Bio-Behavioral Assessment and Support for ADHD in Autism: Part 1

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Speaker Disclosures

- I have nothing to disclose for this presentation

It’s About the Marshmallows

Brain-based skills that allow us to:

Get started quickly and easily (Initiation)

"Put on the brakes" (Inhibition)

Be flexible (Shifting Attention and Considering Alternatives)

Stay calm (Emotional Regulation/Control)

Keep information in mind (Working Memory)

See the big picture and keeping track of materials (Organization/Prioritizing)

Develop and carry out an action (Plan)

Track performance (Self Monitoring)

domains / tasks

Cold executive functions			
major domains		**major tasks**	
working memory	set shifting	n-back / digit span	attention shifting
response inhibition	multi-tasking	Go/No-Go / SST	task-switching
attentional control	error detection	Stroop / AX-CPT	conflicting tasks
problem solving	performance monitoring	Tower of London	Stroop
cognitive flexibility	fluency	remote associate test	verbal fluency task

Hot executive functions			
major domains		**major tasks**	
emotion regulation	self-referential	ERT	self attribution task
reward processing	social cognition	reward-based tasks	theory of mind
delay discounting	any cold executive function domain with emotional or motivational features	monetary decision	any cold executive function task with emotional or motivational features
risky decision making		Iowa gambling task	
affective decision		emotion tracking task	

brain structures

Hot EFs: goal-directed, future-oriented cognitive processes elicited in contexts that generate emotion, motivation, and a tension between instant gratification and long-term rewards.

Cool EFs: Cognitive flexibility, inhibition, and working memory. More complex EFs include planning and organizing.

assumptions

- purely cognitive
- place on a spectrum (no all-or-none)
- dependent on task features
- deliberate top-down processing
- automatic bottom-up processing
- related to lateral regions of the prefrontal cortex

- predominantly emotional/motivational
- place on spectrum (no all-or-none)
- dependent on task features
- bottom-up emotional expectation / reward experience
- hot top-down expectation
- dependent on subcortical areas
- related to medial regions of the prefrontal cortex

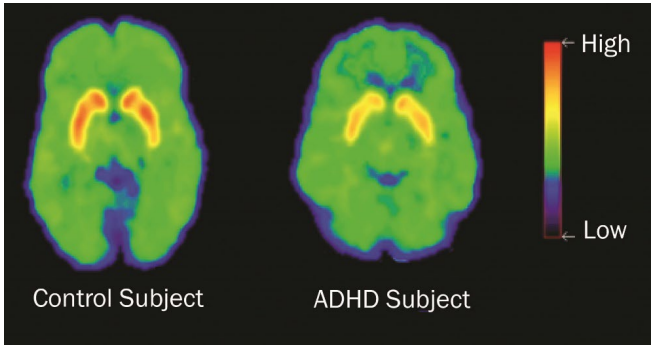
Salehinejad M.A. (2021) Brain and Neuroscience Advances Volume 5: 1–19.
https://doi.org/10.1177/23982128211007

EF and Autism + ADHD

- Executive function differences and ADHD often go hand-in-hand

- ADHD affects an estimated **30 to 61 percent of children** with autism

- Many similarities are present in genetic factors, brain characteristics, and cognitive profiles of those with ADHD and those with ASD (Rommelse, Beuitelaar, and Hartman, 2017)



What we often hear from family members:

- (Time Blindness) He/She gets lost and has no sense of urgency.
- He/She goes from 0-60 in just a matter of seconds. It's intense
- Can only follow through on one direction (not more)
- If we didn't "stay on him" every 5 minutes nothing would get done
- He/She just acts and never thinks through the consequences
- They need so much prep to get out of the house, or we change up the routine.

ADHD and Autism

Per 2013 DSM-5, ADHD and Autism are not mutually exclusive---

At least 40% of children with ASD have ADHD:

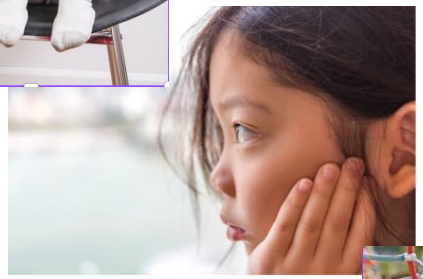
- Including preschool children
- Aggression and oppositionality more common in children with hyperactive/combined ADHD
- Children with more severe ASD are more likely to have combined or inattentive type ADHD

Murray MJ (2010) Curr Psych Reports

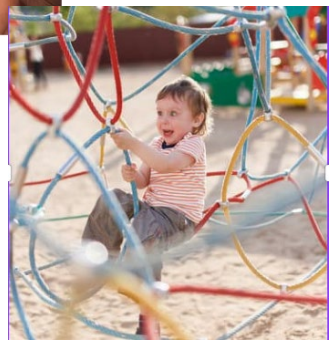
Types of ADHD

Attention deficit hyperactivity disorder, Combined type

Attention deficit hyperactivity disorder, predominantly inattentive type



Attention deficit hyperactivity disorder, predominantly hyperactive-impulsive type



ADHD Criteria - Inattention

- Fails to pay close attention to details
- Trouble paying attention to tasks or play activities
- Doesn't follow through on instructions, tasks
- Doesn't listen when spoken to
- Trouble organizing tasks/activities
- Avoids/dislikes tasks requiring mental effort

- Loses things
- Easily distracted
- Forgetful in daily activities

ADHD Criteria – Hyperactivity/Impulsivity

- Fidgets, squirms
- Leaves seat
- Unable to play quietly
- Talks excessively
- Blurts out answers before question completed
- Interrupts or intrudes

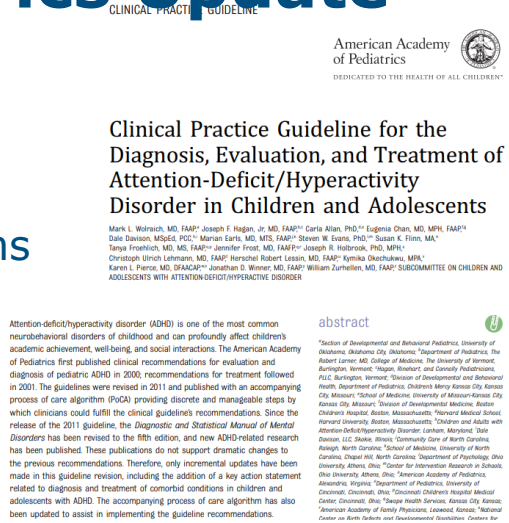
- Trouble waiting turns
- On the go
- Runs and climbs inappropriately

More from the DSM-5

- Pattern of behavior, present in multiple settings (e.g., day care, school and home)
- Behavior affects functioning in social, educational, or work settings.
- Children must have 6 symptoms out of 9 in either subcategory
- Older adolescents and adults (over age 17 years) must have five symptoms
- Symptoms must be present prior to age 12 years
  - *** AAP suggests diagnosis can be made as young as 4 yrs

2019 American Academy of Pediatrics Update

- Evaluate ages 4 to 18 years for ADHD if showing symptoms.
- Multiple forms of input (including child's)
- Use rating scales and other sources to document the symptoms and ensure that DSM-5 criteria have been met
- Rule out any other possible conditions that can cause similar symptoms.
- Screen for other conditions that might coexist with ADHD (physical, learning, emotional, developmental)
- Refer children to a specialist if they detect co-occurring conditions that they are not experienced in treating or diagnosing.



CLINICAL PRACTICE GUIDELINE

American Academy of Pediatrics

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Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents

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Attention-deficit/hyperactivity disorder (ADHD) is one of the most common neurobehavioral disorders of childhood and can profoundly affect children's academic achievement, well-being, and social interactions. The American Academy of Pediatrics first published clinical recommendations for evaluation and diagnosis of pediatric ADHD in 2000; recommendations for treatment followed in 2001. The guidelines were revised in 2011 and published with an accompanying process of care algorithm (PoCA) providing discrete and manageable steps by which clinicians could fulfill the clinical guideline's recommendations. Since the release of the 2011 guideline, the *Diagnostic and Statistical Manual of Mental Disorders* has been revised to the fifth edition, and new ADHD-related research has been published. These publications do not support dramatic changes to the previous recommendations. Therefore, only incremental updates have been made in this guideline revision, including the addition of a key action statement related to diagnosis and treatment of comorbid conditions in children and adolescents with ADHD. The accompanying process of care algorithm has also been updated to assist in implementing the guideline recommendations.

abstract

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ADHD and/or Something Else?

Intellectual disability (particular of importance in children with borderline ID; i.e. splintered cognitive profile or IQ 71-~80).

Environment lacking enrichment

Oppositional behavior

Learning Disability

Anxiety, depression, other psychiatric disorder

Autism Spectrum Disorder

Sleep Disorders/Poor Sleep

ADHD Assessment Common Screening Tools

Screen

- NICHQ VANDERBILT scales
  - For ages 6-12
  - Parent and teacher
  - 40-55 items, mostly scored 0-3

http://www.nichq.org/childrens-health/adhd/resources/vanderbilt-assessment-scales

NICHQ Vanderbilt Assessment Scale—PARENT Informant

Today's Date: _____ Child's Name: _____ Date of Birth: _____

Parent's Name: _____ Parent's Phone Number: _____

Directions: **Each rating should be considered in the context of what is appropriate for the age of your child. When completing this form, please think about your child's behaviors in the past 6 months.**

Is this evaluation based on a time when the child ☐ **was on medication** ☐ **was not on medication** ☐ **not sure?**

Symptoms	Never	Occasionally	Often	Very Often
1. Does not pay attention to details or makes careless mistakes with, for example, homework	0	1	2	3
2. Has difficulty keeping attention to what needs to be done	0	1	2	3
3. Does not seem to listen when spoken to directly	0	1	2	3
4. Does not follow through when given directions and fails to finish activities (not due to refusal or failure to understand)	0	1	2	3
5. Has difficulty organizing tasks and activities	0	1	2	3
6. Avoids, dislikes, or does not want to start tasks that require ongoing mental effort	0	1	2	3
7. Loses things necessary for tasks or activities (toys, assignments, pencils, or books)	0	1	2	3
8. Is easily distracted by noises or other stimuli	0	1	2	3
9. Is forgetful in daily activities	0	1	2	3
10. Fidgets with hands or feet or squirms in seat	0	1	2	3
11. Leaves seat when remaining seated is expected	0	1	2	3
12. Runs about or climbs too much when remaining seated is expected	0	1	2	3
13. Has difficulty playing or beginning quiet play activities	0	1	2	3
14. Is "on the go" or often acts as if "driven by a motor"	0	1	2	3
15. Talks too much	0	1	2	3
16. Blurts out answers before questions have been completed	0	1	2	3
17. Has difficulty waiting his or her turn	0	1	2	3
18. Interrupts or intrudes in on others' conversations and/or activities	0	1	2	3

ADHD Assessment, Cont.

Informal and formal observations (school, home, playgroud, etc.)

Interviews with child/adolescents, teacher and/or caregiver

BRIEF-2 (Behavior Rating Inventory of Executive Function®, Second Edition

Conners Rating Scales

ADHD-IV Scale

Subscales on behavior questionnaires like the CBCL or BASC

Additional tests used by neuropsychologists (Stroop, Go-No Go, N-back/digit span, Cambridge gambling task)

Management & Interventions ASD + ADHD

A coordinated and collaborative approach is required (school, PCP, family, youth, behavioral teams)

- Optimize non medication interventions first:
  - Parent training/coaching in behavior management; and/or
  - Behavioral classroom interventions (if available).

-AAP; ADHD: Clinical practice guideline for the diagnosis, evaluation, and treatment of children and adolescents with attention-deficit/hyperactivity disorder. *Pediatrics*, September 30th, 2019.

Barbaresi, William, Campbell, Lisa, Diekroger, Elizabeth, et al. The Society for Developmental and Behavioral Pediatrics Clinical Practice Guideline for the Assessment and Treatment of Children and Adolescents with Complex Attention-Deficit/Hyperactivity Disorder: Process of Care Algorithms. J Dev Behav Pediatr. 2020;41:S58-S74. doi:10.1097/DBP.0000000000000781.

Management & Interventions, Cont.

School Considerations:

- Psychoeducational Evaluation Requests
- IEP (Individualized Education Plan; school age; 3-21) eligibility or
- IFSP (Individualized Family Service Plan; birth-3 yrs.) eligibility
- 504 Plan eligibility
  - Particular guidance from DOE on ADA law and assessment & services for ADHD in education
- Parent Advocacy

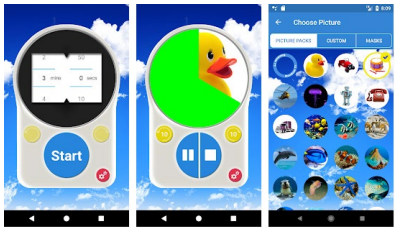
More Treatment Implications

- Behavioral treatment and concrete supports are essential for shaping natural settings to assist the executive function skill development.
  - They provide cues to substitute for the working memory deficits (signs, lists, cards, charts, posters)
  - They provide artificial consequences in the large time gaps between consequences (accountability) (i.e., tokens, points, etc.)
  - Their effects do not generalize or endure after removal because they primarily address the motivational deficits in ADHD
- The compassion and willingness of others to make accommodations are vital to success

Adapted from Barkley, R. 2012. ADHD, Self-Regulation, andExecutive Functioning: Theory and Implications for Management

Engineering for Success (Prevention)

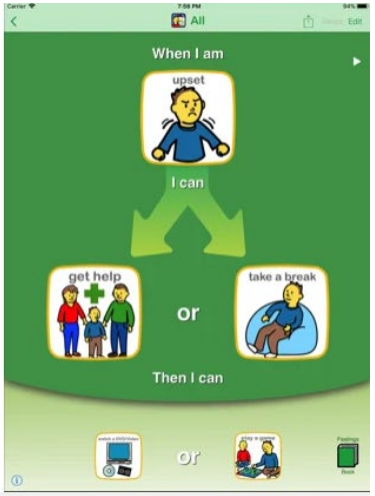
- Environmental modifications to reduce distractions/temptations (seating/positioning, barriers, noise prevention headphones, removing certain preferred items in the environment)
- Salient cues for transitions and when things are and are not available
  - Visual cues or auditory cues paired to challenging situations



- Flow charts and decision trees for prioritization
- Utilize technology (visual, tactile, and auditory reminders, timers, phone alarms)

Engineering for Success (Prevention), Cont.

- Break down tasks (especially long ones, task analyses)
- Organizational assistance and systems (calendars, binders, visual schedules, checklists)



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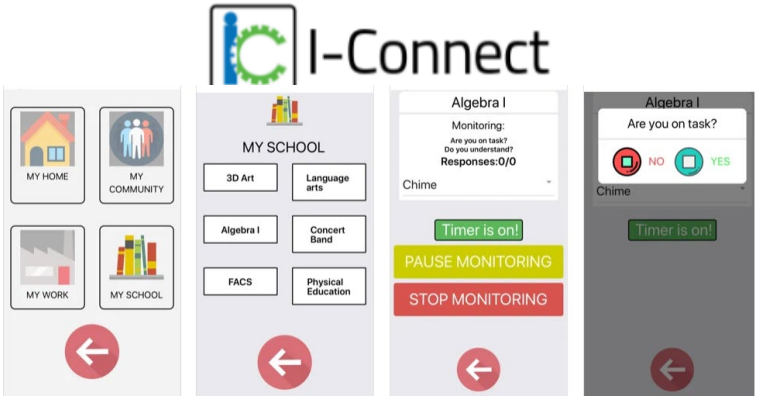
Engineering for Success (Prevention + Contingency Management)

- Goal-setting

- Behavior contracts



- Self-monitoring
  - E.g. https://iconnect.ku.edu/i-connect-for-me-overview/

Addressing Emotion Control, Cont.

- Coping skills and problem solving training
- Replacement skills and functional communication
- Therapy focused on building executive function skills
- In-vivo or role-play coaching + Home Practice
  - Playing games promotes self-control, especially games where children have to listen to the rules, pay attention when the rules change and not act on autopilot. Two great examples are Simon Says and Red Light/Green Light.
- "Catch 'em being good" whenever possible (can be combined with therapy intervention)

Resources for Parents

Web resources:

- https://addfreesources.net/this-is-how-you-treat-adhd-with-russell-barkley-ph-d/
- https://www.additudemag.com/ ADDITUDE *Inside the ADHD mind*
- **The video "How to (explain) ADHD"** https://www.youtube.com/watch?v=jhcn1_qsYmg.

Undertsood.org: E-Book: Executive Function 101

- https://www.understood.org/en/learning-attention-issues/child-learning-disabilities/executive-functioning-issues/ebook-executive-function-101

Resources for Parents

Web resources:

CDC Handouts (bi-lingual)

https://www.cdc.gov/ncbddd/adhd/materials-multimedia/factsheets.html

https://www.cdc.gov/ncbddd/adhd/materials-multimedia/infographics.html

CHADD (Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD):

https://chadd.org/about-adhd/myths-and-misunderstandings/

References

- 2020 – Executive function skills are the roots of success | Stephanie Carlson | TEDxMinneapolis | https://www.youtube.com/watch?v=BvyTiC_byOo

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