

# THE MODERN MANAGEMENT OF ADHD

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# DISCLOSURES

- Clinician - 40 years in neuropsychology; 35 years at EVMS
- Scientist – Editor, *Perceptual and Motor Skills*
- CBA Board of Trustees - 27 years
- Co-founder of Xcentiv, Inc. – technology for augmenting EF
- I have family members with adhd
- I over-think everything!

# ADHD PERSPECTIVES

NOT A GIFT  
NOT DEFINING

- Is ADHD “Faster than Normal” ( a la Peter Shankman)?
  - Yes... it can sometimes be a good thing; we should honor any advantages.
  - But ... we should not minimize its pain.
- Let's stop talking about ADHD people;
  - and talk instead about PEOPLE with adhd

# GUIDING ADHD FACTS

- Diagnoses are up over last 20 years: 6.1% (1997); 10.2% (2016) (JAMA, 2018)
- Diagnoses are challenging: yes, maybe made too casually; yet, girls and high IQ folks may be under-recognized
- Known to be a frontal lobe brain dysfunction (with broad brain involvement)
- Known to be neurodevelopmental (present early, persists, changes through life)
- Still has no cure (does not disappear)
- Management is key (biologically, psychologically)
- All must adapt (individual, family, teacher, school, employer, society)
- Helpers are *always* in the background (and helpers can use some help)

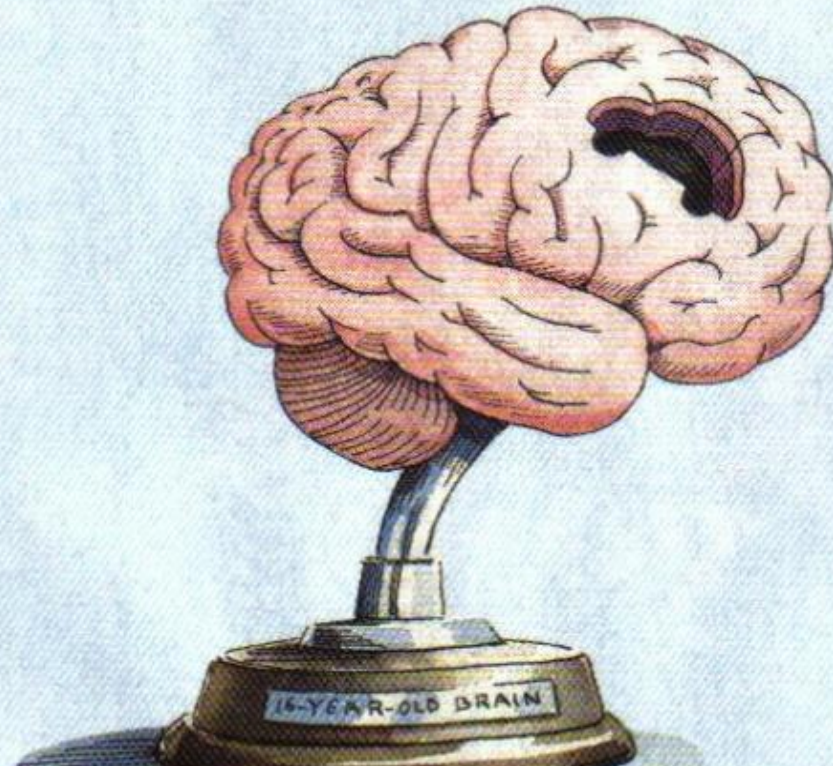
# FIRST, THE NEURO- (IN NEUROPSYCHOLOGY) FRONTAL LOBE / BRAIN BASIS

- PET Scans show slower frontal brain metabolism in patients ADHD
- SPECT Scans show slower frontal brain blood flow (metabolism) in ADHD
- QEEG shows slower frontal brain waves in patients with ADHD
- Alterations in brain maturation with ADHD (Nat. Proceedings of Science)
- Brain development complications for males leads to more males with ADHD
- ADHD is Epigenetic - 70% inheritable (as much as height)
- ADHD is Dopaminergic
  - Dopamine is the predominant frontal lobe neurotransmitter
  - Genetic links to dopaminergic receptor sites
  - Dopamine treatment helpful in management of symptoms for 80%

Why do most 16-year-olds  
drive like they're  
*missing a part of their brain?*



BECAUSE THEY ARE.



Courtesy of  
Allstate Auto  
Insurance Co.



# ADHD LOOKS LIKE? IMMATURITY

- Full maturation of frontal lobe system takes @ 25 years
- Critical Periods are transitions
  - 3<sup>rd</sup> grade (peak age for 1<sup>st</sup> referral)
  - Middle school
  - College/independent living
  - Work/independent living/marriage
  - Retirement? Under researched
  - Old age? Under researched

## SYMPTOM CHANGES WITH DEVELOPMENT

- Tykes -- mainly hyperactivity
- Kids / Teens -- hyperactivity and EF problems
- Adults -- mainly EF problems
- Elders -- under-researched



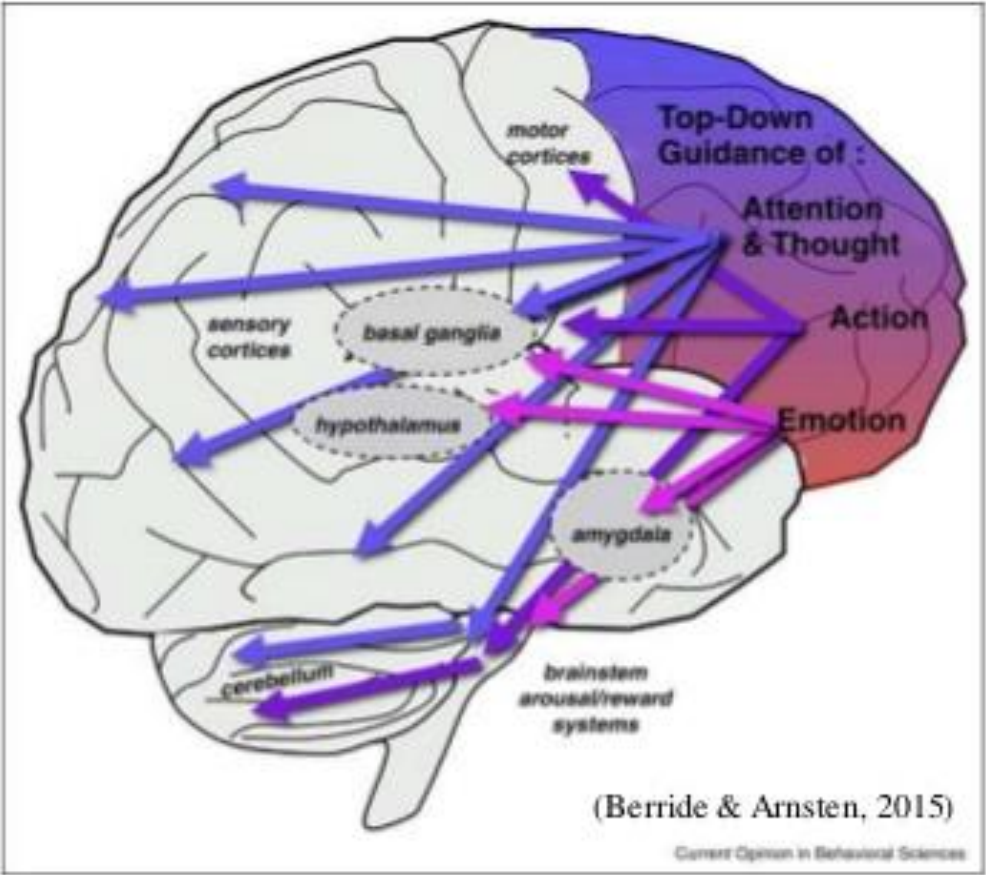
# THE FRONTAL LOBE EXECUTIVE SYSTEM IS A WHOLE BRAIN BUSINESS

**The Neural  
Correlates of  
Executive  
Function**

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**Prefrontal Cortex**

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# EXECUTIVE FUNCTIONING (EF) **SYSTEM**

- EF is a system of different but highly interwoven cognitive skills
- EF skills are easy to name but not easy to separate
- EF dysfunction is **NOT** deficient IQ or knowledge
- The DSM-5 way oversimplifies Executive Dysfunction
  - Hyperactivity/impulsivity (EF response inhibition)
  - Inattention/distractibility (everything else)

# EF PROBLEMS

## ADHD IS A DYSEXECUTIVE DISORDER

- Inattention = more problems with sustained/flexible/selective attention
- Disinhibited = behaviorally, cognitively, socially, emotionally
- Working Memory Weakness = visual/auditory; immediate past/immediate future
- Planning/Organizing Weakness = thinking ahead; tracking details; prioritizing; chunking tasks
- Time Sense Weakness = knowing time's passage; estimating time required
- Self-Regulation Weakness = over- and under-responding;
- Multi-tasking Weakness = poor at juggling multiple tasks
- Metacognition Weakness = poor at thinking about thinking

# BEYOND MEDICINE . . . WHAT ELSE HELPS?

- To respect the client,
  - Know the disorder
  - Accept the symptoms
- Help people stop trying to fix ADHD
  - ADHD will not go away
  - PEOPLE with adhd are not broken
  - Denying reality is only a bad idea 100% of the time
    - Increases stress and frustration; threatens self-esteem

# SCAFFOLDING YOUNG ONES (WE'RE FOREVER YOUNG!)

- **Assist acceptance** (expect resistance)
- **Avoid put-downs** - embarrassing, blaming, predicting, concluding (expect self-denigration)
- **Notice the positives** - > 3: 1 Positive to Negative interactions collectively
- **Use good behavioral plans** (expect a need for extrinsic rewards)
- **Use novelty** (expect disinterest)
- **Prod** - “Do One More” (expect impatience and feeling overwhelmed)
- **Give breaks** - “10- 3 Rule” (expect restlessness)
- **Chunk tasks** - “2 To Do” ( expect forgetfulness)
- **Time prompts** - “Stop and Wait!” “Red Light/ Green Light” “Egg Timer”
- **Cue with care** - subtle; non-judgmental (expect sensitivity to nagging)
- **Join in** to get it done (expect to be more needed)
- **Teach self-control** - ”Say what you feel.” “Say to yourself...”

# SCAFFOLDING TEENS

- **Model planning and organizing** (again and again)
- **Teach planning:** “What’s first? What’s next?”
- **Monitor** progress (patiently)
- **Use incentives to build motivation;** reward successful steps
- **Teach initiation** – “Do it when you say you will.”
- **Teach persistence** – “Looks like you’re stuck... plan B?”
- **Expect better** (a little) and **fade prompts** (slowly)
- **Rely on respected others** (“homework coaches”)
- **Protect personal patience** (get support for yourself)
- **Build metacognition** (“Drive Your Brain”)

# STRESS SLEEP

- Sleep and ADHD are inextricably mixed
- While sleep restores the brain it may be harder to get
- Stick with regular bedtime routine
- Avoid late night blue light
- Avoid late night stimulants (including chocolate, caffeine, meds)
- Teens have a late PM, late AM biorythm



# EMPHASIZE EXERCISE

- Scientific articles on short term exercise benefits for enhanced EF in people of all ages are exploding – a major theme in *Perceptual and Motor Skills* in past 2-3 years
- Exercise is critical to the brain's production of BDNF – brain development neurotropic factor – "miracle grow" for the brain
- Exercise related dopamine release and BDNF in frontal lobes have particular relevance for EF dysfunction and brain immaturity of folks with ADHD
- 30' aerobic exercise 3-4x/week offers all of us persistent EF benefits and brain protection against brain insult and disease !  
Please do it !

# THINK TECHNOLOGY

- Historically - a distraction (games, social media, misinformation)
- Yet, inherently appealing – fast, non-judgmental, reinforces exploration
- Career opportunities – entrepreneurship opportunities abound
- Can we martial it ??

# TECHNO-ASSESSMENT

- Desperate for greater objectivity in assessment
- Still no practical biological tests for ADHD
- We base diagnosis on cognitive and behavioral disinhibition (rating scales) while we know the disorder is broader
- Neuropsychological “tests” of executive dysfunction have been helpful but disappointing
- Technology through mobile devices might offer real time behavioral assessment, time sense testing, and advantages of artificial intelligence (AI) through massive number crunching from many, many users

# TECHNO-SCAFFOLDING

Nonjudgmental and Automated Visual / Auditory Prompting

Planning Aids – linked calendars, time sense, chunking, prioritizing, working memory

Joint behavioral planning - shared details for parents, kids, teachers, therapists on tasks, progress, wish lists, rewards

Medication management data shared between patients, parents, teachers, therapists, and prescribers

What works best AI data gathering through mass usage

# MODERN MANAGEMENT SUMMARY

- Greater societal understanding to promote adaptations
- Broader acceptance to promote help seeking
- Better communication within the helping team
- More flexibility in school and work settings
- More informed use of behavior planning
- Increased emphasis on sleep and physical activity
- Mobile technology for assessment, management, team communications, and AI
- More research (technology, neurobiological markers, aging with ADHD, etc.)