

May I Have Your Attention Please?  
ADHD Updates for Pediatrics  
Non-Medication Alternatives

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Disclosures

- I have nothing to disclose of relationships with pharmaceutical and behavioral programs

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Overview

- Brief review of ADHD neurobiology
- Executive function
- Diagnostic criteria – the new DSM-5
- Update of the MTA study
- Situational and setting alternatives to ADHD stimulant and other medications
  - Home & family
  - Community
  - School

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### Learning Objectives

- Review and understand neuro-regulation and neurochemical differences of the ADHD brain
- Review ADHD impaired executive function
- Learn the Gold-standard documents & tools used for ADHD diagnosis & follow-up
- Describe non-medication treatments and supports for children with ADHD
- Learn the validity and reliability of alternative interventions and therapies for ADHD behaviors
- Learn ways to support key ADHD problems as an alternative or adjunct to first-line stimulant medication
  - Time management
  - Task organization
  - Interpersonal relationships
  - Academic and vocational/professional success
- Through review of Federal/State/local School Board laws supporting children with ADHD, teach parents the process of gaining educational supports for children not learning to their potential

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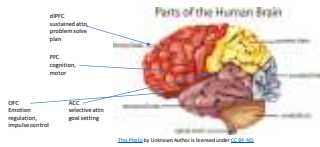
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### Brain and Cognitive Circuits




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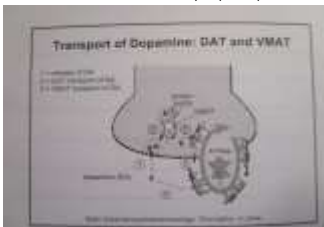
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### Presence of Dopamine & Regulation in the Pre-Post and Inter-synaptic Spaces



Saiki, SM (2008) Essential psychopharmacology: Neuroscientific basis & practical approaches NY: Cambridge

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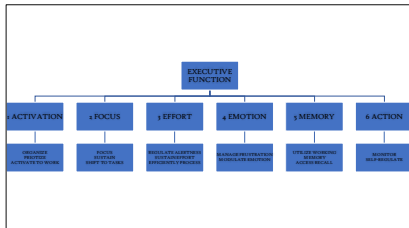
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Executive Functions Potentially Impaired in Untreated ADHD



Brown, TE. (2013) A New Understanding of ADHD in Children & Adults. NY:Routledge

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Gold Standard Tools for ADHD Diagnosis and Treatment

- Diagnostic and Statistical Manual for Mental Disorders – 5<sup>th</sup> ed. (2013), Alexandria, VA: American Psychiatric Association.
- ADHD: Clinical Practice Guideline for the Diagnosis and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents (2011) *Pediatrics* 128(5). Elk Grove, IL: American Academy of Pediatrics.
- Practice Parameters for the Assessment and Treatment of Attention-Deficit Hyperactivity Disorder (2007) *JAACAP* 46(7), Amsterdam: Elsevier.
- \*Comprehensive psychoeducational testing is useful to identify specific learning disabilities (SLDs), but does not determine ADHD and is very expensive (several thousand dollars).
- \*\*Currently there are no valid and reliable tests for ADHD diagnosis

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Making an ADHD Diagnosis  
DSM-5<sup>(2013)</sup> 314.0 ADHD

- ≥ 6 behaviors persisting ≥ 6 months; as early as age 4 years
- Inconsistent with expected developmental level; causing direct, negative impact on social, and-or academic/occupational activities
- Observed and reported in ≥ 2 settings
- Several behaviors present before age 12
- > 17 yo can be diagnosed with 5 behaviors
- Behaviors are not exclusive to other mental health disorders or drug/alcohol use

ICD-10 F90.9

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ADHD Differential Diagnosis

- Physical health
  - mild, moderate hearing &/or vision deficits
  - neurodegenerative disorders
  - traumatic brain injury (prenatal-adult)
  - absence seizures
  - generalized seizure disorders
  - movement disorders
  - sleep disorders - OSA
  - thyroid deficiencies
  - toxins (prenatal-adult)

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ADHD Differential Diagnosis

- Mental interference
  - intelligence
  - co-morbid neuromuscular compromise
- Learning disability
  - slow learners
  - situational - environmental
  - processing problems
    - visual fluency, interpretation, "dyslexia"
    - auditory perception, recall
    - comprehension, short-term memory
- Spectrum disorders

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ADHD Differential Diagnosis

- Mental health problems
  - self-esteem issues
  - family, child neglect & abuse
  - co-morbid emotional/behavioral disorders
    - anxiety, depression, opposition
  - mental illness
    - bipolar, personality disorders
  - alcohol & drug use: a-motivation

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DSM-5, 314.0...ADHD Diagnostic Criteria  
≥ 6 Behaviors of Either Inattentive, Hyperactive-Impulsive or Combined Type

- 314.00 Predominantly Inattentive
  - poor attention to detail / careless mistakes
  - difficulty sustaining attention in tasks or play
  - appears to not listen when spoken to
  - poor follow through of instructions or task completion
  - difficulty organizing
  - reluctance/avoidance to engage in activity of sustained mental effort
  - loss of necessary supplies
  - easily distracted
  - forgetful in daily activities
- 314.01 Predom Hyperactive/Impulsive
  - fidgets & squirms
  - leaves seat although remaining seated is the requirement
  - runs about / climbs excessively
  - difficulty playing quietly
  - "on the go" "driven by a motor"
  - talks excessively
  - blurts out before question completion
  - difficulty waiting turn
  - interrupts or intrudes on others

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Key Impairments of *Untreated* Childhood ADHD

- Academic underachievement
- Peer rejection
- Marked compromise in parent-child; family interactions (difficulty developing & maintaining interpersonal relationships); increased parental divorce
- Decreased self-esteem
- Increased accidents/injuries
- Lowered independence
- Increased incidence of substance use, abuse, dependence

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Wilens, T., 2011.  
*J. Am. Acad. Child & Adol Psych*, 50(1)6-8.

A Sobering Fact: ADHD Leads to Substance Abuse

- 5<sup>th</sup> Grade: Time to start discussing SUD risk w/patients and families
- 15-20% of drug/alcohol use adults have ADHD
- Multifactorial links
  - neuropsychologic differences
  - neurostructural differences
  - catecholaminergic dysregulation

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Important Facts

- 1. Cigarette smoking (vaping?) in youth is considered to be a gateway to more severe alcohol and drug use
- 2. Attitudes towards marijuana use are changing. There is evidence-based data of it's effects on the neurological/plasticity changes in the adolescent/early adult brain
- 2. ADHD and co-morbid ODD have a higher incidence of later substance abuse
- 3. Sustained abstinence from SUD took 2x longer for ADHD individuals

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Medication or Behavioral Treatment ?  
The MTA Attention Deficit Study Results

- 1999: N=579 (all ADHD-C) ages 7-9.9 years. Initial results showed medication alone vs medication + behavioral supports to have insignificant statistical difference
- 2000: at 10-months post-study, 50% showing initial advantages subsided
- 2002: at 14-month post-study, 64% of medication-only or combination medication-therapy group had stopped medications
- 2009: N=436 ages 14.9-16.8 years. 8-year post-study reported significant impairments in learning at school & behaviors at home and school
- 2017: Group comparisons – increased use of medications in behavioral therapy group and local normative (control) group. Medication and Medication + Therapy groups continued modest decrease in medication use

MTA Cooperative Group (1999) 14-month randomized clinical trial. Archives of General Psychiatry 56:1073-1086

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National Survey of Children's Health: NSCH 2003, 2007  
CDC, MM Weekly Report, 59(44):1439-1444. 11/12/2010

	2003	2007	
Ever diagnosed	7.8%	9.5%	
Overall #	4.4 million	5.4 million	
Males:	11.0/100	13.2/100	surveyed
		6.9/100	treated
Females:	4.4/100	5.6/100	surveyed
		2.5%	treated
<b>Overall treated</b>		<b>507,600</b>	
Criterion for treatment			
Mild: 56.4%	Moderate: 71.6%	Severe: 85.9%	
2.65%	3.37%	4.04%	

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Non-medication but Noted Alternative Therapies

- Special diets: exclusion, elimination, challenge
- Omega-3 (polyunsaturated) fatty acids
  - Alpha-linolenic acid (ALA)
  - Eicosapentaenoic acid (EPA), 320 mg/day
  - Docosahexaenoic acid (DHA), 200 mg/day
- Herbs: naturopaths, flower essence, Chinese
- Individual & mixed homeopaths
- Neurofeedback, Biofeedback
- Cognitive training
- Vision therapy
- Sensory integration
- Behavioral therapy
- Parent Management Training (PMT), Behavioral Parent Training (BPT), parent-child training, child-focused therapy

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Dietary Therapies

- Exclusion: [www.feingold.com](http://www.feingold.com)
  - **Certified food dyes:** tartrazine, allura red, ponceau 4R, Quinoline yellow, WS, Sunset yellow, carmoisine
  - **Sodium benzoate** (beverages)
  - **Preservatives:** BHA, BHT, TBHQ
  - **Salicylate, amines, emulsifiers**
- Elimination:
  - Oligoantigenic: apples, cucumbers, tomatoes
  - "Known antigenic foods"
  - Provoking foods: allergens
    - Gluten-free
    - Lactose/casein-free
- Challenge-dechallenge-rechallenge

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Supplement Therapy

- Essential alpha linolenic (fatty) acid supplementation: Omega-3
  - DHA fish oil 200
  - PUFA olive oil
  - EPA flax oil 320
  - Vayarin
- Magnesium
- Zinc

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Naturopathics/Homeopathics

- Naturopathics
  - "ADHD Alternatives", "Calm Keeper", "Kid's Attention +", "Natural Focus", "Natural Kids", "Natural Vitality", "Nature's Answer", "On Task", "Synaptol"
- Bach Flower Essences
- Focusene: Acetyl-L-Carnitine, Phenylalanine, L-Theanine
- Essential oils
- Homeopathics
  - "Focus Factor", "Bright Spark", pulsatilla, stramonium
- Chinese herbs

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Neurofeedback –

- neurotherapy, neurobiofeedback, EEG biofeedback (EEGBF)
  - "develop one's own brainwaves to then gain control over thinking, feeling"
  - Brain wave synchronization
  - Enhanced memory via theta-gamma oscillation
  - Improved audio-visual-tactile entrainment
- Institutes
  - Drake
  - Brain Balance
- Games
  - Mindball

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Cognitive Training

- Continuous Performance Tasks
  - TOVA: Test of Variables of Attention
- Working Memory
  - Computerized training: [www.cogmed.com](http://www.cogmed.com)
  - Positive reinforcement, feedback
- Vision Therapy
  - Computer-based tracking games
    - [www.eyescanlearn.com](http://www.eyescanlearn.com)
  - Irlen lenses
- Sensory integration
  - Kineshetics
  - Touch

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Behavioral “talk” Therapy

- Individual therapy
  - Cognitive behavioral
  - Problem focused
- Parent training
  - Parent mediated therapy
  - Behavioral parent training
  - Parent-child training
  - Child focused training
- Behavioral reinforcement
- Rewards-consequence training

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Non-Medication Treatment for Learning and Social Issues of Childhood ADHD

- **Auditory and/or Visual-Motor Processing**
  - Matching teaching and learning styles: teaching parents to advocate and monitor their child's successful in-class learning: classroom accommodations, audiobooks/Reading Ally, "dragon dictation", choral reading, verbal reports and tests
  - Providing insight to individualized learning: Exploring alternative learning: specialized schools, home schooling, online learning formats, educational therapists, tutors, homework helpers – study buddies, learning programs, school-based resource setting, 1-1 aides
- **Organization and Time Management**
  - Developing home routines for school mornings, arrival to school, transitions at end of school day, homework, play and activities, next day planning (launching pad), bedtime
  - Signed agenda books, schools' online homework and grade sites, daily/weekly teacher-parent email
- **Building and Fostering Self-Esteem and Success**
  - Catching the child/adolescent doing well, praise, reward (consequences), rewards charts
  - Therapy (Coaching) – individual, group, family, parent-child training: Cognitive Therapy, CBT, Problem-focused therapy
- **Team Building and Preservation for Life**
  - Encouraging ongoing multi-disciplinary care for your patient & parents through school, community, extended family, educational partnerships (CHADIS), and health care resources

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Non-medication Multimodal Therapy

- Effective time management
- Organizational skill building
- Behavior modification/rewards systems
- Psychosocial individual/group support/family therapy
- Academic - Career accommodations/modifications
- Educational therapy/tutoring/coaching/ modeling/mentoring
- Good humor

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### Time Management

- Time management: PROCESS vs PRODUCT
- Goal: learn to predict then efficiently manage time needed for a specific task
  - Over scheduling
  - Overextending
- Consistency: regular, predictable, structured daily environment
  - Habits
  - Routines by time and tasks
  - Scheduling around events
  - Places for everything and everything has its place
- Rewards: positives for acceptable completions

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### Organization Tools

- Spaces
  - Work/study areas
  - Colorful, unique supply receptacles/containers
  - Clutter control: see-through bins, large, divided laundry receptacles
- Electronics
  - Watches, alarms, timers, iphones, ipads
- Reusable writing surfaces
  - Boards: white, cork
  - Laminated calendars, shopping/supply lists, daily schedules/routines, information lists (tele #), rewards charts
- Paper goods
  - Daily plan, "do lists", future tasks, projects,
  - Hourly/daily/weekly/monthly/calendars; agenda books
  - "Sticky notes", index cards, stickers
- People
  - Virtual alarm, timer, work buddy, shadow, monitor

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### Socialization Skills

- Developing social awareness
  - Practicing social skills: family meetings – a time to listen, to hear, voice perspective, share information and beliefs; solve and resolve concerns; family outings; visits to family and close friends; visits to cultural venues; pre-visitor preparation
  - Defining acceptable behavior: home, school, work, community
  - Reading social cues: role playing, interpreting observed actions
  - Curtailing impulsive actions: count to 10; stop look listen; take two deep breaths
  - Practicing skills to become a habit needs 30 days
  - Providing pre-preparation expectations: why, who, what, when where, how, how long
  - Setting and anticipating rewards and consequences

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Socialization Supports

- Social skills groups
- Supervised play dates
- School-based student groups
- CHADD groups
- Solution-based therapy groups
- Behavior modification therapy
- Meta-cognitive therapy
- Couples therapy
- Family therapy
- Behavioral contracts, team building

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Academic Supports

- Create a continuum – home to school to home
  - Inform teachers, school administrators, support staff in direct contact with the ADHD child of diagnosis, interventions, and supportive plans
  - Develop direct communication lines to teacher(s)
    - Written and verbal: daily log book, agenda, email, phone message numbers
    - Regular communication schedules: daily, weekly, urgent
  - Monitor school and teachers' online assignment & grade portals
  - Practice same to similar rewards/consequences in all education arenas: home, school, tutorials, families' homes
  - Remind parents to not ask nor expect teachers to do what they do not plan to reinforce or support

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Study/Work Tools

- Home set of textbooks: [www.Amazon.com](http://www.Amazon.com), request from school
- Chapter questions/summaries; class notes
- Books by download or on CD, dictionary
- Computer/Electronic Writer: controlled internet access; cut and paste, spell check, Thesaurus
- Paper: lined, grid/graph, colored; folders
- Pens, pencils, sharpener, highlighters, crayons, color markers
- Scissors, tape, stapler, clips, glue stick
- Flash cards, index cards, sticky notes, bookmarks

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Further Supporting School Work Completion

- Educational therapists
- Coaches
- Tutors: adult, teen, peers
- Study buddies
- Parent exchanges
- Learning programs: Kumon, Huntington, Mathnasium, Sylvan, SCORE, Kaplan, LindaMoodBell, Brain Balance
- School/community intervention programs: after-school intervention, Saturday school, public library reading
- After-school homework clubs, Martial Arts Studios

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Attention Deficit vs Learning Disability

- IDEA - "The Individuals with Disabilities Education Act" PL 94-452 1990, reauthorized 1997, 2004
  - FAPE – Free Appropriate Public Education, regardless of ability
  - Comprehensive, free, multi-disciplinary team assessment for needed services and accommodations to promote learning at school
  - Psychoeducational testing to identify a Specific Learning Disability (SLD):
    - Reading, Written expression, Mathematics
  - Individualized special education services described within the child's Individual Education Plan (IEP)
    - Source for learning, Minutes per subject per day, Evaluation criteria
- ADHD and an IEP
  - OHI designation – Other Health Impaired: Cannot access the curriculum without accommodations, modifications in learning
- Section 504
  - Student not meeting IEP criteria, but in need of accommodations for learning

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Comparison of Eligibility

• IDEA Modifications

- Responsibility lies w/institution
- Mandated timely procedures for start, continuation and reviews
- Federal/State fiscal support
- Rights of consent to changes, due process
- Stay-put provisions
- Available pre-existing options

• 504 Accommodations

- Responsibility lies w/family
- As-needed reviews
- Institutional fiscal support
- Right to notice for changes
- Changes permitted during a challenge
- Similar to IDEA services
- Faster, more flexible, less stigmatizing, less challenging to school & district
- Greater chance that teachers are unaware

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Modeling Acceptance and Support for Patients with ADHD

- Be proactive: self-educate about ADHD diagnoses & treatments
- Practice within applicable standardized protocol
- Individualize clinical practice – can use existing algorithms as guides to diagnosis and therapy
- Provide privacy and confidentiality in discussions and when planning care/medication
- Look for patient’s personal and academic/occupational/professional strengths
- Be alert for signs of co-morbid behaviors
- Catch pediatric patients “being good”
- Congratulate successes of all patients/families

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Attention Deficit  
or  
Attention Getting Disorder?




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Key Impairments of Undiagnosed-Untreated  
Adult ADHD

- Poorly developed learning & academic/trade skills
- Concentration problems
- Organization & planning problems - forgotten obligations
- Poor concept of time - often late
- Impulsivity – verbal & physical
- Job instability
- Lowered economic independence
- Marital and relationship difficulties
- Anger management issues
- Affective dysregulation leading to emotional/mental health issues

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Prognosis for Persons with ADHD

- Improvement of symptoms via learned compensatory & coping strategies
- 15-65% "outgrow" in young adulthood (@ 25 years of age), do well as adults
- 50-60% persist & experience interpersonal, social, employment difficulties
- 10-15% develop severe antisocial problems, depression, and/or substance abuse
- 50% diagnosed, untreated ADHD persons will become SUD (tobacco, alcohol, un-prescribed drugs of abuse) users or addicted

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Referral sources

- Medical specialists: psychiatry, neurology, developmental pediatrics, headache clinics
- Occupational therapy: gross/fine motor evaluation and interventions
- Speech therapy
- Mental/behavioral health specialists: psychiatrists, clinical psychologists, social workers, individual/family/group therapists
- School: psychologists, administrators, counselors, teachers, nurses
- Educational therapists: individual or commercial; subject or task specific
- Tutors, mentors, coaches
- Health educators: nutritionists, exercise/sport mentors
- Parenting groups: CHADD

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Resources - Journals

- *American Journal of Psychiatry* [ajp.psychiatryonline.org](http://ajp.psychiatryonline.org)
- *Journal of the American Academy of Child and Adolescent Psychiatry* [www.jaacap.org](http://www.jaacap.org)
- *Journal of Attention Disorders*
- *Pediatrics*
- *Journal of Pediatrics*
- *Attention* [www.chadd.org/attention\\_magazine](http://www.chadd.org/attention_magazine)
- *Additude* [www.additudemag.com](http://www.additudemag.com)
- *Journal of Child Psychiatry*
- *Archives of Pediatric and Adolescent Medicine*
- *Child Development*

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### Resources - Websites

- [www.aap.org](http://www.aap.org): nichq Vanderbilt ADHD ratings
- [www.apa.org](http://www.apa.org)
- [www.ncbl.nim.nih.gov](http://www.ncbl.nim.nih.gov)
- [www.chadd.org](http://www.chadd.org)
- [www.help4adhd.org](http://www.help4adhd.org)
- [www.add.org](http://www.add.org)
- [www.addwarehouse.com](http://www.addwarehouse.com)
- [www.supportforadd.com](http://www.supportforadd.com)
- [www.addclasses.com](http://www.addclasses.com)
- [www.ldanatl.org](http://www.ldanatl.org)
- [www.aetonline.org](http://www.aetonline.org)
- [www.hcp.med.harvard.edu/ncs/asrs.php](http://www.hcp.med.harvard.edu/ncs/asrs.php)
- [www.justice.gov/dea](http://www.justice.gov/dea)

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