study, the depressive symptom level was found significantly higher in the donor group compared with the nondonor group. State anxiety symptoms were higher in the BMT group ($P < .05$). There were no significant differences in trait anxiety symptoms. Self-respect was higher in children in the donor group compared with those in the BMT group ($P < .05$). During the transplant process, children with bone marrow transplants had a higher prevalence of depression, anxiety disorder, and attention-deficit/hyperactivity disorder, and nondonor siblings had a higher prevalence of depressive disorder, anxiety disorder, and attention-deficit/hyperactivity disorder compared with society in general.

CONCLUSION: Physicians should deal with the family as a whole, not just their patient, and should be aware of the psychiatric risk of other siblings during the assessment

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Seizure. 2019 Dec;73:51-55.

AUTISM SPECTRUM DISORDER IN CHILDREN AND YOUNG PEOPLE WITH NON-EPILEPTIC SEIZURES.

McWilliams A, Reilly C, Gupta J, et al.

PURPOSE: Non-epileptic seizures are paroxysmal events which to an observer resemble epileptic seizures. Proposed risk factors incorporate biopsychosocial aspects including factors in the affected individual. Unexpectedly high rates of autism spectrum disorder (ASD) occurred in the clinical population reported here. Although elevated levels of psychiatric co-morbidity are known to be present in patients with NES, ASD has only been previously described in a single case report.

METHODS: This case series captures rates of ASD in 59 children and young people who were referred to a specialist paediatric mental health service at Great Ormond Street Hospital, London, UK for assessment and treatment of non-epileptic seizures between 2012 and 2016.

RESULTS: 10/59 (16.9%) of the children and young people with non-epileptic seizures also had ASD, with 5/10 (50%) of these undiagnosed with ASD before referral. Children and young people with ASD were significantly more likely to have tics or attention-deficit hyperactivity disorder than those without ASD.

CONCLUSION: ASD may be a common co-morbidity in non-epileptic seizures. Careful clinical assessment with consideration of ASD traits is therefore important in the non-epileptic seizures population. It is beneficial to diagnose ASD early as its presence is likely to require a modified approach to assessment and treatment of non-epileptic seizures. Study of the development of non-epileptic seizures in ASD may suggest hypotheses for the pathogenesis of non-epileptic seizures in the wider population

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Sleep Science. 2019;12:295-301.

SLEEP DISTURBANCE IN CHILDREN WITH ATTENTION-DEFICIT HYPERACTIVITY DISORDER: A SYSTEMATIC REVIEW.

Martins R, Scalco JC, Jose FG, et al.

The aim of the present systematic review was to compare sleep disorders in children, from 7 to 12 years old, with and without an attention-deficithyperactivity disorder (ADHD) diagnosis. Electronic literature search of PubMed, LILACS, Scopus, Web of Science and Cochrane Library databases was conducted in September 2017. We included cross-sectional observational studies comparing the sleep of children between 7 and 12 years old, with and without an ADHD diagnosis, reported according to the Diagnostic and Statistical Manual of Mental Disorders criteria. The studies with other research designs, those that included adolescents and/or

adults in the sample and those who evaluated the sleep of children with ADHD and other associated comorbidities were excluded. A total of 1911 articles were identified. After analyzing, 8 articles were compatible with the theme and included in the review. For sleep evaluation, most of the studies used an objective measure together with another subjective measure. Three out of six studies that used objective measures did not observe any differences between children with and without ADHD diagnosis. Children with ADHD presented more sleep disturbances when compared to children without the diagnosis. These disorders were diverse, yet inconsistent among the surveys. More studies are needed to clarify and for robust results

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Stat Methods Med Res. 2019 Feb;28:462-85.

REGRESSION STANDARDIZATION AND ATTRIBUTABLE FRACTION ESTIMATION WITH BETWEEN-WITHIN FRAILTY MODELS FOR CLUSTERED SURVIVAL DATA.

Dahlqwist E, Pawitan Y, Sjolander A.

The between-within frailty model has been proposed as a viable analysis tool for clustered survival time outcomes. Previous research has shown that this model gives consistent estimates of the exposure-outcome hazard ratio in the presence of unmeasured cluster-constant confounding, which the ordinary frailty model does not, and that estimates obtained from the between-within frailty model are often more efficient than estimates obtained from the stratified Cox proportional hazards model. In this paper, we derive novel estimation techniques for regression standardization with between-within frailty models. We also show how between-within frailty models can be used to estimate the attributable fraction function, which is a generalization of the attributable fraction for survival time outcomes. We illustrate the proposed methods by analyzing a large cohort on preterm birth and attention deficit hyperactivity disorder. To facilitate use of the proposed methods, we provide R code for all analyses

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Transcultural Psychiatry. 2020.

CHALLENGES IN ADHD CARE FOR ETHNIC MINORITY CHILDREN: A REVIEW OF THE CURRENT LITERATURE.

Slobodin O, Masalha R.

While attention deficit hyperactivity disorder (ADHD) has been extensively studied in the past decades, the role of social and cultural practices in its assessment, diagnosis, and treatment has been often overlooked. This selective review provides an overview of research that explores social and cultural influences on help-seeking behavior in ethnic minority children with ADHD. Studies were selected that address cultural diversity in three areas of ADHD help-seeking: problem recognition, access to mental health services, and treatment. Special attention was given to studies of treatment selection and adherence in minority groups. Findings suggested that cultural disparities in ADHD care among ethnic minority children occur in the early stages of problem recognition, through service selection, and in the quality of treatment. Ethnic minority children were less likely than their nonminority counterparts to be diagnosed with ADHD and its comorbid conditions and less likely to be prescribed and adhere to stimulant drug treatment. These differences reflect cultural diversity in norms and attitudes towards mental health issues (e.g., fear of social stigma) as well as limited access to qualified health care. Paradoxically, cultural, racial, and language bias may also lead to the overidentification of ethnic minority children as disabled and to higher ratings of ADHD symptoms. This review highlights the importance of sociocultural factors in understanding developmental psychopathology and help-seeking behavior. In addition, it further supports calls for increasing cultural competence in communications during clinical assessment, diagnosis, and treatment in minority communities. Clinical, theoretical, and methodological considerations for future research are discussed

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Ugeskr Laeger. 2019 Aug;181.

ADHD IN PRESCHOOLERS AND EARLY PARENT TRAINING INTERVENTIONS.

Lange AM, Thomsen PH.

ADHD is a prevalent neuro-developmental disorder, and with onset often occurring in early childhood. It impacts daily functioning across a range of domains and is predictive of long-term burden to families as well as health, social, education and criminal justice systems. Parent training (PT) is recommended as first-line treatment for pre-school children with ADHD. This review outlines the clinical presentation of preschool ADHD and presents the evidence for three different PT programmes available in Denmark and evaluated in RCTs with preschoolers

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Ugeskr Laeger. 2019 Dec;182.

MINDFULNESS AS TREATMENT FOR ADHD.

Jakobsen K, Thomsen PH, Lemcke S.

This review presents an overview of the present knowledge of the effectiveness of mindfulness interventions (MI) for patients with ADHD. A search was performed in four databases, and 15 papers were found. In adults, the effect of MI was significant on ADHD symptoms but unclear on other outcomes. For children and adolescents, results were uncertain but point toward improved planning, cognitive flexibility and better interactions in the families. No studies have compared the efficacy of MI to pharmacological treatment. Evidence in the field is still sparse due to small sample sizes and differences in study designs

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Zh Nevrologii Psihiatrii im S S Korsakova. 2020;120:120-24.

TYPOLOGY OF IMPAIRED ATTENTION IN CHILDREN AND RELATED BEHAVIORAL DISORDERS.

Chutko LS, Surushkina SY.

A review of publications devoted to the study of impaired attention in children is presented. The authors identified the main types of impaired attention, examined the main psycho-neurological diseases, in which impaired attention is the leading symptom, and approaches to treatment of these disorders

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STANDARD PAPER

Does ACT-Group Training Improve Cognitive Domain in Children with Attention Deficit Hyperactivity Disorder? A Single-Arm, Open-Label Study

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Abstract

This single-arm, open-label study aimed to investigate the efficacy of a cognitive-behavioural group training based on acceptance and commitment therapy (ACT) on cognition in drug-naïve children with attention deficit hyperactivity disorder (ADHD). Thirty-six children with ADHD aged 8–13 were invited to participate in the 9-month ACT training programme, which consisted of 26 weekly sessions of group therapy lasting 90 min each. Their parents also received 12 sessions of ACT-based parent training, every 2 weeks. The outcome measure for the present study was the change in the cognitive performance assessed by a battery of computerised task. The cognitive outcome of children receiving ACT-group intervention was compared to that of an external untreated control group of children with ADHD. No significant improvements were observed in any of the cognitive measures. This preliminary study suggests that the 9-month ACT-group training programme might not have positive effects on cognitive difficulties usually occurring in ADHD. Future randomised controlled trials with larger sample sizes are required to shed more light on this issue.

Keywords: ADHD; ACT; mindfulness; executive function; rehabilitation

Introduction

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterised by persistent symptoms of inattention, excessive motor activity, and impulsive behaviour. The disorder significantly influences academic and job performance, social relationships, and family life (DSM-5; APA, 2013). ADHD is one of the most common neurodevelopmental disorders, affecting 7.2% of children worldwide (Thomas, Sanders, Doust, Beller, & Glasziou, 2015), although prevalence estimates are different between countries. In Italy, it is about 1%, according to the Italian National Institute of Health (2014).

With respect to intervention strategies, international clinical guidelines recommend a multimodal approach, including both pharmacological and psychosocial intervention for the treatment of children with ADHD (see, e.g., the MTA Cooperative Group, 1999). Pharmacological treatment (i.e., stimulant medication) is considered the most effective in reducing core symptoms and behavioural impairments associated with ADHD (Coghill et al., 2014). However, some patients refuse such medication due to possible side effects, partial responses, and concerns about long-term effects. In addition to stimulant medications, other empirically based interventions for the treatment of children with ADHD include

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behavioural programmes, such as school-based interventions, behavioural parent training, and child training programmes. Among these, parent training is the most widespread psychosocial treatment (Evans, Owens, Wymbs, & Ray, 2018), although a relatively recent meta-analysis showed low efficacy when the testers were blind to treatment allocation (Daley et al., 2014). Data in support of child training programmes based on cognitive-behavioural therapy approaches are less compelling (Sonuga-Barke et al., 2013; Vanzin et al., 2018). Nonetheless, psychosocial treatments with child involvement have higher parent satisfaction ratings than those using medication alone (MTA Collaborative Group, 1999).

Mindfulness is a key component of several cognitive-behavioural interventions. Kabat-Zinn (1994) defined mindfulness as 'a particular way of paying attention on purpose, in the present moment and nonjudgmentally' (p. 4) that helps participants focus their attention on the experience of sensations, thoughts, and emotions and to accept them without reacting or avoiding the experience itself. As self-regulation impairment is a core characteristic of ADHD (Barkley, 1997), studies on mindfulness practices have reported potential positive effects, including reduction of inattentive symptoms and impulsivity, anxiety, and depression (see, e.g., Zylowska et al., 2008). Acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) includes mindfulness practices as a part of broader treatment protocols. ACT is a cognitive-behavioural therapy aiming at building psychological flexibility by encouraging participants to be aware of inner experiences and external signals and to stay in contact with uncomfortable ones (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Simons & Gaher, 2005). Several studies showed that ACT-based interventions can be effective in different clinical and nonclinical contexts, such as psychiatric treatment, health promotion, and in organisational environments (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Powers, Zum Vorde Sive Vording, & Emmelkamp, 2009; Ruiz, 2010; Öst, 2014; A-Tjak et al., 2015). However, to the best of our knowledge, only two studies have investigated the efficacy of ACT-based interventions in either children or adolescents with ADHD. Murrell, Steinberg, Connally, Hulsey, and Hogan (2015) evaluated the feasibility of a short ACT-group training in nine school-aged children with ADHD and comorbid learning disorders. The programme consisted of 60-min group sessions, once a week, for 8 weeks. They found significant reliable change index scores on the Behaviour Assessment Scale for Children — second edition and the Bull's-Eye Values Assessment in two out of nine participants. Accordingly, a more recent investigation (Vanzin et al., 2020) indicated that 26 weeks (90-min sessions) of ACT-based group child training delivered over 9 months had positive effects on the behaviour of 31 school-aged children and adolescents diagnosed with ADHD at post-treatment. More specifically, this explorative single-arm, open-label study found improvements in ADHD symptoms measures, on clinical rating scales such as the Conners' Parent Rating Scale-Revised and Clinical Global Impression-Severity. The mindfulness components of the ACT programme provide training in self-regulation to improve attentional processes, such as orienting and alerting, and executive functions.

However, research is yet to report the cognitive effects of the Vanzin (2018) ACT-based child intervention among school-age children with a clinical diagnosis of ADHD. Therefore, the aim of this exploratory, open-label study is to compare the efficacy of ACT-based group child training programme on different cognitive domains (focused and sustained attention, inhibition, and flexibility) in school-aged, drug-naïve children with ADHD.

Methods

The present work is a preliminary, single-arm, open-label study investigating the cognitive effects of a 9-month ACT-group training programme for children aged 8–13 with ADHD plus ACT-based parent training. This study was approved by the ethics committee of our institute '"Comitato Etico IRCCS E.Medea – Sezione Scientifica Associazione La Nostra Famiglia"' and was performed in accordance with the ethical standards set forth by the 1964 Declaration of Helsinki and its later amendments with written informed consent and assent from all caregivers and participants.

While the present work was an uncontrolled trial, the cognitive outcome of participants receiving ACT-group intervention was compared to that of an external control group of drug-naïve children

with ADHD. The latter group of participants was enrolled as placebo group in a foregoing, randomised, placebo-controlled, double-blind intervention trial exploring the efficacy of supplementation with docosahexaenoic acid in children with ADHD (NCT01796262; Crippa et al., 2019). The parents of this group of children did not receive ACT-based parent training.

Participants

All participants were recruited from the Child Psychopathology Unit at our institute over a 3-year period (2015–2018). Children were eligible for inclusion into the 9-month ACT-group training if they met the following criteria: (1) a clinical diagnosis of ADHD; (2) aged between 8 and 13 years; (3) a full-scale intelligence quotient higher than 85 on the Wechsler Intelligence Scale for Children — IV (Wechsler, 2012); (4) the absence of any major neurological or medical condition; (5) the absence of comorbid autism spectrum disorder; and (6) their parents had completed ACT-based cognitive-behavioural group parent training no later than 3 months before study commencement.

Following these criteria, the clinical coordinator (L.V.) identified 36 children eligible for ACT-group training. The 25 children for the external control group were previously and separately recruited according to the same criteria.

All participants had been previously diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders (fourth ed., text rev. or fifth ed.; American Psychiatric Association, 2000; American Psychiatric Association, 2013) at admission by a medical doctor specialised in child neuropsychiatry with expertise in ADHD. Two child psychologists (V.M. and A.V.) independently confirmed the diagnoses through direct observation and the semi-structured development and well-being assessment (Goodman, Ford, Richards, Gatward, & Meltzer, 2000). All participants were Caucasian and had a normal or corrected-to-normal vision.

Procedure

Data were collected from January 2015 to December 2018. Figure 1 depicts the schematic overview of the design of the study, including collection measures and the flow of participants through the study.

ACT-group training participants were assessed at our institute's Child Psychopathology Unit at baseline and at the end of the intervention. At these two visits, participants underwent a shortened battery of cognitive tests from the Amsterdam Neuropsychological Tasks (De Sonneville, 2000) programme to evaluate the executive function domain. While children were completing these tasks, parents filled out the Conners' Parent Rating Scale-R (Conners, 1997) and ADHD Rating Scale IV Parent Version — Investigator completed (ADHD-RS; DuPaul, Power, Anastopoulos, & Reid, 1998) to assess ADHD symptoms. Furthermore, a clinician not directly involved in ACT-group training evaluated the children's global functioning using the Clinical Global Impression-Severity Scale (Busner & Targum, 2007). Last, data on parental employment were used as an index of socioeconomic status and coded according to the Hollingshead 9-point scale for parental occupation (Hollingshead, 1975). The same measures were collected from participants in the external control group. For further details about these participants, see Crippa et al. (2019).

Intervention

The treatment consisted of 26 weekly sessions of group therapy lasting 90 min each, for a total duration of approximately 9 months. Each group included four to five children. The parents of this group of children had received the ACT-based cognitive-behavioural group parent training before study commencement. The treatment protocol for ACT-based group PT consisted of 12 1.5 h-long sessions, every 2 weeks. The PT included both individual educative and psychological goals. The first part of PT aimed at a psycho-educative description of the disorder. In the second part, the goal was to teach behavioural strategies (time-out, rewards, and ignoring) for reducing dysfunctional parent–child interactive cycles. The last part stimulated mindfulness-related skills consistent with the ACT model.

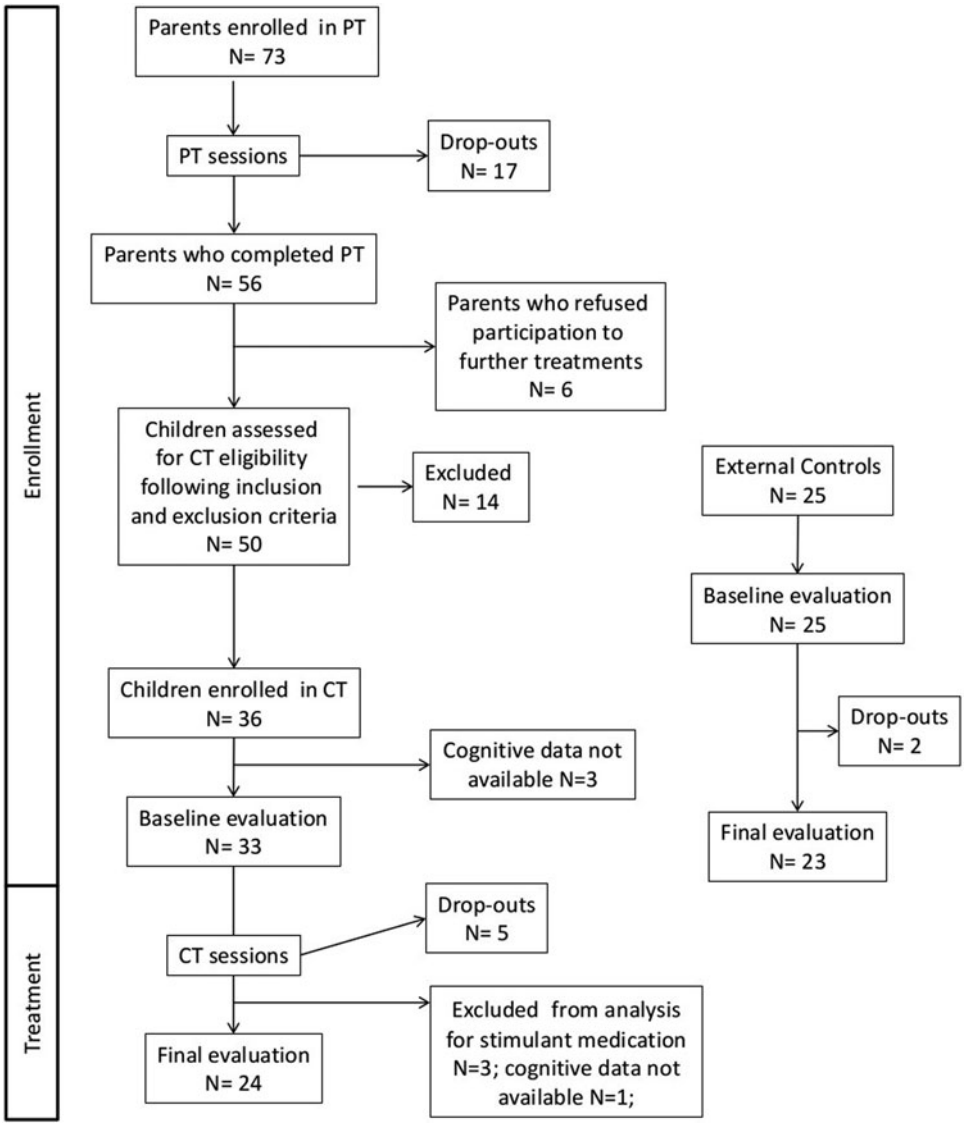

Figure 1. Schematic overview of the study design. PT = parent training; CT = child training.

Before starting the ACT-based group child training, all participants and their families were introduced to the programme to discuss potential benefits or shortcomings, learn about the reinforcement and punishment system, and receive reinforcement about the need to complete homework assignments and pursue weekly objectives.

The intervention used in this study was manualised (Vanzin, 2018) to facilitate efficient and effective administration and to make the programme available for other therapists. The general objective of the programme is to gradually promote the reduction of immediate responses to thoughts and feelings so as to decrease children's impulsive behaviour and improve self-regulation. Children experienced all six core ACT processes throughout the programme: acceptance, cognitive diffusion, being present, self as context, values, and committed action. The focuses and exercises of the different sessions are summarised in Table 1. For a more detailed description of the intervention, see Vanzin et al. (2020).

Table 1 Main Activities, Therapeutic Goals, and Cognitive Functions Targeted for Each Module of the Intervention

Sessions Number	Main Activities and Therapeutic Components	Cognitive Functions Targeted
1–4	An aim of the first sessions is to encourage individual presentation and present the training programme, investigating personal expectations and introducing principal goals and the group metaphor. We help the children to identify strategies that they have tried to employ to solve the everyday problem and to examine whether or not they have been effective. We help them to identify "personal values" in life domains and 'committed actions' to enrich own life, creating personal 'values compass'. Another principal goal of these sessions is introduced mindfulness practice (example of exercise: Mindfulness of breathing).	Sustained and selective attention
5–9	During these sessions, we guide children to identify barriers (feelings, thoughts, and external stimulus) to reach personal goals. We help them to increase awareness of thought, for example noticing thoughts during a play activity, and to promote defusion skills, withdrawing attention to own thoughts and focusing on the present. We also develop mindfulness practice (example of activities: dropping anchor exercise; focus on five senses).	Sustained and selective attention Cognitive flexibility
10–15	An aim of these sessions is to help children to increase awareness of emotions, for example, watching cartoon scenes, and describing triggers, emotions and behavioural consequences. We also teach them to read emotions as discriminative stimuli of an action compatible with the current context, for example during role-playing exercises. In each session, we continue to propose mindfulness activities to develop the ability to focus on the present moment (e.g.: focus on five senses, body scan exercise).	Sustained and selective attention Cognitive flexibility Automatic response inhibition
16–19	During these sessions, we focused on perspective-taking abilities in order to foster empathy and social sensitivity. In each session, we continue to propose mindfulness activities to develop the ability to focus on the present moment (e.g.: awareness walk).	Sustained and selective attention Cognitive flexibility Automatic response inhibition
20–22	In these sessions, children have the possibility to review what was done in the previous sessions. We focus on problem-solving abilities through 'ROAD model': R respira (breath), Osserva (observe), A ascolta i tuoi valori (notice your values), D decidi come agire (choose your actions). In each session, we continue to propose mindfulness activities to develop the ability to focus on the present moment (e.g.: grounding).	Sustained and selective attention Cognitive flexibility Automatic response inhibition Working memory
23-25	During the last session, we invite children to re-elaborate in a creative way what they have learnt (for example, creating a video to be watched with their parents).	

For further details about the intervention used in this study, the reader is referred to Vanzin (2018).

Token economy was used to reinforce individual and group target behaviours during the sessions, support motivation to complete homework, and ensure adherence and compliance with the programme. While the number of completed/missed sessions for each child was not recorded, if a participant missed a session, therapists offered a brief overview of the discussed arguments during the first part of the following session. All sessions were conducted by two experienced psychotherapists (V.M. and A.V.). During the intervention, therapists met weekly to discuss group progresses and monitor the state of treatment. Sessions were supervised by an expert cognitive-behavioural psychotherapist (L.V.).

Throughout the intervention, children had three additional one-on-one sessions (at the beginning of treatment, after 4 months of intervention, at the end of the programme) that lasted 1 h. These sessions aimed to point out potential individual issues and to assist each child in generalising the skills acquired into their daily life. Finally, at the end of each session, parents were included for approximately 10 min to

share progress, be presented with intervention content, and discuss how they could assist with homework. All sessions took place in the afternoon, so that participants did not have to miss school lessons.

Outcome Measures

The effects of ACT-group training on behavioural ADHD symptoms were previously reported (Vanzin et al., 2020). Thus, the focus of the present work was to investigate the effects of this training on the cognitive domain as assessed by Amsterdam Neuropsychological Tasks programme. To do this, four computerised tasks — baseline speed, focused attention 4-letters, shifting attentional set-visual, and sustained attention — were administered to the participants. As in previous studies (Crippa, Agostoni, Mauri, Molteni, & Nobile, 2018; Crippa et al., 2019), we used baseline speed, median reaction time (RT), and standard deviation (SD) of RTs as dependent variables. For focused attention 4-letters, the dependent variables were (1) RT for correct responses, (2) SD of RTs for correct responses, (3) misses, and (4) false alarms. For shifting attentional set-visual task, we calculated (1) mean response time inhibition (difference in RTs between conditions 2 and 1), (2) mean response time flexibility (difference in RTs between conditions 3 and 1), (3) number of errors in inhibition, and (4) number of errors in flexibility. Finally, for sustained attention, the dependent variables were (1) the sum of the 12 latencies per series, (2) SD of this sum across series, (3) misses, (4) false alarms, and (5) the coefficient of variation (i.e., SD/M RT).

Statistical Analysis

Primary analyses were intent-to-treat, including all study participants, and were conducted using free and open software JAMOVI 0.8.2.2 (retrieved from hiips://www.jamovi.org) with general analysis for a linear model module (GAMLj module; retrieved from hiips://gamlj.github.io/).

First, visual and statistical inspections of data were carried out to check the assumptions of normality, linearity, independence of observations, and homogeneity of error variance. Baseline between-group differences on the demographic variables, clinical measures, and cognitive variables were analysed using chi-square analysis and independent sample *t*-tests. The effect of ACT-group intervention on outcome measures was investigated using linear mixed modelling. This technique allows participants with missing data or dropouts to be included in the statistical analysis. Each outcome variable was individually assessed with the same mixed-model design, including a fixed treatment group effect, a fixed time effect, and a treatment by time interaction, estimating the average group-specific intercepts, rates of change over time, and group-specific differences in those rates, respectively. The significance level was two-tailed ($p < .05$) for all analyses. Because this study was exploratory, neither correction for family-wise error rate nor a priori power analysis was conducted. Cohen's *d* effect sizes were calculated to define the effect size of ACT-group intervention versus external controls between baseline and the final evaluation using the formula:

$$d = \frac{M_{\text{change-ACT}}}{\text{SD}_{\text{ACT}}} - \frac{M_{\text{change-external controls}}}{\text{SD}_{\text{external controls}}}$$

where $M_{\text{change-ACT}}$ is the change score (i.e., the mean of the difference between pre-test and post-test means) for the ACT-group training, $M_{\text{change-external controls}}$ is the mean of the change scores for the external controls, SD_{ACT} and $\text{SD}_{\text{external controls}}$ are the standard deviation of ACT-group training scores and external controls scores, respectively (Feingold, 2009).

Results

Treatment Adherence and Baseline Characteristics

Of the 36 children with ADHD who elected to participate in the intervention, five refused to complete the entire ACT-group training, implying a dropout rate of approximately 15%. Three of the 31

participants who completed the entire programme were also on stimulant medication with methylphenidate and were, therefore, excluded from the analyses. Last, data on cognitive outcome measures were not collected at baseline from three children and were not available for one further participant at the end of the training. Overall, cognitive data was, therefore, available on 24 children (73%) at post-treatment. With respect to external controls, data were available for 25 children at baseline and for 23 participants at the final evaluation.

Data on the demographic, clinical, and cognitive variables at baseline are summarised in Tables 2 and 3. ACT-group training participants and external controls did not significantly differ in any of the demographic variables (all $p > .05$). A trend towards significance was observed for the between-group difference in ADHD subtypes ($p = .065$), with 8% of children in the ACT-group training having the inattentive subtype (16% of external controls), 16% the hyperactive–impulsive subtype (44% of external controls), and 76% having the combined subtype (40% of external controls). ADHD symptoms ratings were similar across participants at baseline. Last, with respect to cognitive measures at baseline, children in the ACT-group training produced more false alarms in the focused attention task (false alarms relevant non-target, $p = <.001$) compared to external controls.

Efficacy of Cognitive Outcome Measures

As depicted in Table 3, the linear mixed-model analysis revealed a main effect of time on several ANT scores: false alarms relevant non-target in the focused attention 4-letters task; reaction time of flexibility, number of errors inhibition, and number of errors flexibility in visual set-shifting; tempo × series, standard deviation of the correct responses, false alarms in the sustained, and coefficient of variation in a sustained attention task. Overall, this indicates that children across both groups showed significant ameliorations of cognitive performance over the study. Furthermore, the linear mixed-model analysis showed a significant interaction between treatment condition and time on the number of misses and false alarms irrelevant target in focused attention 4-letters task and in reaction time of flexibility in visual set-shifting. Children in the ACT-group training showed an increase of misses and false alarms in the focused attention 4-letters task at the end of treatment, whereas children in the external control group displayed a lower number of both misses and false alarms. Similarly, children in the ACT-group training showed an increase of response time of inhibition in visual set-shifting, with children in the external control group displaying a reduction of response times.

Discussion

The goal of the present exploratory study was to examine the efficacy of an ACT-based group child training (Vanzin, 2018) on different cognitive domains in school-aged, drug-naïve children with ADHD. Their parents also participated 6 months of ACT-based PT before the onset of child training. To the best of our knowledge, this is the first study that has investigated the possible effect of ACT-based training using a battery of computerised cognitive tests. To do this, we compared the cognitive outcome of a group of children with ADHD receiving ACT-group training to that of an external control group of diagnosed children. The cognitive tasks assessed a range of pre- and post-intervention executive functions, including vigilance, focused and sustained attention, inhibition, and cognitive flexibility.

The results of this single-arm, open-label study did not show the convincing evidence of the benefit of ACT-based group child training on cognitive performance of children with ADHD. Indeed, fluctuations of the cognitive tasks' scores observed during this preliminary study are likely to represent either random fluctuations or developmental changes in the performance, not real treatment effects. The results reported here, therefore, seem to point out that the previous findings (Murrell et al., 2015; Vanzin et al., 2020) of a possible significant benefit of ACT-based child training could be limited to ADHD behavioural symptoms. In particular, the present findings do not replicate, on a cognitive level, the recent results of Vanzin et al. (2020) showing a reduction of inattention as behaviourally rated by

Table 2 Demographics and Clinical Characteristics of the Participants at Baseline Assessment

	ACT-Group Training	External Controls	*p*
Demographics			
N	29	25	
Females : Males	5 : 24	2 : 23	.384[a]
Age	10.25 (1.35)	10.91 (1.42)	.098[b]
IQ	98.32 (11.38)	104.48 (13.79)	.091[b]
SES	58.60 (18.11)	50.2 (19.82)	.124[b]
Clinical Ratings			
ADHD Rating Scale			
Hyperactivity–Impulsivity scale	14.36 (3.48)	14.48 (5.23)	.924[b]
Inattention scale	14.88 (6.09)	17.28 (5.98)	.166[b]
Total	29.64 (8.34)	31.76 (9.76)	.413[b]
Conners' Parents Rating Scales			
ADHD index	71.88 (10.81)	75.00 (11.63)	.331[b]
CGI: restless-impulsive	66.36 (8.96)	70.96 (11.46)	.120[b]
CGI: emotional lability	52.48 (12.47)	58.88 (14.55)	.101[b]
CGI: total	64.80 (8.79)	69.52 (12.49)	.130[b]
DSM IV: inattentive	70.16 (12.07)	73.48 (13.78)	.369[b]
DSM IV: hyperactive–impulsive	68.36 (7.43)	69.96 (12.28)	.580[b]
DSM IV: total	71.32 (10.02)	74.08 (12.28)	.388[b]

Note: Mean and standard deviation (in brackets). IQ = intelligence quotient; SES = socioeconomic status; CGI = Conners' Global Index.
[a]Chi-square test.
[b]Student's *t*-test.

parents via the Conners' Parent Rating Scale-Revised, in a partially overlapping set of participants. This result is not surprising in light of previous evidence, suggesting that different mechanisms could be responsible for the improvement in cognitive performance and ameliorations of behavioural symptoms, respectively (Coghill, Rhodes, & Matthews, 2007). It is also important to acknowledge that comparison of results of the present work and Vanzin et al. (2020) is limited by the fact that we excluded some of their participants that were receiving concurrent pharmacotherapy. This decision was taken to rule out the well-documented effects of pharmacological intervention on the cognitive domain (Coghill et al., 2014).

Our results should be regarded with some limitations in mind. First, the present work is a preliminary single-arm, open-label study and lacks an appropriate control group. At the time of the study, we could not include patients in the waiting list of our clinical unit as controls because the wait was shorter than the 9-month period needed for ACT-group training. Therefore, we decided to compare the cognitive outcomes of participants receiving ACT-group intervention to that of a group of children previously enrolled as a placebo group in a clinical trial investigating the effect of docosahexaenoic acid in children with ADHD (NCT01796262; Crippa et al., 2019). While the two groups of children in the present study were closely matched on the basis of demographic and clinical characteristics at baseline, the temporal interval between the baseline and the final cognitive evaluation was different (9 months for ACT-group training, 6 months for the external control group). Second, we underline that we did not monitor the significance testing for multiple comparisons because this study was exploratory. Third, the present study only reported post-training results.

Table 3 Cognitive Measures per Experimental Group

	Baseline		Final Evaluation		Mixed-Model Repeated Measures			Pre- to Post-Effect Size
	ACT-Group Training ($N = 29$)	External Controls ($N = 25$)	ACT-Group Training ($N = 24$)	External Controls ($N = 23$)	Time b [95% CI]	Group b [95% CI]	Time* Group b [95% CI]	Cohen's *d*
ANT — Baseline Speed								
RT (ms)	334.88 (53.02)	342.68 (74.74)	352.44 (111.28)	359.52 (57.22)	17.99 [−6.18 to 42.2]	−6.70 [−42.70 to 29.3]	2.21 [−46.13 to 50.5]	−0.11
SD of RT	115.68 (51.10)	129.60 (87.79)	188.70 (179.83)	143.91 (96.15)	44.00 [0.90 to 87]	15.50 [−31.31 to 62.4]	58.90 [−27.20 to 145.1]	−1.27
ANT — Focused Attention 4-Letters								
RT correct responses (ms)	999.20 (266.61)	971.64 (332.64)	979.29 (364.32)	908.35 (258.25)	−46.60 [−125 to 31.5]	50.60 [−103 to 204.1]	46.0 [−110 to 202.3]	−0.12
SD of correct responses RT	328.72 (143.76)	395.73 (185.81)	335.75 (229.97)	371.14 (190.19)	−13.90 [−62.2 to 34.4]	−49.30 [−143.5 to 44.9]	35.40 [−61.2 to 131.9]	−0.18
Misses	3.92 (4.73)	2.84 (2.59)	9.04 (10.08)	2.43 (2.27)	2.38* [0.51 to 4.25]	3.81** [1.14 to 6.49]	5.46** [1.72 to 9.21]	−1.24
False alarms relevant non-target	2.88 (2.99)	0.56 (0.77)	2.21 (2.28)	0.17 (0.39)	−0.57* [−1.06 to −0.08]	2.17*** [1.20 to 3.14]	−0.30 [−1.28 to 0.67]	−0.28
False alarms irrelevant target	1.56 (1.71)	1.00 (0.91)	3.79 (4.75)	0.91 (1.00)	1.08* [0.14 to 2.01]	1.72** [0.60 to 2.85]	2.33* [0.46 to 4.20]	−1.21
ANT — Visual Set-Shifting								
RT inhibition (ms)	247.20 (230.85)	333.96 (188.29)	262.92 (170.85)	219.83 (148.57)	−49.50 [−111.4 to 12.4]	−22.10 [−107.67 to 63.4]	129.30* [5.5 to 253.0]	−0.67
RT flexibility (ms)	589.80 (283.98)	616.98 (263.95)	447.60 (230.60)	442.80 (185.90)	−159.3*** [−243 to −75.4]	−12.3 [−122 to 97.2]	29.9 [−138 to 197.6]	−0.16

(*Continued*)

Table 3 (*Continued.*)

	Baseline		Final Evaluation		Mixed-Model Repeated Measures			Pre- to Post-Effect Size
	ACT-Group Training (*N* = 29)	External Controls (*N* = 25)	ACT-Group Training (*N* = 24)	External Controls (*N* = 23)	Time b [95% CI]	Group b [95% CI]	Time* Group b [95% CI]	Cohen's *d*
Number of errors inhibition	10.16 (8.32)	7.36 (7.31)	5.71 (5.35)	4.04 (4.63)	−3.81*** [−5.73 to −1.89]	2.22 [−0.97 to 5.4]	−1.17 [−5.0 to 2.67]	0.08
Number of errors flexibility	10.80 (6.69)	14.96 (11.74)	6.88 (6.01)	9.43 (10.65)	−4.76*** [−6.78 to −2.74]	−3.09 [−7.75 to 1.56]	2.14 [−1.9 to 6.18]	0.11
ANT — Sustained Attention Date								
Tempo × series	14.23 (3.55)	14.37 (4.05)	12.64 (3.18)	12.02 (3.88)	−1.98*** [−2.94 to −1.02]	0.16 [−1.67 to 1.99]	0.59 [−1.33 to 2.51]	−0.13
SD	3.40 (1.72)	3.51 (1.51)	2.66 (1.11)	2.84 (1.57)	−0.74*** [1.04 to −0.44]	−0.18 [−0.96 to 0.60]	−0.15 [−0.76 to 0.46]	−0.01
Misses	48.84 (24.49)	37.68 (26.60)	39.39 (20.48)	39.00 (22.57)	−4.38 [−10.57 to 1.81]	6.20 [−5.54 to 17.94]	−9.92 [−22.31 to 2.47]	0.44
False alarms	31.32 (24.19)	22.00 (16.67)	16.87 (9.09)	13.61 (7.33)	−11.49*** [−16.77 to −6.21]	6.48 [−0.89 to 13.85]	−5.68 [−16.23 to 4.88]	0.09
Coefficient of variation	0.23 (0.09)	0.24 (0.08)	0.20 (0.05)	0.22 (0.06)	−0.03* [−0.05 to −0.01]	−0.02 [−0.05 to 0.02]	−0.01 [−0.05 to 0.03]	0.08

Note: Descriptive (observed) means and standard deviations (in brackets). CI = confidence interval; ANT = Amsterdam neuropsychological task; RT = reaction time; SD = standard deviation.
*p < .05, **p <.01, ***p <.001.

With these issues in mind, this preliminary, single-arm, open-label study did not find the evidence of the cognitive benefit of ACT-based group child training in children with ADHD. In light of our results and the findings of Vanzin et al. (2020), this study supports the hypothesis that mindfulness embedded in the present protocol could have a beneficial effect on self-regulation and attention control of children with ADHD but limited to the behavioural domain. Future clinical trials, if undertaken to shed more light on this important issue, should include larger sample sizes, a random assignment of participants to different groups, and blinding of examiners.

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Declaration of Interest. L.V. is the co-developer of the ACT-group intervention and receives royalties from the FrancoAngeli Edizioni for the handbook of the intervention. None of the other authors has conflicts of interest to declare in relation to the specific topic of the present manuscript.

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Covid-19 e salute mentale in età evolutiva: l'urgenza di darsi da fare

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Giorno dopo giorno emerge la drammatica realtà clinica degli effetti devastanti sulla salute mentale (e più in generale sulla salute) di bambini e adolescenti conseguenti ai mutamenti sociali che la tempesta Covid-19 si sta portando dietro, in modo particolare per le categorie che, per problemi di salute, sono più fragili e con minori protezioni. Ognuno di noi, pediatra o neuropsichiatra che sia, dovrebbe prenderne atto impegnandosi a dare una risposta operativa personale prima ancora che istituzionale. È di questa urgenza che questo articolo ci fa prendere coscienza, con ampia visione generale ma anche con l'esemplificazione concreta di quello che ognuno di noi potrebbe fare, come singolo medico dell'età evolutiva e come partecipe alla difesa di un Servizio Sanitario Nazionale efficiente e adeguato a rispondere in tempo reale ai bisogni di salute indotti dalla crisi in atto.

GIORNO –2 DAL DPCM #IORESTOACASA

D., un ragazzo di 15 anni in terapia antidepressiva con inibitori selettivi della ricaptazione della serotonina in condizioni stabili da circa tre mesi, scrive:

«Buonasera dottore, in questi giorni mi sento male. Le chiedo se posso venire, avrei bisogno di parlare. Spero di non disturbarla. Grazie».

GIORNO 2 DAL DPCM #IORESTOACASA

C. di 9 anni arriva in Pronto Soccorso (PS) per difficoltà respiratorie. Dice ai medici: «Non riesco a far entrare l'aria nei polmoni». I genitori riferiscono che le difficoltà respiratorie si evidenziano a riposo e si risolvono spontaneamente se distratto in attività di suo interesse. L'esame obiettivo è negativo, mentre la visita neuropsichiatrica evidenzia ansia libera e paure ipocondriache. C. al termine della visita dice: «Ho paura del coronavirus, mi sento male quando sento la tv e devo spegnerla o andare in un'altra stanza perché non ce la faccio più a sentire queste cose sul virus».

COVID-19 EMERGENCY AND MENTAL HEALTH: INTENSIVE AND COORDINATED STEP-UP INTERVENTIONS
(Medico e Bambino 2020;39:237-240)

Key words
Mental health, Public health, Coronavirus, Psychiatry, Adolescent, Child

Summary
The coronavirus outbreak has shocked health systems worldwide. It is a serious situation that will pervade the entire population in their bodies and minds. Long-term implications on mental health will persist even when the outbreak will have worn off. Children, adolescents and parents are more susceptible to the impact of quarantine and isolation conditions as well as exposure to traumatic events. There is an urgent need to manage the mental health emergency in a way that is proportionate and coherent with the new and unexpected crisis condition. To respond to this mental health crisis, it will be necessary to develop and test emergency intervention strategies in public health, based on intensive and coordinated step-up interventions, aimed at the whole population, whilst paying greater attention to risk groups and specific mental health needs.

La diagnosi alla dimissione è di sighing dispnea.

GIORNO 7 DAL DPCM #IORESTOACASA

G. di 17 anni, seguita da anni dalla Neuropsichiatria Infantile (NPI) per tratti di personalità borderline associati a disturbo della condotta e sintomatologia depressiva, in terapia neurolettica, giunge in PS accompagnata dalle Forze dell'Ordine, in stato alterato di coscienza. Precedentemente, a ottobre 2019, giungeva in PS in seguito a dichiarata intenzionalità suicidaria. Da allora risultava stabile senza necessità di altri accessi in PS. Nell'ultimo accesso la ragazza spiega di aver assunto vari farmaci a scopo suicidario dopo essere scappata di casa.

Da circa 10 giorni ha sospeso l'attività scolastica e ha interrotto l'attività terapeutica di gruppo che svolgeva presso il Servizio territoriale.

GIORNO 20 DAL DPCM #IORESTOACASA

Una sera, vengo chiamato dalla pediatra di M., di 13 anni. «M. si è buttata dalla finestra, è in PS. Ha fatto un salto di 4 metri, ma per fortuna non si è fatta nulla, quando è stata soccorsa diceva che voleva morire».

M. è una ragazzina seguita da un Servizio di NPI privato convenzionato, per disabilità intellettiva lieve e disturbo oppositivo provocatorio.

Avevo incontrato la ragazza a gennaio, su richiesta della famiglia per una "second opinion" in merito alla terapia farmacologica (due neurolettici a dosaggio molto basso).

La famiglia mi diceva: «Non siamo seguiti da nessuno; dove ci hanno prescritto la terapia non hanno da tempo neuropsichiatri e pertanto nessuno controlla la terapia di M., vorremmo una presa in carico».

Formalizzo un invio alla struttura di Neuropsichiatria territoriale pubblica di riferimento e nel frattempo adeguo il trattamento con una monoterapia a dosaggio terapeutico con risconto di un miglioramento delle condotte esternalizzanti sino all'episodio che ha condotto M. in PS.

GIORNO 28 DAL DPCM #IORESTOACASA

Il papà di F, bambina con ritardo di sviluppo che ha da varie settimane sospeso la frequenza dell'asilo nido e della terapia riabilitativa, scrive:

«Buongiorno dottore, spero tutto bene. Sono il papà di F., la bimba in osservazione da voi al "Burlo".

La bimba sta bene, ma sta soffrendo la mancanza del nido. Al nido stava facendo degli ottimi progressi grazie all'interazione con altri bambini e all'ottimo personale presente. Ho paura che una parte di questi progressi vadano vanificati dal prolungato stop del nido.

Le scrivo per chiederle se può consigliarmi delle attività da farle fare a casa, che possano in qualche modo aiutarla a progredire sopperendo alla mancanza del nido. La ringrazio,

Cordiali saluti».

UNA CONDIZIONE ESTREMA DI DISAGIO

Stiamo iniziando a confrontarci con una condizione estrema di disagio psicologico che con il tempo produrrà maggiore pressione su bambini, adolescenti e genitori: sintomi somatici, paura estrema di ammalarsi, ridotta concentrazione, umore deflesso, mancanza di energia, rabbia e aggressività, abuso di alcol, tabacco e sostanze, insorgenza di disturbi psichiatrici come il disturbo post-traumatico da stress, disturbi ansiosi, fobie, disturbi dell'umore, suicidalità e disturbi del pensiero[1-5].

D'ora in avanti dovremo confrontarci con il severo trauma che avrà pervaso tutta la popolazione, grandi e piccoli. L'impatto psicologico dell'isolamento e della quarantena prolungate si andrà a sommare all'altissimo numero di vite umane perdute a causa dell'emergenza pandemica: genitori, nonni, parenti, amici, figure di riferimento[6-10].

Le nostre preoccupazioni dovranno andare oltre il solo il corpo ferito, e ancora oltre le indelebili cicatrici nella mente. L'*humus* della società dovrà essere gelosamente preservato. Da una parte la memoria della senilità e la produttività dell'età adulta, dall'altra la mente vivace del bambino e il genio dell'adolescente.

Ogni misura elaborata in questo contesto ad altissimo potenziale distruttivo deve prevedere interventi trasversali finalizzati alla salute dell'intera collettività. Come dire che si dovrebbe cominciare a parlare, non solo di Salute pubblica, ma anche e soprattutto di Salute della civiltà.

Un approccio integrato, dove misure straordinarie di Sanità pubblica si associano a misure altrettanto straordinarie di salute mentale sull'età evolutiva, rappresenta un obiettivo cruciale e urgente da raggiungere per meglio gestire la situazione di emergenza e per arginare e controllare la diffusione dell'epidemia.

LA RISPOSTA SANITARIA

La risposta sanitaria all'epidemia da Covid-19 deve quindi articolarsi con interventi multidisciplinari finalizzati a preservare e sostenere la salute fisica e mentale degli individui[6,9,11].

Le realtà di Cina e Corea del Sud, dove è stato già superato il picco di contagi, suggeriscono interventi mirati di salute mentale, con interventi centralizzati e coordinati.

Il 26 gennaio 2020 il Governo cinese, in risposta all'emergenza per l'epidemia da Covid-19, ha prodotto delle linee guida che enfatizzano la priorità di un tempestivo intervento di supporto psicologico coordinato a livello nazionale per il controllo complessivo dell'epidemia[12].

In Corea del Sud, il *National Trauma Center*, istituito direttamente dal Governo centrale e attivo dal 2018, svolge attività di promozione di salute mentale e di interventi di emergenza per sostegno psicologico e psichiatrico in risposta a situazioni di crisi o catastrofi nazionali[13].

Valutando nel dettaglio gli interventi di salute mentale da attuare, questi possono essere rivolti all'intera popolazione attraverso una stratificazione dei bisogni e dei sistemi di supporto, come riportato nella *Figura 1,* che riflette gli interventi di salute mentale proposti in contesti e situazioni di emergenza[14,15].

Sono quindi necessari interventi di promozione di salute mentale rivolti all'intera popolazione; campagne di resilienza con interventi non specialistici rivolti alla popolazione a rischio, ad esempio coinvolgendo i pediatri di famiglia e i medici di Medicina generale; e infine interventi specialistici neuropsichiatrici che possono avere una gradualità variabile in base alle specifiche condizioni e ai bisogni.

Programmare e coordinare questa tipologia di misure sull'intero territorio nazionale o su territorio regionale, coerentemente con quella che è la diffusione dell'epidemia, non può che avvenire per mezzo di un gruppo di lavoro dedicato e in stretto contatto con gli Apparati istituzionali. In altri termini *think globally, act locally*[16].

Sebbene siamo consapevoli che tale proposta evochi l'immagine di pesanti ingranaggi burocratici statali, talvolta poco operativi e non tempesti-

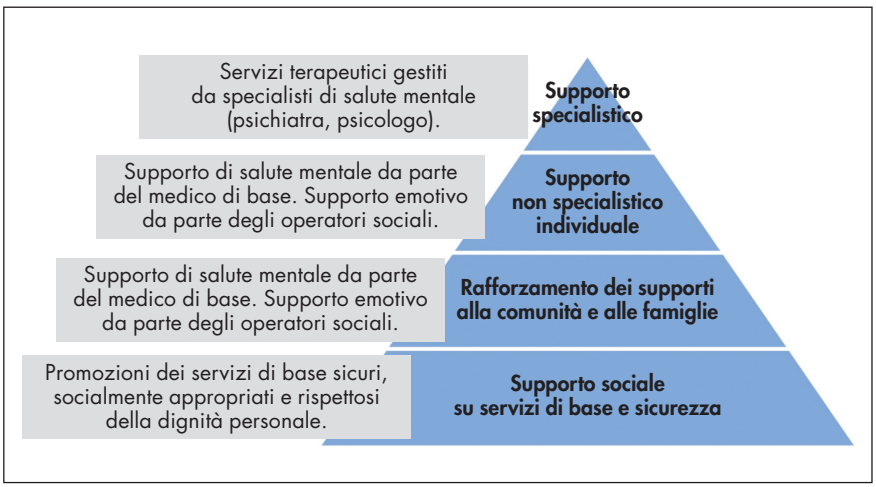

Figura 1. *Interventi di salute mentale: strategie dei bisogni e dei sistemi di supportoDa voce bibliografica 14, modificata.*

vi, l'auspicio è che una tale condizione richiami a movimenti di reale spirito di apertura, confronto e cooperazione tra professionisti e settori che operano nell'ambito dell'età evolutiva.

UNA SFIDA PER LA COMUNITÀ SCIENTIFICA E ASSISTENZIALE

Un'emergenza di questa portata rappresenta una sfida per la comunità scientifica, che in questo momento storico è chiamata a perfezionare le proprie competenze e abitudini a favore del bene comune.

Ci sembra quindi urgente e doverosa l'istituzione di un Tavolo di lavoro tecnico per pianificare strategie di sostegno alla salute mentale nell'età evolutiva. Tavolo di lavoro i cui obiettivi primari dovrebbero essere ad esempio:

- la centralizzazione e il coordinamento di interventi di salute mentale nell'età evolutiva;
- la cooperazione con realtà sociali, civili, Società scientifiche e Istituzioni che operano nell'ambito dell'età evolutiva;
- l'individuazione di indicatori di monitoraggio clinico utili a orientare gli interventi nel corso dell'evoluzione dell'epidemia;
- la creazione di programmi di resilienza e promozione della salute mentale nell'età evolutiva;
- la pianificazione degli interventi sanitari sulla base di una stratificazione del rischio clinico e dei relativi bisogni assistenziali;
- la diffusione delle linee di indirizzo per servizi ambulatoriali e ospedalieri che operano nell'ambito dell'età evolutiva.

EMERGENZA AL TEMPO DEL CORONAVIRUS: DALLA PRATICA ALLA PRATICA

Certamente, pur rimanendo il piano proposto irrinunciabile, c'è bisogno anche di qualcosa di più diretto, più immediatamente applicabile, più consono a rispondere, caso per caso, all'urgenza della situazione. Invitiamo quindi chi opera nell'ambito della Neuropsichiatria, e più genericamente in quello dell'età evolutiva, anche a una riflessione in questo senso.

L'esperienza che i medici delle diverse specialità stanno vivendo in questi giorni in Italia possono essere assai disparate in base al territorio e all'ambito professionale. Se da una parte c'è chi si trova a sostenere turni massacranti per carenza di personale, dall'altra parte esistono Servizi paralizzati, con attività ordinaria ridotta al minimo e non sempre propensa a una pratica clinica da remoto (telefono, videochiamate, *chat*, *mail*).

In questa condizione di estrema necessità, che certamente avrà (e già ha) un impatto drammatico su tanti nostri pazienti, è necessario immaginare un nuovo modo di adoperarsi nella pratica quotidiana.

Per quanto riguarda l'età evolutiva dovremmo impegnarci a non perdere di vista i nostri pazienti. Dovremmo rianalizzarli e ordinarli intanto per rischio clinico, considerando: condizioni psicosociali, patologie croniche, patologie neuropsichiatriche, malattie rare, condizioni di monogenitorialità, disabilità e altre patologie gravi in famiglia, pazienti in quarantena, pazienti in condizioni di isolamento o condizioni dove vi sono state recenti perdite. E dovremmo quindi contattarli. Le *chat*, le telefonate o le videochiamate, potrebbero prevedere una durata breve, il tempo necessario a creare un minimo stato di interesse per l'altro. Ascoltare con interesse è una soluzione alla distanza. Farsi raccontare come viene trascorsa la giornata dai figli e dai genitori, com'è composta la casa, come ci si divide gli spazi, quali *routine* sono state adottate. Quali sono i punti di forza e quelli di criticità rispetto alle loro condizioni di vita. Se ci sono da dare consigli bisognerà poi interessarsi sull'evoluzione delle cose: è infatti utile darsi sempre un appuntamento per non perdere poi quella situazione. Nel parlare con gli adolescenti non è necessario imporsi, basta proporsi con interesse. E proprio come si fa con gli adulti, si fanno le stesse domande, con lo stesso grado di interesse. Com'è la camera, come trascorre la giornata, quale *record* raggiunto in ore di cellulare utilizzato, ci sono difficoltà di convivenza con gli adulti, quali applicazioni sul cellulare o sul *computer* vengono utilizzate, e magari farsele spiegare per imparare qualcosa.

Ci preme sottolineare che questo stile di colloquio dev'essere visto come una chiacchierata, non come una psicoterapia. È un'occasione per il genitore o per il figlio per poter chiedere un consiglio, un aiuto o per stringere un legame più forte con il proprio pediatra di riferimento; dall'altra parte vale lo stesso. Nella nostra pratica spesso i buoni consigli ci vengono dati dai pazienti adolescenti.

Infine, è anche possibile che questa situazione di chiusura e isolamento esa-

cerbi conflittualità già presenti, o possa facilitare lo sviluppo di psicopatologie o situazioni di rischio. In tal caso, bisognerà prestare attenzione ai messaggi non sempre molto chiari che nascondono una richiesta di aiuto per cui è poi necessario "inviare" il caso agli specialisti della salute mentale o se necessario segnalare a chi di competenza.

Rimandiamo alle linee guida prodotte dalla Società Italiana di Neuropsichiatria dell'Infanzia e dell'Adolescenza che ben indirizzano il neuropsichiatra nell'ambito del suo lavoro all'interno dei Servizi territoriali, ospedalieri o riabilitativi. Alcune indicazioni potrebbero risultare di estrema utilità anche per altri professionisti sanitari che operano nell'ambito dell'età evolutiva[17].

MESSAGGI CHIAVE

❏ Una calamità di tale portata (quella della pandemia da coronavirus), che coinvolge l'intera popolazione e destabilizza in modo così perturbante i comparti sanitari, sociali ed economici del Paese, rappresenta una condizione di emergenza mai vissuta prima.

❏ In tale situazione sono prevedibili implicazioni a lungo termine sulla salute mentale di bambini, adolescenti e genitori, maggiormente suscettibili all'impatto delle condizioni di quarantena e isolamento.

❏ È pertanto urgente elaborare misure di intervento nell'ambito della salute mentale dell'età evolutiva.

❏ A tal fine proponiamo l'istituzione di un Gruppo multidisciplinare di coordinamento centrale, nazionale o regionale, che possa orientare gli interventi di salute mentale, predisponendo progetti e programmi coerentemente ai bisogni della popolazione e all'andamento della diffusione dell'epidemia sul territorio nazionale.

❏ È altresì fondamentale che ogni operatore sanitario che lavora nell'ambito della Neuropsichiatria, e più genericamente in quello dell'età evolutiva, si adoperi da subito per stabilire un contatto con le situazioni più presumibilmente problematiche, quelle che richiedono un ascolto, un confronto, che inizialmente può e deve avvenire anche a distanza.

CONCLUSIONI

In questa condizione di incertezza e precarietà nessuno può esimersi dal riflettere sul proprio ruolo in difesa dei pazienti, della propria professionalità e dell'adeguatezza del nostro Sistema Sanitario Nazionale (SSN).

Se da una parte l'emergenza in atto esaspererà la condizione di precarietà del SSN, dall'altra potrebbe rappresentare un fertile spazio per ricostruire un senso collettivo di dignità etica e professionale. Siamo quindi certi che la costituzione di un Gruppo di lavoro multidisciplinare possa rappresentare l'occasione per creare un nuovo terreno di negoziazione con la classe dirigente e un crescente spirito di cooperazione tra tutti gli operatori che lavorano nell'ambito dell'età evolutiva. Così come siamo certi che a questo Tavolo di lavoro ognuno di noi saprà portare il contributo di impegno, creatività e passione professionale che questa drammatica emergenza gli ha avrà dato occasione di sperimentare.

"… Ho sentito neonati piangere con voce di colomba
E vecchi con i denti rotti attoniti senza amore
Capisco la tua domanda, uomo, si è senza speranza e abbandonati?
Entra - disse lei - Ti darò riparo dalla tempesta"

Bob Dylan
"Shelter from the storm" - 1974

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Editoriali

APPUNTI DI NEUROPSICHIATRIA

C'è tanta Neuropsichiatria nell'aria…: nei reparti, nei Pronto Soccorso, negli ambulatori dei pediatri. Così tanta, così drammaticamente pervasiva del nostro lavoro (e così frustrante per quanti casi rimangono sospesi in attesa di una soluzione) che siamo sicuri di fare piacere ai lettori di *Medico e Bambino* nel proporre con questo numero una nuova rubrica: Appunti di Neuropsichiatria.
La Neuropsichiatria è stata fino a ora solo parte minore (e poco valorizzata) della formazione pediatrica, mentre proprio noi pediatri (si tratta di un paradosso cui è urgente porre rimedio concreto) ci troviamo oggi a essere i naturali referenti, la prima linea di impatto dell'epidemia dei disturbi psichiatrici nei bambini e negli adolescenti. Un'epidemia questa che ha molte facce, ma che è sempre e comunque caratterizzata dalla sofferenza e dalla perdita di prospettiva esistenziale: si tratti di problemi psico-relazionali nella famiglia o di difficoltà scolastiche, si tratti di una delle tante facce del disturbo somatico dove il sintomo rappresenta un vortice che risucchia tutta l'esistenza del bambino, si tratti di ansia o depressione, si tratti di un disturbo dello sviluppo come l'ADHD o come l'autismo, che ora sappiamo riconoscere bene e tempestivamente, ma la cui cura rimane in mano alla disponibilità (prima ancora che alla competenza) di altri. Intendiamoci subito: la rubrica non ha nessuna velleità di insegnare ai pediatri a fare il mestiere di altri. Ma intende di certo, questo sì, offrire ai lettori uno strumento per sentirsi più adeguati e sicuri nello svolgere il ruolo che sono oggi chiamati a svolgere: nel partecipare alle cure di quel singolo caso, così come, più in generale, nel partecipare (come dovrebbe essere) ai Tavoli in cui vengono definite le priorità e i modi della rete assistenziale dell'età evolutiva. Con la consapevolezza che per essere attori di tutto ciò (per fare bene cioè quello che ci spetta fare…) della (Neuro)psichiatria del bambino dovremmo almeno conoscere le basi e comprendere il linguaggio, sì il linguaggio: senza sentirci a disagio o fuori luogo quando si sente discutere di questo o quell'approccio terapeutico, di questo o quel farmaco. Ci piacerebbe soprattutto pensare che attraverso le pagine degli Appunti di Neuropsichiatria (pagine pratiche e semplici, scritte da specialisti, una specie di glossario sempre esemplificato da casi; ma ci sarà anche qualche pagina di approfondimento su argomenti di interesse generale) si potesse consolidare con i nostri colleghi di area psichiatrica una consapevolezza condivisa della prevalenza e della tipologia dei problemi e dell'urgenza relativa delle soluzioni da adottare: trovando così un modo concreto di "sporcarsi le mani" insieme (qualcuno ha detto di "lavarsele con lo stesso sapone"), di contribuire ognuno con il proprio ruolo e le proprie competenze a mantenere tempestivo, incalzante, e quindi efficace, l'intervento terapeutico.
Di certo non sarà facile. Di certo per raggiungere questo obiettivo non basteranno gli Appunti di Neuropsichiatria…. Ma si tratta di un processo imprescindibile per dare un senso, oggi, al diverso operare professionale: quello di noi pediatri, ancora troppo incerti e balbettanti, infragiliti come siamo dalla coda di paglia di un sapere posticcio; quello dei neuropsichiatri, a volte ancora egocentricamente arroccati nella difesa del loro tempo e di un modo asettico di operare: di fatto complici, in questo modo, della deriva che sta portando la Neuropsichiatria a essere un Servizio specialistico prevalentemente fruibile in forma privata, al di fuori dell'offerta del Servizio Sanitario Nazionale.
Sono parole dure. E che di certo non si addicono alla maggioranza dei colleghi con cui condividiamo la fatica quotidiana. Ma non si può più ritardare né la denuncia né una presa d'atto consapevole e necessariamente condivisa: in primo luogo per richiamare in maniera efficace le Istituzioni sul bisogno di implementare il numero di specialisti e di Servizi specialistici centrati sull'assistenza psichiatrica al bambino. Ma certamente anche, e ancora di più, per impedire a ognuno di noi di sfuggire al proprio compito (al proprio dovere di… sporcarsi le mani): si tratti della maggiore disponibilità (e piacere) all'interazione che ci si aspetta dai neuropsichiatri, si tratti della maggiore capacità del pediatra di avere ruolo nella rete delle cure psichiatriche piuttosto che rimanere attore di automatiche quanto deleterie deleghe.

Alessandro Ventura, Federico Marchetti

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Iniziativa nell'ambito del Progetto di Neuropsichiatria dell'Infanzia e dell'Adolescenza
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Il Progetto è realizzato con il contributo, parziale, della Regione Lombardia
(in attuazione della D.G. sanità n. 3798 del 08/05/2014, n. 778 del 05/02/2015, n. 5954 del 05/12/2016, N. 1077 del 02/02/2017 N. 1938 del 15/02/2019) Capofila Progetto: UONPIA Azienda Ospedaliera "Spedali Civili di Brescia"
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