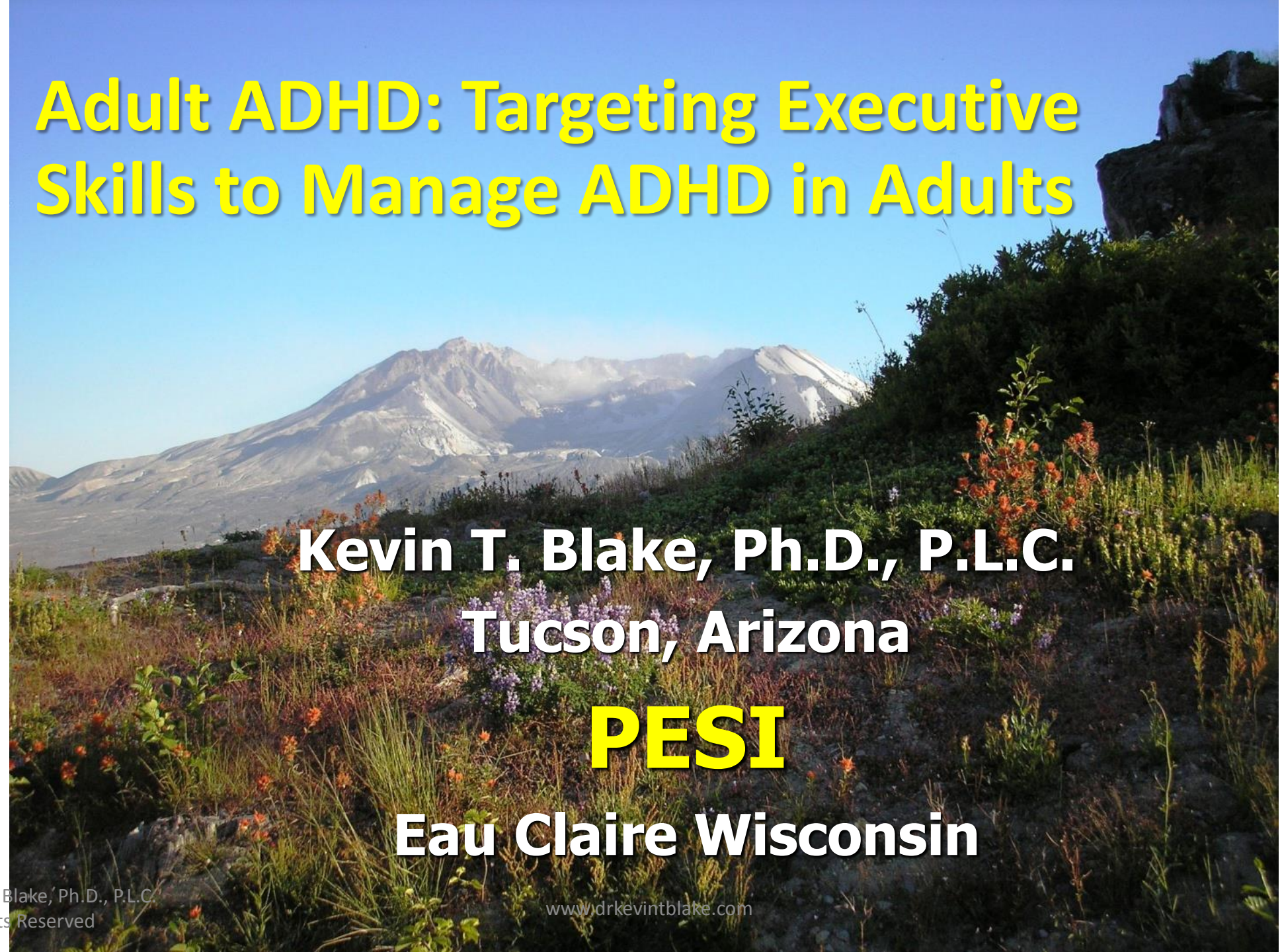
Adult ADHD: Targeting Executive Skills to Manage ADHD in Adults



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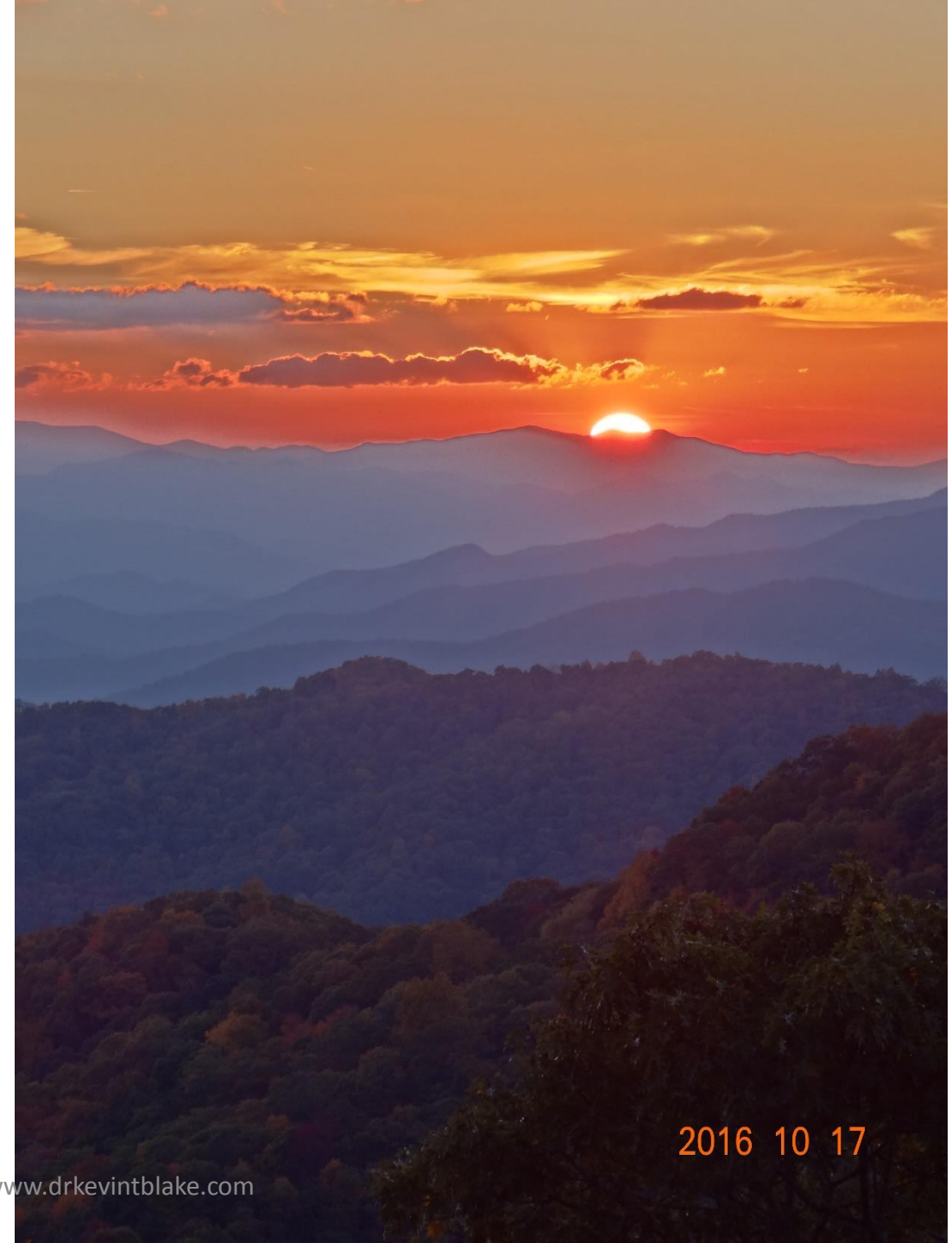
Announcements, Disclosures and Paperwork



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Disclaimer

"Materials that are included in this course may include interventions and modalities that are beyond the authorized practice of mental health professionals. As a licensed professional, you are responsible for reviewing the scope of practice, including activities that are defined in law as beyond the boundaries of practice in accordance with and in compliance with your professions standards. "

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Disclaimer

- None of the techniques described in this seminar will work for all adults with AD/HD. Every adult with AD/HD is different.
- There are no absolutes.
- All treatments have negative side effects. Some more than others. The presenter will do his best to cover the most common ones.
- The theories described in this seminar do not have the same amount of empirical evidence supporting each one of them. The presenter will do his best to describe the pros and cons of each.
- If you are concerned about a treatment technique described in this seminar ask the presenter about it.

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Disclaimer

- **Speaker Disclosure:**
- **Financial: Kevin Blake maintains a private practice. He is a stockholder in Johnson & Johnson, Inc. and Amgen, Inc. Dr. Blake receives a speaking honorarium from PESI, Inc.**
- **Non-financial: Kevin Blake is a member of the Children and Adults with Attention Deficit Disorders (CHADD), International Dyslexia Association, Learning Disabilities Association, and American Psychological Association.**

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Executive Function & Phineas Gage

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Phineas Gage

- Vermont, 1848 was 25 year old railroad working tamping gun powder in a drilled hole in rock excavation.
- Explosion forced 3 foot iron rod through his left cheek and out the top of his skull.
- Lost his left eye, but not consciousness; no focal neurological deficits; left facial weakness.
- Massive personality change:
  - Prior to accident was, "the most efficient and capable foreman"
  - After accident was childish, obstinate, could not control his desires, his friends did not consider him to be Phineas Gage.
  - He had problems with short-term memory, motor attention and inhibitory control.

O'Driscoll, K., and Leach, J.P. (December 19, 1998). "No Longer Gage": An Iron Bar Through The Head -- Early observations of personality change after injury to the prefrontal cortex. British Medical Journal, 317(7174), 1673-1674. From website: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1114479/.

- Damage to right & left prefrontal lobes = Problems with rational decisions and processing emotion.

Damasio, H., et al. (August 26, 1994). The return of Phineas Gage: clues about the brain from the skull of a famous patient. Science, 264(5162), 1102-1105. From website: http://www.ncbi.nlm.nih.gov/pubmed/8178168.

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What is Executive Function (EF)?

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Executive Function Defined

Denckla defined executive functions as, "…the proactive elements of interference control, effortful and flexible organization, and strategic planning—that is, anticipatory, goal-oriented 'preparedness to act.' Executive function also may be construed to include working memory…, highlighting as it does the elements of delay between stimulus and response or maintenance of internal representations to guide actions" (p. 117-118).

Denckla, M.B. (1994). Measurement of Executive Function. In G. R. Lyon (Ed.), Frames of Reference for the Assessment of Learning Disabilities: New Views on Measurement Issues. Baltimore, MD: Brookes.

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When You Have to Use EF

- Those that involve planning or decision making.
- Those that involve error correction or troubleshooting.
- Situations when responses are not well rehearsed or contain novel sequences of actions.
- Dangerous or technically difficult situations.
- Situations that require the overcoming of a strong habitual response or resisting temptation.

Goldstein, S. (November 9, 2017). Understanding and Evaluating Executive Functioning in ADHD Across the Life Span. Paper presented at the CHADD International Conference, Atlanta, GE, Pre-Conference Institutes, Session TA-01, November 9, 2017.

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Frontal Lobes

- In humans, a disproportionate expansion the frontal lobe.
- Prefrontal Cortex key player in vast networks of associative areas
- These areas also include the inferior parietal and anterior temporal regions
- Up to 40 times larger in humans than in macaques
- It allows us to read
- They allow us to transmit knowledge to younger generations

Dehaene, S. (2009). Reading in the Brain: The New Science of How We Read. New York, NY: Penguin.

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Theories of Executive Function

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Baddeley's Executive Function Theory

"The term working memory refers to a brain system that provides temporary storage and manipulation of the information necessary for such complex cognitive tasks as language comprehension, learning, and reasoning. This definition has evolved from the concept of a unitary short-term memory system. Working memory has been found to require the simultaneous storage and processing of information. It can be divided into the following three subcomponents…" (p. 556).

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Baddeley's Executive Function Theory

- **Central Executive**: "The central executive, which is assumed to be an attentional-controlling system, is important in skills such as chess playing and is particularly susceptible to the effects of Alzheimer's disease; and two slave systems, namely…" (p. 556).

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Baddeley's Executive Function Theory (Cont'd)

- **Phonological Loop: "The phonological loop, which stores and rehearses speech-based information and is necessary for the acquisition of both native and second-language vocabulary" (p. 556).**

- **Visual-Spatial Sketchpad: "…which manipulates visual images" (p. 556).**

Baddeley, A. (January 31, 1992). Working Memory. Science, 255(5044), 556-559. DOI: 10.1126/science.1736359.

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Baddeley's Executive Function Theory (Cont'd)

These systems, "…allow humans to comprehend and mentally represent their immediate environment, to retain information about their immediate past, to support the acquisition of new knowledge, to solve problems, and to formulate, relate, and act on current goals"(p. 28).

Baddeley, A. (January 31, 1992). Working Memory. Science, 255(5044), 556-559. DOI: 10.1126/science.1736359.

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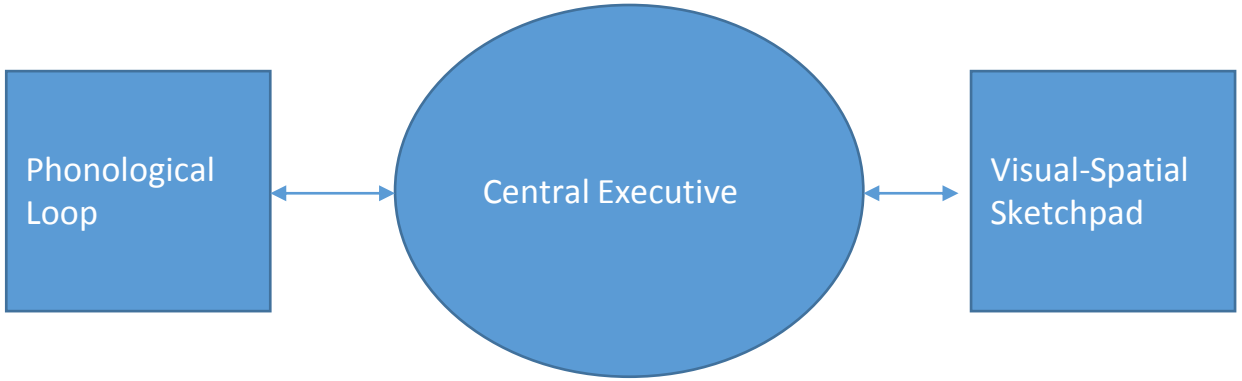
Baddeley's Executive Function Theory (Cont'd)



Baddeley, A. (January 31, 1992). Working Memory. Science, 255(5044), 556-559. DOI: 10.1126/science.1736359.

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Summary of Barkley's Theory Of Executive Function

Step 1: *Response Delay*

Step 2: *Prolongation*

Step 3: *Rule Governed Behavior*

Step 4: *Dismemberment of the Environment*

Barkley, R.A. (2006). Attention-Deficit Hyperactivity Disorder, Third Edition. New York, NY: Guilford.

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Barkley's Hierarchy of Executive Capacities

- Spatial: Spatial distance to achieve goal & means to attain it
- Temporal: Time event horizon
- Motivational
  - Hot: Emotional
  - Cold: Informational
- Inhibitory: Capacity to restrain action
- Conceptual/Abstract: Abstractness of rules being considered
- Behavioral-Structural: Motor consequences and behavioral complexity to achieve a goal over time
- Social: Cooperating with others to achieve goal
- Cultural: The degree that one's culture plays a part in attaining a goal (p. 68-70)

Barkley, R.A. (2012). Executive Functions: What They Are, How They Work, and Why They Evolved. New York, NY: Guilford.

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Definitions of Executive Function

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Executive Function Defined

“Executive functioning is a higher level psychological process responsible for cuing, directing and coordinating multiple aspects of perception, cognition, emotion, and behavior during purposeful, goal directed, problem solving behavior” (p. 29).

Dehn, M.J. (2014). Essentials of Processing Assessment, Second Edition. Hoboken, NJ: Wiley.

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Naglieri & Goldstein's Definition of Executive Function

"Executive Function is how efficiently you decide what to do."

Goldstein, S. (November 9, 2017). Understanding and Evaluating Executive Functioning in ADHD Across the Life Span. Paper presented at the CHADD International Conference, Atlanta, GE, Pre-Conference Institutes, Session TA-01, November 9, 2017.

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"Executive Function"

- 1. Set goal; 2. gather info; 3. rate routes; 4.select route; 5. monitor; 6. change route; 7. solution

Naglieri, J.A. et al. (2014). Handbook of Executive Function. New York, NY: Springer.

- Those that involve planning or decision making.
- Those that involve error correction or troubleshooting.
- Situations when responses are not well rehearsed or contain novel sequences of actions.
- Dangerous or technically difficult situations.
- Situations that require the overcoming of a strong habitual response or resisting temptation.

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When You Have to Use EF

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Brain Areas Involved in EF

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Brain Areas Involved in EF

- Prefrontal Cortex
- Basal Ganglia
- Amygdala
- Limbic System
- Cerebellum

Barkley, R.A. (2012). Executive Functions: What They Are, How They Work, and Why They Evolved. New York, NY: Guilford.

- Prefrontal, subcortical and brain stem
  - Dorsolateral Prefrontal Cortex – Integrates behavior and cognition
  - Anterior cingulate cortex -- emotional drives decision making and inhibition
  - Orbital prefrontal cortex-maintenance of set, monitor of behavior for appropriateness

Goldstein, S. (November 9, 2017). Understanding and Evaluating Executive Functioning in ADHD Across the Life Span. Paper presented at the CHADD International Conference, Atlanta, GE, Pre-Conference Institutes, Session TA-01, November 9, 2017.

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The Cerebellum, Executive Function & AD/HD

"One such area is the cerebellum which contributes not only to motor coordination, but also to language, verbal working memory, processing of emotions, and other executive functions." (p. 28).

Brown, T.E. (2013). A New Understanding of ADHD in Children and Adults: Executive Function Impairments. New York, NY: Routledge, 28.

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The Cerebellum & Social Interaction

“The Cerebellum has only recently been implicated in the normal functioning of social behavior…new research has shown that the cerebellum is important as a mediator in cognition. To perceive an object or event, we must pull together the various sensory qualities and any relevant memories or thoughts in a carefully timed way…the cerebellum assists in delaying or accelerating these associations, and regulates attentional states…”

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The Cerebellum & Social Interaction (Continued)

"…Coordinating associations and attention is essential to entering into a relationship with another human being. Communication, conversation and graceful social interaction all depend on being able to pay attention to another person and to one's own internal states and to alternate easily back and forth between them." (p.305)

Ratey, J.J. (2001). A User's Guide to the Brain: Perception, Attention, and the Four Theaters of the Brain. New York, NY: Vintage.

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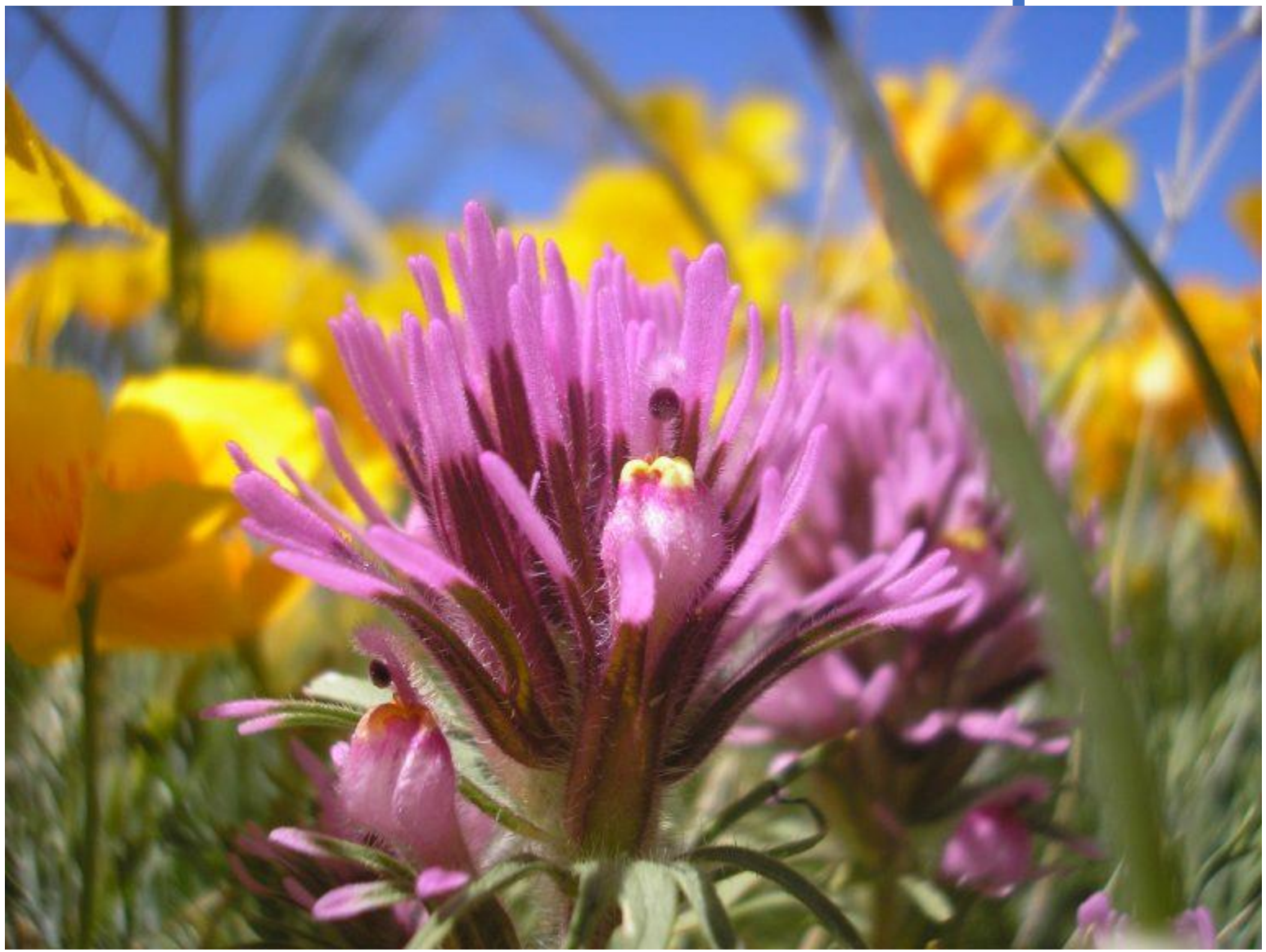
Adolescent & Adult Brain Development and EF



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Adolescent Brain Development

- **The Prefrontal Cortex and its connections undergo very significant changes during adolescence.**
- **These changes underlie important cognitive developments.**
- **Prefrontal Cortex development is variable across adolescents and adults; some people never attain what might be called "mature" frontal lobes (i.e., adults with AD/HD).**

Turkstra, L.S. et al. (December 1, 2010). Executive Functions and Communication in Adolescence. The ASHA Leader, 15, 8-11. DOI: 10.1044/leader.FTR1.15152010.8

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Processing and Speed Executive Function Development During Adolescence

- **Processing speed increases significantly due to brain myelination and significant increase of gray matter volume development. These changes are as sweeping as are seen in children in the first two years of life. Hormone and environmental changes are particularly important during brain development in adolescence.**
- **"Executive function sees selective attention, decision-making and response inhibition skills, along with the ability to carry out multiple tasks at once, might improve during adolescence…Different aspects of executive function, therefore, may have different developmental trajectories."**

McCalla, A. (December 11, 2017). Executive Functioning – Where is it Controlled and How Does it Develop? / Remediation Techniques for Deficits and Dysfunction. Rainbow Rehabilitation Centers. From website: https://www.rainbowrehab.com/executive-functioning/#attachment%20wp-att-6197/0/.

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Down Turn in Executive Function in Adolescence

Around age 12 to 13 puberty starts and there is massive amounts of new synapses created and myelin laid down. Executive function abilities initially blossom, but between ages 15 and 17 they tend to deteriorate to prepubescent levels, because the signal to noise ratio between needed new synapses and unneeded ones is out of balance. Eventually, by about age 27 to 30 the pruning of unneeded synapses is back in balance and adult level executive function is typically achieved.

McCalla, A. (December 11, 2017). Executive Functioning – Where is it Controlled and How Does it Develop? / Remediation Techniques for Deficits and Dysfunction. Rainbow Rehabilitation Centers. From website: https://www.rainbowrehab.com/executive-functioning/#attachment%20wp-att-6197/0/.

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Executive Function Adolescent Development

- Around age 12 there is an increase in goal setting abilities.
- Between ages 11 and 15 there is a significant increase of planning abilities. This is when girls executive function exceeds boys.
- Age 14 working memory starts to increase.
- About age 15 shifting attention, inhibition and working memory approaches adult levels. Planning skills reach adult levels, but pros are given more weight than cons.
- As the individual reaches about 19 more weight given to cons and reward system more adult-like.
- 16 year olds do not have adult working memory spans.**

McCalla, A. (December 11, 2017). Executive Functioning – Where is it Controlled and How Does it Develop? / Remediation Techniques for Deficits and Dysfunction. Rainbow Rehabilitation Centers. From website: https://www.rainbowrehab.com/executive-functioning/#attachment%20wp-att-6197/0/.

Elif, I. et al. (May 27, 2015). Visual working memory continues to develop through adolescence. Frontiers in Psychology. DOI: 10.3389/fpsyg.2015.00696

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Difference Between Well Developed Adult Executive Function and Adolescent Executive Function

"Though, the teen is functioning at or near adult levels, their self-monitoring and self-reflective abilities are not fully mature. Further, when placed in highly complex situations or a situation in which one is required to integrate numerous pieces of information to make an informed decision, the teen will show shortcomings. They tend to base decisions on the advantage of a given situation versus the disadvantages.

Decisions and actions are based on the specific moment and do not consider the long-term consequences, rather making decisions based on their view of themselves at the moment and how they will be perceived by outsiders."

McCalla, A. (December 11, 2017). Executive Functioning – Where is it Controlled and How Does it Develop? / Remediation Techniques for Deficits and Dysfunction. Rainbow Rehabilitation Centers. From website: https://www.rainbowrehab.com/executive-functioning/#attachment%20wp-att-6197/0/.

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Older Adult EF Development

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Older Adults and EF Development

- Short-Term memory peaks at age 25 to 30.
- People in their 80s tend to have lower IQs due to slower processing speed, lower performance on visual tasks and reduced perceptual reasoning. Verbal comprehension and working memory tend to be intact.
- They have difficulty switching attention and slower on selective attention and more like young adults on vigilance.
- Higher cognitively functioning older adults were typically higher cognitively functioning younger adults.
- From middle adulthood EF, memory and attention decline.

Principotta, D. et al. (2014). Executive functioning as a mediator of age-related cognitive decline in adults. In S. Goldstein & J. A. Naglieri (Eds.), Handbook of executive functioning, New York, NY: Springer, 143-155.

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Older Adults and EF Development

- The prefrontal cortex is vulnerable to aging. This is one of the first areas to show degeneration due to age.
- The prefrontal cortex, cerebellum, and basal ganglia suffer loss of total volume due to reduction of myelination of these brain regions.
- Older adults with EF difficulty will have significant difficulty with slow gait when walking over obstacles (i.e., degree of locomotion + sensory adaptation to complete task). They also have difficulty performing tasks of everyday living.
- Older adults walk slower when carrying a package when they have good EF. Connection of EF and walking speed found earlier.

Princiotta, D. et al. (2014). Executive functioning as a mediator of age-related cognitive decline in adults. In S. Goldstein & J. A. Naglieri (Eds.), Handbook of executive functioning, New York, NY: Springer, 143-155.

Coppin, A.K. et al. (November, 2006). Association of executive function and performance of dual-task physical tests among older adults: analyses from the InChianti study. Age and Aging, 35(6), 619-624.

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Older AD/HD Development

Researchers from Taiwan found adults with AD/HD have 3.4 fold higher risk of developing dementia when compared to non-AD/HD adults after conducting a national sample.

Tzeng, N-H. et al. (June 19, 2017). Risk of Dementia in Adults With ADHD: A Nationwide, Population-Based Cohort Study in Taiwan. Journal of Attention Disorders. DOI: 10.1177/1087054717714057.

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Assessment of Executive Function

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Assessment of Executive Function

- **Every assessment needs:**
  - **Standardized testing of psychological processing**
  - **Informal methods**
    - **Observations**
    - **Interviews**
  - **"Assessment of attention and executive functions depends heavily on the use of rating scales, as direct measurements of these processes are limited" (p. 213).**

Dehn, M.J. (2014). Essentials of Processing Assessment, Second Edition. Hoboken, NJ: Wiley.

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Abilities Accessed by Executive Function

- Attention
- Emotional Regulation
- Flexibility
- Inhibitory Control

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- Initiation
- Organization
- Planning
- Self-monitoring
- Working Memory

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EF Assessment Instruments

- Adult Executive Functioning Inventory (ADEXI)
- Behavior Rating Inventory of Executive Function—Adult Version (Brief-A)
- Executive Skills Questionnaire — Adults
- NIH Toolbox Cognition Batteries:
  - http://www.healthmeasures.net/explore-measurement-systems/nih-toolbox/intro-to-nih-toolbox
  - http://www.healthmeasures.net/explore-measurement-systems/nih-toolbox/intro-to-nih-toolbox/cognition
  - http://www.healthmeasures.net/images/nihtoolbox/NIH_Toolbox_brochure_June_2017.pdf
- Barkley Deficits in Executive Functioning – Children and Adolescents, Daily Activities (BDEFS-CA)
- Barkley Deficits in Executive Functioning Scale (BDEFS for Adults)
- Comprehensive Executive Function Inventory Adult (CEFI Adult)
- NIH Toolbox Cognition Battery (NIHTB-CB)
- WAIS-IV
- WJ-IV Cognitive Battery

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Negative Influences On Executive Function

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Negative Influences of Executive Function

- **"People with ADHD, depression, learning disabilities, and autism often have difficulties with executive function. Alzheimer's disease or brain damage (for example from concussion or stroke) can also affect executive function. Some research has found an association between OCD and problems with executive function.**
- **People with no executive function impairment can experience temporary problems. For example, being overly stressed, sad, or sleep-deprived can hinder a person's executive function ability".***

--American Psychiatric Association (January 19, 2017)*; Diamond (September, 27, 2012)

Author (January 19, 2017).* Executive Function of the Brain: Key to Organizing, Managing Time and More. American Psychiatric Association, Washington, DC from Website: https://www.psychiatry.org/news-room/apa-blogs/apa-blog/2017/01/executive-function-of-the-brain-key-to-organizing-managing-time-and-more.

Diamond, A. (September 27, 2012). Executive Functions. Annual Review of Psychology. DOI: 10.1146/annurev-psych-113011-143750.

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Diamond's Literature Review of EF

- Good EF in childhood-Typically will have it through life
- EF can be taught throughout life and practice can improve it
- Predicts: achievement, quality of life, physical and financial health
- Fluid Intelligence (decision making/problem solving) can be taught and practice can improve it
- Interference Control (selective attention/inhibition) may be he part of EF that protects what is in working memory
- Sleepiness, loneliness, and lack of fitness can hurt executive function

Diamond, A. (September 27, 2012). Executive Functions. Annual Review of Psychology. DOI: 10.1146/annurev-psych-113011-143750.

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Interventions for Executive Functions

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Teaching Executive Function

Goldstein (2017) states, "Children can be taught to be more strategic." Or, more efficient with executive function. He went on to say this is also true throughout the lifespan.

Goldstein, S. (November 9, 2017). Understanding and Evaluating Executive Functioning in ADHD Across the Life Span. Paper presented at the CHADD International Conference, Atlanta, GE, Pre-Conference Institutes, Session TA-01, November 9, 2017.

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Interventions for Executive Functions

- **Teach Self-Monitoring and Self-Talk**
- **COGMED**
- **Teach Metacognitive Strategies, Planning and Decision Making**
- **Teach Multisensory Memory**
- **Associate things to remember with familiar place-Loci**

Dehn, M.J. (2014). Essentials of Processing Assessment, Second Edition. Hoboken, NJ: Wiley.

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Coaching and Executive Functioning

- **Coaching can work to relieve executive function difficulties in adolescents.**
- **Coaching is more directive than counseling/talk therapy.**

Goldstein, S. (November 9, 2017). Understanding and Evaluating Executive Functioning in ADHD Across the Life Span. Paper presented at the CHADD International Conference, Atlanta, GE, Pre-Conference Institutes, Session TA-01, November 9, 2017.

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Helping with Executive Function Difficulties

- **Cognitive Behavioral Therapy (CBT): "Stop, Look, Listen"**
- **Must teach at the point of performance.**
- **"A strategy is a procedure that a learner uses to perform a task."**
- **It is thinking, "how do I accomplish what I want to do."**
- **Practice, practice, practice…until it is automatic**
- **Teach "Metacognition", Thinking about thinking", this works with everyone.**

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Interventions for Executive Dysfunction

- **Guiding Principals:**
  - Automatize new behaviors-habits
  - Self-Awareness-strengths & weaknesses
  - Teach goal setting, planning and review
- **Organization & Planning:**
  - One master schedule (or, 1 @ home, 1 @ work/school) (paper/digital)
  - Keep all notes in one place
- **Clutter Control:**
  - Everything has a “home”
  - Rules for how long you keep things
  - “Touch it once”
  - Schedule organization times
- **Financial Organization:**
  - ID problem areas
  - Set short, mid, and long-term $ goals
  - Learn where $ is going and keep track of it

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Interventions for Executive Dysfunction

- Automatic payments, etc.
- Make “habit”

- **Time Management:**
  - Learn how long you can work without distraction
  - Set goal of time you will work without distraction
  - ID distractors in work environment & get rid of them

- **Getting Projects Done:**
  - **Set goal;**
    - Use S.M.A.R.T. (Specific, Measurable, Attainable, Relevant & Timely) create “to do list”, to understand task and required outcome.
  - **Process:**
    - Write down all steps
    - Determine realistic amount of time needed for each step
    - Set priorities and schedule time for each step
    - Start working plan and monitor progress

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Interventions for Executive Dysfunction

- **Healthy Living:**
  - Good sleep every night
  - Good diet; no excesses
  - Weekly exercise plan-possibly develop with physician's help
  - Allow for rest and relaxation-learn relaxation technique (automatize)
  - Monitor mood; if bad 2 weeks get help
- **Adaptive Thinking:**
  - Monitor & chart negative and positive self-talk
  - Learn to counter negative self-talk with positive
  - Practice relaxation technique
  - Automatize

Jennings, A., and Nguyen, C. (September 5, 2014). STRATEGIES FOR IMPROVING EXECUTIVE FUNCTIONING SKILLS: A MODEL FOR THERAPEUTIC INTERVENTION. Paper presented at the 3rd Annual Conference on ADHD and Executive Function, Sheraton Station Square, Pittsburg, PA, September 5th, 2014.

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Memory Difficulties

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Memory Problems Everyone Has

- **Transience: problems accessing memory over time**
- **Absent-mindedness: lapses in attention**
- **Blocking: tip of the tongue experience**
- **Suggestibility: the incorporation of misinformation into memory**
- **Bias: altering memory to fit beliefs**
- **Misattribution: believing you heard something you didn't.**

Murray, B. (October, 2003). Convention Award-Winner Daniel Schacter Explained the Ways Memory Tricks Us. Monitor On Psychology, 34 (9), pp. 28-29.

Schacter, D. (2001). The Seven Sins of Memory: How the Mind Forgets and Remembers. New York, NY: Houghton Mifflin.

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Memory Disorders

Dysnomia:

- **"…is a word-finding problem in remembering and expressing words." (p. 373)**
- **"Dyslexic people are slower at naming series of various types of familiar stimulus items– objects, colors, numbers, letters." (p. 29)**
- **This is part of the Rapid Automatized Naming Deficit, or "Double Deficit" of SLD-dyslexia.**

Lerner, J. (1997). Learning Disabilities: Theories Diagnosis, and Teaching Strategies, 7th Edition. Boston, MA: Houghton Mifflin.

Clark, D.B. (1988). Dyslexia: Theory and Practice of Remedial Instruction. Parkton, MD: York.

Wolf, M., and O'Brien, B. (2001). On Issues of Time, Fluency, and Intervention. In A.J. Fawcett (Ed.), Dyslexia: Theory and Good Practice. Philadelphia, PA: Whurr.

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Two General Memory Systems

- ***Declarative Memory***: **Remembering the what, i.e. Facts and Events**
- ***Procedural Memory:*** **Knowing how to do something**
- **Proficient Reading is a skill and is a product of procedural memory.**
- **With procedural memory robust gains in knowledge are made after training is terminated.**
- **Train until the person's new behavior plateaus, stop training then allow to sleep. The next day they will have improved behavior and less errors.**

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Two Memory Systems (Continued)

- **This will not happen if the person is not allowed to sleep and/or if they are then taught a competing task.**
- **If the training situation is considered novel, learning will continue to increase.**

Karni, A. (November 3, 2004). Brain Basis of Skill Acquisition and Learning: How do They Relate to Reading? Paper presented during the Neural Basis of Reading and Other Forms of Skills Acquisition Symposium of the 55th Annual International Dyslexia Association Conference, Philadelphia, PA, Session W-1.

Karni, A., Tanne, D., Rubenstein, B.S., Askensay, JJ., and Saji, D. (1994). Dependence on REM Sleep of Overnight Improvement of A Perceptual Skill. Science, 265 (5172), pp. 679682.

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Sleep and Memory

- "…sleep allows us to process and retain new memories and skills." (p. 58)
- Deprive sleep/block training improvement in skill
- "Evidence for sleep's effect on declarative memory is much weaker than its effect on procedural memory." (p. 59)

Stickgold, R. (2005). Sleep-Dependent Memory Consolidation. Nature, 437 (7063), pp. 1272-1278.

Winerman, L. (January, 2006). Let's Sleep On It. Monitor On Psycholoy, 37 (1), pp. 58-60.

Nguyem, N.D. et al. (July 1, 2013). Overnight Sleep Enhances Hippocampus-Dependent Aspects of Spatial Memory Sleep. 36(7), 1051-1057. DOI: https://doi.org/10.5665/sleep.2808.

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Working Memory

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Executive Function
Memory Problems

- **Working Memory:**
  - **"…denotes a person's information-processing capacity" (p. 4-5)**
  - **Is the "memory buffer in the brain."**
  - **It allows for "theory of mind."**
  - **"Remembering so as to do."(non-informational)**

Wechsler Adult Intelligence Scale- Third Edition, Wechsler Memory Scale-Third Edition (1997). Technical Manual. San Antonio, TX : Psychological Corporation.

Brown, T. E. (October 11, 2001). Assessment and Treatment of Complicated ADHD Across the Lifespan. Seminar Presented at the Arizona Association of School Psychologists 33rd Annual Conference, Mesa, AZ.

Frith, C. D. and Frith, U. (1999). Intersecting Minds-A Biological Basis. Science, 286, pp. 1692- 695.

Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

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Possible Working Memory Computer Training Programs

Working Memory Training:

- Cogmed: www.cogmed.com
- Posit Science: https://www.brainhq.com/
- Literature Review of Working Memory Training:

  It only works to train the person how to do better with the training program. It does not generalize.

Klingberg, T. (February, 2006). Training Working Memory. AD/HD Report, 14 (1), pp. 6-8.

Barkley, R. (February, 2006). Editorial Commentary Issues in Working Memory Training in ADHD. ADHD Report, 14 (1), pp. 9-11.

Smith, G.E., et al. (2009). A Cognitive Training Program Based on Principles of Brain Plasticity: Results from the Improvement in Memory with Plasticity-based Adaptive Cognitive Training (IMPACT) Study. Journal of the American Geriatrics Society, 57, 594-603; from website: https://wiki.umn.edu/pub/LNPI/ExpertPanelPublications/G_Smith__A_cognitive_training_program_based_on_principles_of_brain_plasticity_results_from_the_Improvement_in_Memory_with_Plasticitybased_Adaptive_Cognitive_Training_study..pdf.

Shipstead, Z., Redick, T.S. and Randall, W.E. (2012). Is Working Memory Training Effective? Psychological Bulletin, DOI: 10.1037/a0027473.

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Richard Abby on Working Memory

- **WM is the best predictor of academic success:**
  - **Reading Comprehension, Math Word Problems, Computation, Verbal Mediation, Complex Reasoning and Inhibition**

Abby, R. (November 12, 2014). What is Working Memory and What is the Role of Working Memory in Attention and Learning. . Paper presented as part of the Understanding and Remediating Working Memory Deficits in Students With Dyslexia Symposium (W6 Symposium) At the 65th Annual International Conference of the International Dyslexia Association, San Diego, CA.

- **Rehearsal is best for temporary storage**
- **When item in WM is lost it cannot be recovered.**
- **80% with working memory problems have significant difficulty with reading, or math, or both**

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Richard Abby on Working Memory

- **Things that disrupt Working Memory:**
  - Background noise
  - Distraction
  - Switching Attention
  - Too much information to encode by rote
  - Too much mental manipulation required to retain information
  - Never encoding it into Long-Term Memory

- **What helps Working Memory:**
  - Silent environment
  - White noise
  - Repeat over and over by rote
  - Associating it with something in Long-term memory
  - Rhyming, Mnemonics, chunking.

Abby, R. (November 12, 2014). What is Working Memory and What is the Role of Working Memory in Attention and Learning. . Paper presented as part of the Understanding and Remediating Working Memory Deficits in Students With Dyslexia Symposium (W6 Symposium) At the 65th Annual International Conference of the International Dyslexia Association, San Diego, CA.

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Aids for Working Memory

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Techniques that Help Memory

- **Periodically testing ones memory of things one wants to remember to weed out poor techniques.**

Alderson, R. et al. (May, 2013). Working memory deficits in adults with attention deficit/hyperactivity disorder (ADHD): An examination of central executive and storage/rehearsal processes. Journal of Abnormal Psychology, 122(2), May 2013, 532541. doi: 10.1037/a0031742.

- **"Self-Imagining" in a made up story of the content you want to remember (episodic memory).**

Grilli, M.D., and Glisk, E.L. (August 5, 2012). Imagining a Better Memory: Self-Imagination in Memory-Impaired Patients. Clinical Psychological Science, 20(10), 1-7. From website: http://cpx.sagepub.com/content/early/2012/10/02/2167702612456464.full.pdf+html.

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Working Memory Interventions

- Teach
  - N-Back
  - Chunking
  - Rehearsal
  - How to ask for help
- Reduce Cognitive Load
  - Match amount of information to WM limit
  - Repetition, Repetition…
  - No multitasking
  - Provide memory prompts

- Reduce Cognitive Load
  - Self-paced learning
  - Allow extended time
  - Provide note taker/recorder
  - Stay on topic
  - Use only Key examples
  - Allow step by step directions on desk

Dehn, M.J. (2014). Essentials of Processing Assessment, Second Edition. Hoboken, NJ: Wiley.

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Treatments For Memory Disorders

- Mnemonics-memory tricks
- Diaries and Social Statements
- Check for sleep disorders.*
- Nootropic Medications
- www.doctormemory.com
- Doctor memory
- Lucas, J. and Lorayne, H. (1974). The Memory Book. New York, NY: Ballantine.

Nosek, K. (1997). Dyslexia in Adults: Taking Charge of Your Life. Dallas, TX: Taylor.

Smith, L. and Godfrey, H.D.P. (1995). Family Support Programs Rehabilitation: A Cognitive- Behavioral Approach to Traumatic Brain Injury. New York, NY: Plenum.

Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

Fawcett, A.J. (October 29, 2010). Dyslexia, Dysgraphia and Procedural Learning Deficit. Paper Presented at the 61st Annual International Dyslexia Association Conference, Phoenix, AZ (October 27-30, 2010), Session F5.

Goldstein, S. and Goldstein, M. (1997). Drugs Affecting Learning, Attention, and Memory. In S. Goldstein (Ed.), Managing Attention and Learning in Late Adolescence & Adulthood: A Guide for Practitioners. New York, NY: John Wiley & Sons, pp. 327-373.

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Technology for Memory Difficulties

- Watchminder 2:
  www.watchminder.com/
- Record lectures with a digital device
- Time Management Organizer
  www.FranklinCovey.com
- Professional Organizer:
  www.napo.org
- California Closets:
  www.californiaclosets.com
- Rolodex Organizer:
  www.franklin.com
- Livescribe Smartpen:
  www.livescribe.com
- Brookstone Wireless Keyfinder:
  www.brookstone.com/Wireless-Key-Finder.html
- Get 168 hour desk blotter

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Professionals Who Can Help with Memory

- AD/HD Coaches: www.addbrain.com
- Professional Organizers: www.napo.net
- Psychiatrists: www.apa@psych.org
- Psychologists: www.apa.org
- Masters Level Counselors: www.nbcc.org
- Social Workers: www.naswdc.org
- Behavioral Neurologists: www.anpaonline.org
- Speech-Language Pathologists: www.professional.asha.org
- Association for Persons in Supported Employment (APSE): www.apse.org

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Anxiety & Executive Function

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Working Memory & Anxiety

- **"Acute stress can almost halve a person's mental capacity."**

  Klingberg, T. (2013). The Learning Brain: Memory and Brain Development in Children. New York, NY: Oxford University Press.

- **Anxiety can significantly reduce working memory capacity**
- **Verbal IQ can go down 20 points with anxiety**
- **Working Memory is connected to Impulse Control**
- **First grade anxiety predicts Fifth grade anxiety**
- **As anxiety goes up the ability to initiate new activities goes down.**

Minahan, J. (November 12, 2014). Theory Into Practice: Effective Intervention for Students with Anxiety. Paper Presented as part of The Impact of Stress and Anxiety on Cognition and Behaviorin Students with Dyslexia: What to Know and What to Do Symposium (Symposium W3) of the 65th Annual International Dyslexia Association Conference, San Diego, CA.

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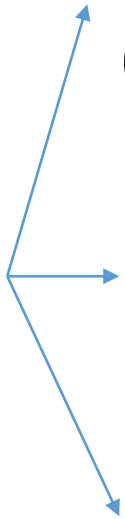
Working Memory & Anxiety

Problem Times for Anxious People

- Unstructured Time
- Writing Tasks
- Transitions
- Unexpected Changes
- Social Demands

Minahan, J. (November 12, 2014). Theory Into Practice: Effective Intervention for Students with Anxiety. Paper Presented as part of The Impact of Stress and Anxiety on Cognition and Behaviorin Students with Dyslexia: What to Know and What to Do Symposium (Symposium W3) of the 65th Annual International Dyslexia Association Conference, San Diego, CA.

Teach



Emotional Thermometer (Body Sensation)

Self-Monitoring, Practice Relaxation

Collect Calming Activities

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Attention-Deficit/Hyperactivity Disorder

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ADHD is NOT New!

In 1775 Melchor Adam Weikart, of Germany described a syndrome very similar to AD/HD. He recommended horseback riding and exercise as treatment.

Barkley, R.A. (2012). Executive Functions: What They Are, How They Work, and Why They Evolved. New York, NY: Guilford.

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Brain Areas Associated with AD/HD

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Neuroimaging of AD/HD Findings

- Frontostriatal dysfunction
- Anterior cingulum
- Prefrontal cortex
- Orbital prefrontal cortex
- Superior parietal regions
- Caudate nucleus
- Thalamus
- Amygdala
- Cerebellum

Kasparek, T., Theiner, P., and Filova, A. (November, 2015). Neurobiology of ADHD From Childhood to Adulthood: Findings of Imaging Methods. Journal of Attention Disorders, 19(11), 931-943. DOI: 10.1177/1087054713505322.

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Impulsivity and The Medial Prefrontal Cortex

- **Impulsivity appears to centered in the medial prefrontal cortex, dorsolateral prefrontal cortex, and the ventral striatum. These areas represent the daily-life system connected to reward related decision making. This area is probably dysfunctional in those with AD/HD, Parkinson's disease and pathological gambling.**

Cho, S.S., et al. (July, 2013). Morphometric Correlation of Impulsivity in the Prefrontal Cortex. Brain Topography, 26(3), 479-487. DOI: 10.1007/s10548-012-0270-x.

- **Swiss researchers found that there is a high rate of comorbidity between adult AD/HD and pathological gambling. The outcomes of those with this comorbidity was far worse and substance problems made it even more worse.**

Brandt, L. et al. (February 5, 2017). Adult ADHD Is Associated With Gambling Severity and Psychiatric Comorbidity Among Treatment-Seeking Problem Gamblers. Journal of Attention Disorders. DOI: 10.1177/1087054717690232.

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Executive Function & The Adult with AD/HD

- **AD/HD adults do significantly worse that adults without AD/HD in overall EF and on speeded tasks.**
- **In AD/HD adults poor EF and performance on speeded task is related to symptoms of inattention.**
- **If the AD/HD adult has a tendency toward rapid incorrect response style it is related to hyperactive/impulsive symptoms.**

Nigg, J.T. et al. (November 2005). Executive functions and ADHD in adults: evidence for selective effects on ADHD symptom. Journal of Abnormal Psychology, 114(4), 706-717. DOI: 10.1037/0021-843X.114.3.706.

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AD/HD, Working Memory, & Reinforcement

- **When given standard intensity of reinforcement children with AD/HD have significantly more difficulty with central executive, short-term memory, and working memory performance than controls.**

- **High intensity reinforcement significantly improved working memory and short-term memory in AD/HD children, but not so much in controls. However the AD/HD children did not normalize.**

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AD/HD, Working Memory, & Reinforcement

- **Motivational deficits negatively effect visual-spatial working memory and short-term memory in AD/HD children.**

Dovis, S. et al. (August, 2013). What Part of Working Memory is not Working in ADHD? Short Term Memory, the Central Executive and Effects of Reinforcement. Journal of Abnormal Child Psychology, 6, 901-917. From website: http://link.springer.com/article/10.1007%2Fs10802-013-9729-9.

- **There is a life long problem with working memory in those with AD/HD, however, the central executive difficulties abate somewhat.**

Alderson, R. et al. (May, 2013). Working memory deficits in adults with attentiondeficit/hyperactivity disorder (ADHD): An examination of central executive and storage/rehearsal processes. Journal of Abnormal Psychology, 122(2), May 2013, 532541. doi: 10.1037/a0031742.

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Neuropsychology & Persistent AD/HD

"These data confirm the presence of neuropsychological deficits in late childhood/early adolescence among those previously diagnosed with ADHD. The data also suggest that greater cognitive impairment is a feature of persistent ADHD" (p. 154).

Robinson, T., and Tripp, G. (April, 2013). Neuropsychological functioning in children with ADHD: Symptom persistence is linked to poorer performance on measures of executive and nonexecutive function. Japanese Psychological Research, 55(2), 154167.

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The Dismal 5

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AD/HD & DSM-5©

In DSM-5© there is one type of Attention-Deficit/Hyperactivity Disorder and it is Attention-Deficit/Hyperactivity Disorder, Combined Type. Since DSM-IV© was published in 1994, longitudinal studies have found Attention-Deficit/Hyperactivity Disorder/Impulsive Type is the early manifestation of Combined Type AD/HD

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AD/HD & DSM-5©

… in preschool and early grade school. As the child ages and his/her frontal lobe develops, they gain more control of their hyperactive motor movements and begin to appear as what was called (in DSM-IV© and DSM-IV, TR©) Combined Type. This process continues until their late 20's/early 30's when their frontal lobes are fully developed. By that time they appear to be the *Inattentive Type*…

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AD/HD & DSM-5©

…when their current adult behavior is compared to their non-AD/HD peers. Remember, when you diagnose someone with AD/HD, you compare them to their non-AD/HD age peers.

Swanson, J., Hinshaw, S., Hechtman, L. and Barkley, R. (November 9, 2012). Research Symposium 1: Montreal Study; Milwaukee Study; Berkeley Girls ADHD Longitudinal Study (BGALS). Symposium presented at the 24th Annual CHADD International Conference, November 8-10, 2012, Burlingame, CA.

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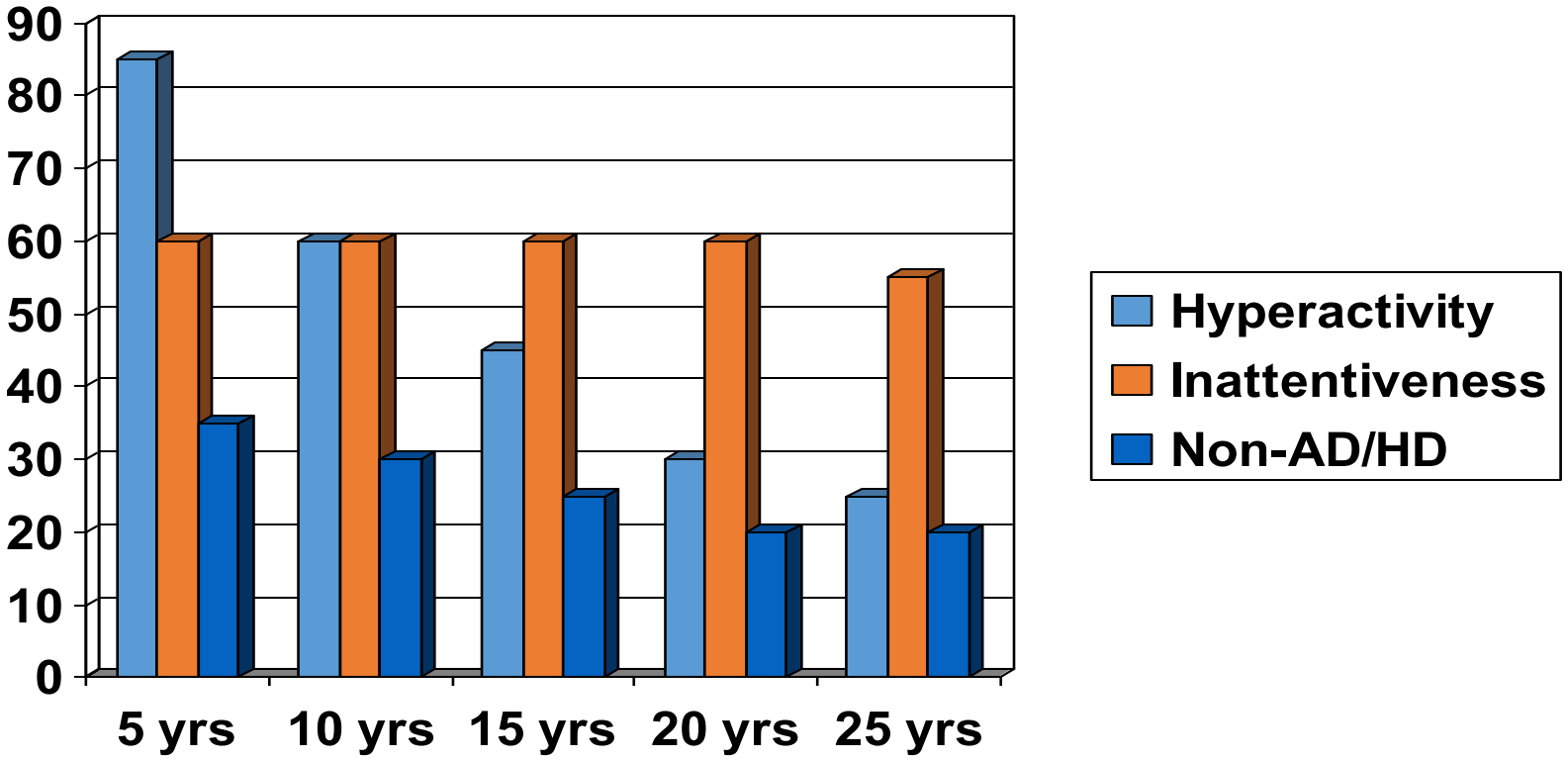
Longitudinal Studies of AD/HD



Barkley, R.A., Murphy, K.R. and Fischer, M. (2008). ADHD In Adults: What The Science Says. New York, NY: Guilford.

Weiss, G. and Hechtman, L. (1993). Hyperactive Children Grown Up. New York, NY: Guilford.

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Does this mean 30% outgrow their AD/HD?

- **No, a large group were at the 90%ile in terms of impairment. i.e. *Shadow Syndrome***
- **Barkley estimated about 15% *outgrow* AD/HD**

Barkley, R. A. (2002A-Tape 1). ADHD Symposium: Nature, Diagnosis and Assessment-Nature and Comorbidity and Developmental Course of ADHD. University of Massachusetts, January, Westborough, MA: Stonebridge Seminars.

"We found that 36% of the Hyperactive group met these two criteria and would be considered to have recovered or to have outgrown their disorder—that is, placing within the normal range in both symptoms and impairment." (p. 69)

Barkley, R.A., Murphy, K.R. and Fischer, M. (2008). ADHD In Adults: What The Science Says. New York, NY: Guilford.

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Attention-Deficit/Hyperactivity Disorder, Inattentive Presentation (Restrictive)

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Inattentive AD/HD?

What about Attention-Deficit/Hyperactivity Disorder, Inattentive Type? It is a separate and distinct disorder behaviorally, neuro-biologically and genetically from AD/HD. It is not included in the DSM-5. In research it may be referred to as AD/HD, Inattentive (Restrictive) Presentation, Sluggish Cognitive Tempo, Concentration Deficit Disorder and/or Crichton Syndrome.

- **Sluggish Cognitive Tempo case difficulties in Executive Function, but they are different from those seen in AD/HD.**

Author (May 3, 2012). DSM-5 Development, Attention Deficit/Hyperactivity Disorder, Rationale. Washington, DC: American Psychiatric Association; From website: http://www.dsm5.org/ProposedRevision/Pages/proposedrevision.aspx?rid=383#.

Barkley, R. A. (November 9, 2012). The Other Attention Disorder: Sluggish Cognitive Tempo (ADD/SCT) Vs. ADHD–Impairment and Management. Paper presented at the 24th Annual CHADD International Conference on ADHD, Burlingame, CA, November 8 – 10, 2012.

Goldstein, S. (November 9, 2017). Understanding and Evaluating Executive Functioning in ADHD Across the Life Span. Paper presented at the CHADD International Conference, Atlanta, GE, Pre-Conference Institutes, Session TA-01, November 9, 2017.

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SCT Symptoms

- Daydreaming excessively
- Trouble staying alert or awake in boring situations
- Easily confused
- Spacey or *in a fog*; mind seems to be elsewhere
- Stares a lot
- Lethargic, more tired than others
- Underactive or have less energy than others
- Slow moving or sluggish
- Doesn't seem to understand or process information as quickly or accurately as others

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SCT Symptoms (Continued)

- Apathetic or withdrawn; less engaged in activities
- Gets lost in thought
- Slow to complete tasks; needs more time than others
- Lacks initiative to complete work or effort fades quickly

Barkley, R. A. (November 9, 2012). The Other Attention Disorder: Sluggish Cognitive Tempo (ADD/SCT) Vs. ADHD– Impairment and Management. Paper presented at the 24th Annual CHADD International Conference on ADHD, Burlingame, CA, November 8 – 10, 2012.

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Sluggish Cognitive Tempo

An American researcher reviewed 10 recent research articles on sluggish cognitive tempo that included 4 continents and individuals from age 4 to 64. This he said indicated it was a worldwide, lifespan issue. He said sluggish cognitive tempo is not AD/HD and can be distinguished from it. Sluggish cognitive tempo symptoms include internalizing, learning difficulties, and functional impairment. It may be related in some was to being caused in part by tobacco exposure and thyroid problems.

Becker, S.P. (February 1, 2017). "For Some Reason I Find It Hard To Work Quickly: Introduction To The Special Issue On Sluggish Cognitive Tempo. Journal of Attention Disorders. DOI: 10.1177/1087054717692882

Becker, S.P. et al. (2018). Sluggish cognitive tempo in adults: Psychometric validation of the Adult Concentration Inventory. Psychological Assessment, 30(3), 296-310. DOI: http://dx.doi.org/10.1037/pas0000476.

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Adults with Sluggish Cognitive Tempo

A study of adults with Sluggish Cognitive Tempo (SCT) indicated SCT is related to inattentive symptoms, and they appear to have more internalizing symptoms than AD/HD adults. Adults with SCT have additional executive functions difficulties over and above those of AD/HD when found comorbidly, particularly in organization and problem solving. Finally, their inattentive symptoms are far more pronounced than in those with solely AD/HD.

Leikauf, J.E. et al. (June, 2017). Sluggish Cognitive Tempo, Internalizing Symptoms, and Executive Function in Adults With ADHD. Journal of Attention Disorders. DOI: 10.1177/1087054716682337.

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Sluggish Cognitive Tempo and EF

Barkley (2018) indicated that Sluggish Cognitive Tempo (SCT) has been shown by what little research that has been done not to be a primary disorder of executive function. It may involve posterior brain areas that control attention shifting and orienting. More impaired than AD/HD in community activity, education, social situations, household organization and work. Slow mean reaction time and shy. More impaired in all life domains than non-disabled, but not, as a whole as disabled as a whole those with AD/HD. Those with SCT tend to have lower education level and income than those with AD/HD as well as being unemployed and unmarried more. Treatment: Cognitive Behavioral Therapy ?; Behavioral techniques; Social Skills Training

Barkley, R.A. (2018). Barkley Sluggish Cognitive Tempo Scale-Children and Adolescents (BSCTS-CA). New York, NY: Guilford.

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“Neurobiological”

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What does *Neurobiological* mean?

- Stephen Pinker – The Blank Slate: The Modern Denial of Human Nature or better stated, the Lie of the Blank Slate.

Pinker, S. (2002). The Blank Slate: The Modern Denial of Human Nature. New York, NY: Viking.

- AD/HD is not caused by child rearing practices or environmental experience.
- 65 to 75% of cases of Combined Type ADHD are caused by genetic anomalies.
- These people are said to have developmental ADHD.

Barkley (2008)

- 80 to 85% of the variance of those with developmental ADHD is genetic.
- I.Q. is 60 to 65% genetic.

Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

Barkley, R. A. (2002A-Tape 1). ADHD Symposium: Nature, Diagnosis and Assessment-Nature and Comorbidity and Developmental Course of ADHD. University of Massachusetts, January, Westborough, MA: Stonebridge Seminars.

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Acquired ADHD

- **25 to 35% of cases of ADHD are acquired/caused by brain trauma**
- **15 to 25% of cases of ADHD are acquired/caused by pre-natal and perinatal brain injuries: Maternal smoking/drinking, premature birth, etc.**
- **3 to 7% of cases of ADHD are acquired/caused by post-natal brain injuries: head trauma, infections, tumors, lead poisoning, PANDAS, etc.**
- **Most of those with acquired ADHD are males.**
- **The male brain is more prone to injury and genetic difficulties than the female brain.**

Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

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Acquired ADHD

- **Most of those with acquired ADHD are males.**
- **The male brain is more prone to injury and genetic difficulties than the female brain.**

Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

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What does Neurobiological mean?

1. Damage to different neural networks may cause AD/HD symptoms.
2. More commonly differences in Brain Development may cause them as well.
3. AD/HD, "…is a condition of the brain produced by genes."
4. ADHD has multiple causes

Swanson, J. et al. (April, 1998). Cognitive neuroscience of attention deficit hyperactivity disorder and hyperkinetic disorder. Current Opinion in Neurobiology, 8(2), 263-271.

Biederman, J. (October 27, 2006). Advances in the Neurobiology of AD/HD. Paper presented the at the 18 Annual CHADD International Conference, Chicago, IL.

Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

- Russell Barkley, Ph.D. (2008) said regarding Combined Type ADHD, "You cannot train out this disorder, period!" He went on to say the counselor is a *shepherd* of a disabled person.

Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

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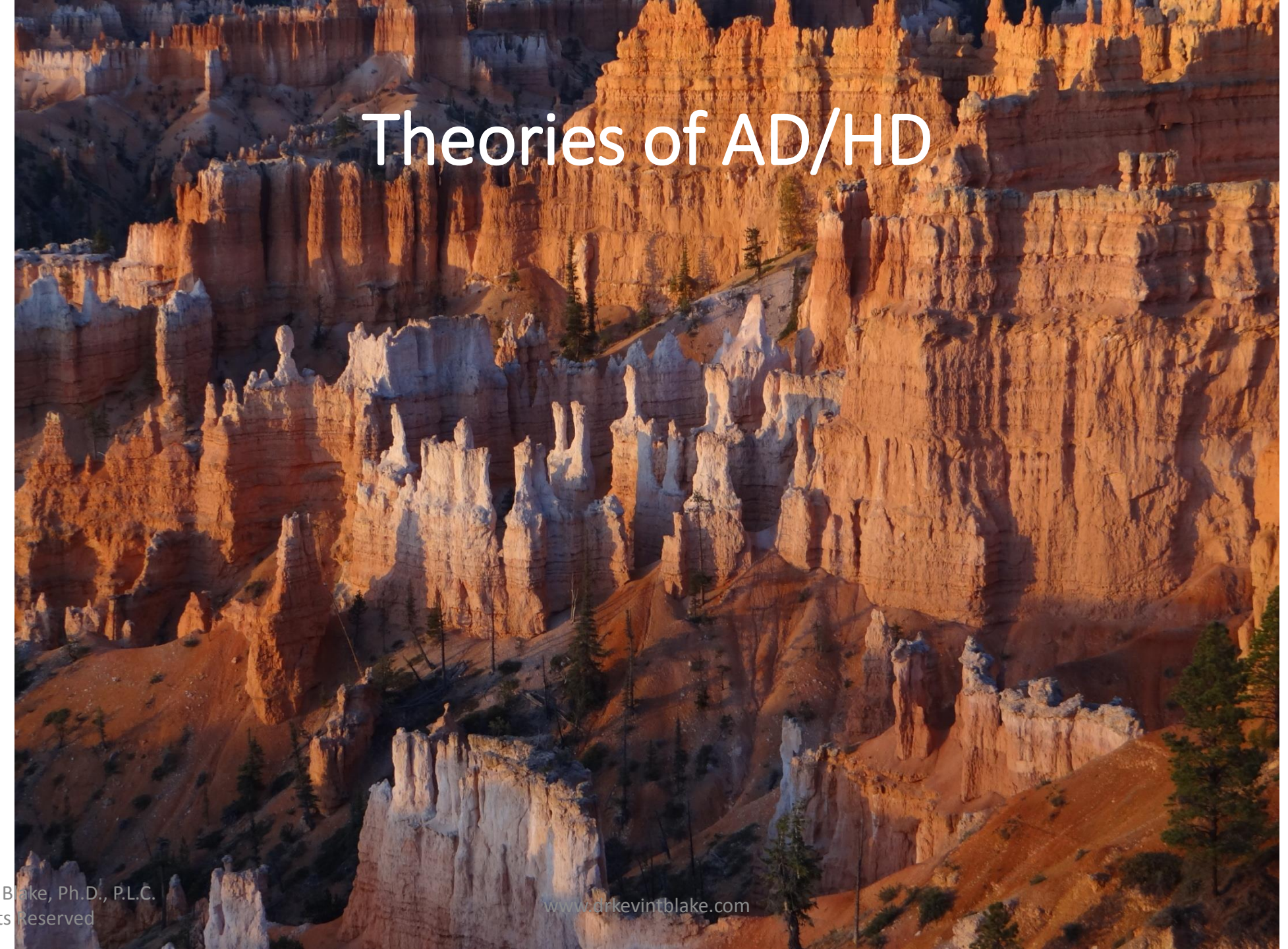

Theories of AD/HD

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Summary of Barkley's Theory Of AD/HD, Combined Type

Step 1: *Response Delay*

Step 2: *Prolongation*

Step 3: *Rule Governed Behavior*

Step 4: *Dismemberment of the Environment*

Barkley, R.A. (1997). ADHD and the Nature of Self-Control. New York, NY: Guilford.

Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com

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Summary of Tom Brown's Theory of AD/HD

- Organizing and activating for work
- Sustaining attention and concentration
- Sustaining energy and effort
- Managing affective interference
- Utilizing working memory and accessing recall
- Being able to predict the reaction of others due to their behavior (Forethought)

Brown, T.E. (1995). Differential Diagnosis of ADD Versus ADHD in adults. In K.G. Nadeau (Ed.), Attention-Deficit Disorder in Adults. New York, NY: Bruner/Mazel, 93-108.

Brown, T.E. (2013). A New Understanding of ADHD in Children and Adults: Executive Function Impairments. New York, NY: Routledge, 28.

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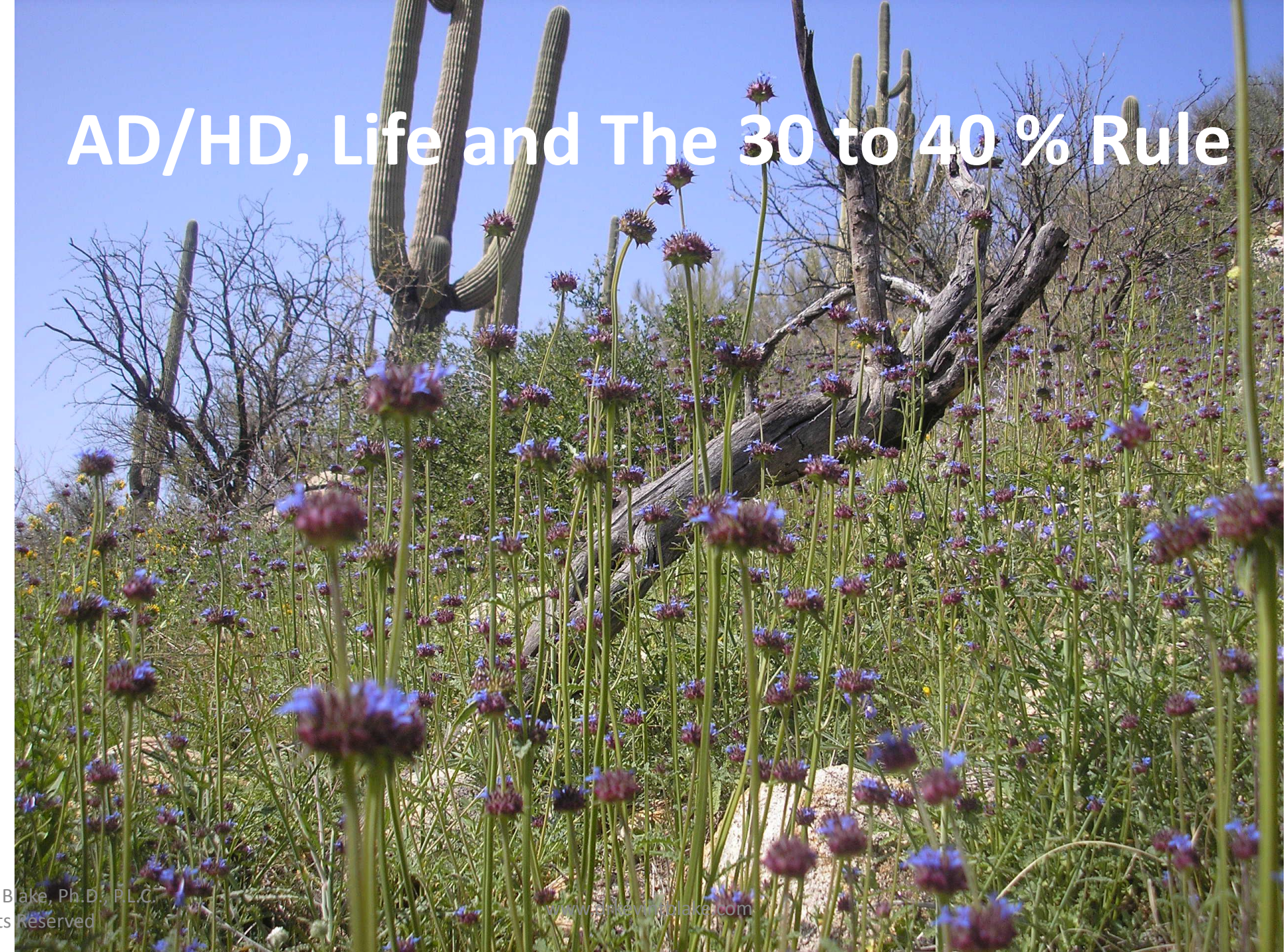
AD/HD, Life and The 30 to 40 % Rule



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Barkley's 30%-40% Rule for Combined AD/HD

People with Combined Type AD/HD tend to be on average 30% - 40% less mature in controlling their hyperactivity, impulsivity, and inattentiveness than their non-disabled age peers.

--Barkley, R.A. (1998), (2008); Chang, Z. et al (2017).

Scientists conducted longitudinal MRIs of children between age 12 and 20 with "Attention Problems". They also measured their driving behaviors, symptom…

Barkley, R.A. (2006). Attention Deficit Hyperactivity Disorder, Third Edition. New York, NY, Guilford.

Barkley, R.A., Murphy, K.R. and Fischer, M. (2008). ADHD In Adults: What The Science Says. New York, NY: Guilford.

Vijayakumar, N. (December 19, 2016). Neurodevelopmental Trajectories Related to Attention Problems Predict Driving - Related Risk Behaviors. Journal of Attention Disorders. DOI: 10.1177/1087054716682336.

…impairment, and "risky behaviors". They found those most at risk of poor driving were those with the highest symptom impairment, and the least developed right orbital-frontal cortex.

--Vijayakumar, N. (December 19, 2016)

A population study of AD/HD adults in Taiwan indicated they have a 143% increased risk of having a serious injury than typical adults. If the AD/HD adult is administered methylphenidate that increase rate of injury is reduced to 22%.

Chien, W-C et al. (June 2017). The risk of injury in adults with attention-deficit hyperactivity disorder: A nationwide, matched-cohort, population-based study in Taiwan. Research in Developmental Disabilities, 65, 57-73.

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Warning for Health Class Instructors!

- **People with AD/HD may have a *significantly reduced life expectancy* due to an impulsive lack of concern for health related issues, exercise, diet, drugs, etc. Life expectancy can be reduced by as much as 25 years!**
- **It is useful to spend significantly more time with them emphasizing the importance of good health and developing ways to ensure they follow through with annual check-ups, etc.**

Barkley, R.A. (January 14, 2018). Life Expectancy Slashed in Worst Cases of AD/HD. Paper presented at the American Professional Society of ADHD and Related Disorders, January 12-14, 2018. Washington, DC.

Inserro, A. (January 14, 2018). Psychologist Barkley Says Life Expectancy Slashed in Worst Cases for Those With ADHD. American Journal of Managed Care. From website: https://www.ajmc.com/conferences/apsard-2018/psychologist-barkley-says-life-expectancy-slashed-in-worst-cases-for-those-with-adhd.

Chau, Y.C.Y. et al. (November 28, 2017). Oral Health of Children With Attention Deficit Hyperactivity Disorder: Systematic Review and Meta-Analysis. Journal of Attention Disorders. DOI: 10.1177/1087054717743331.

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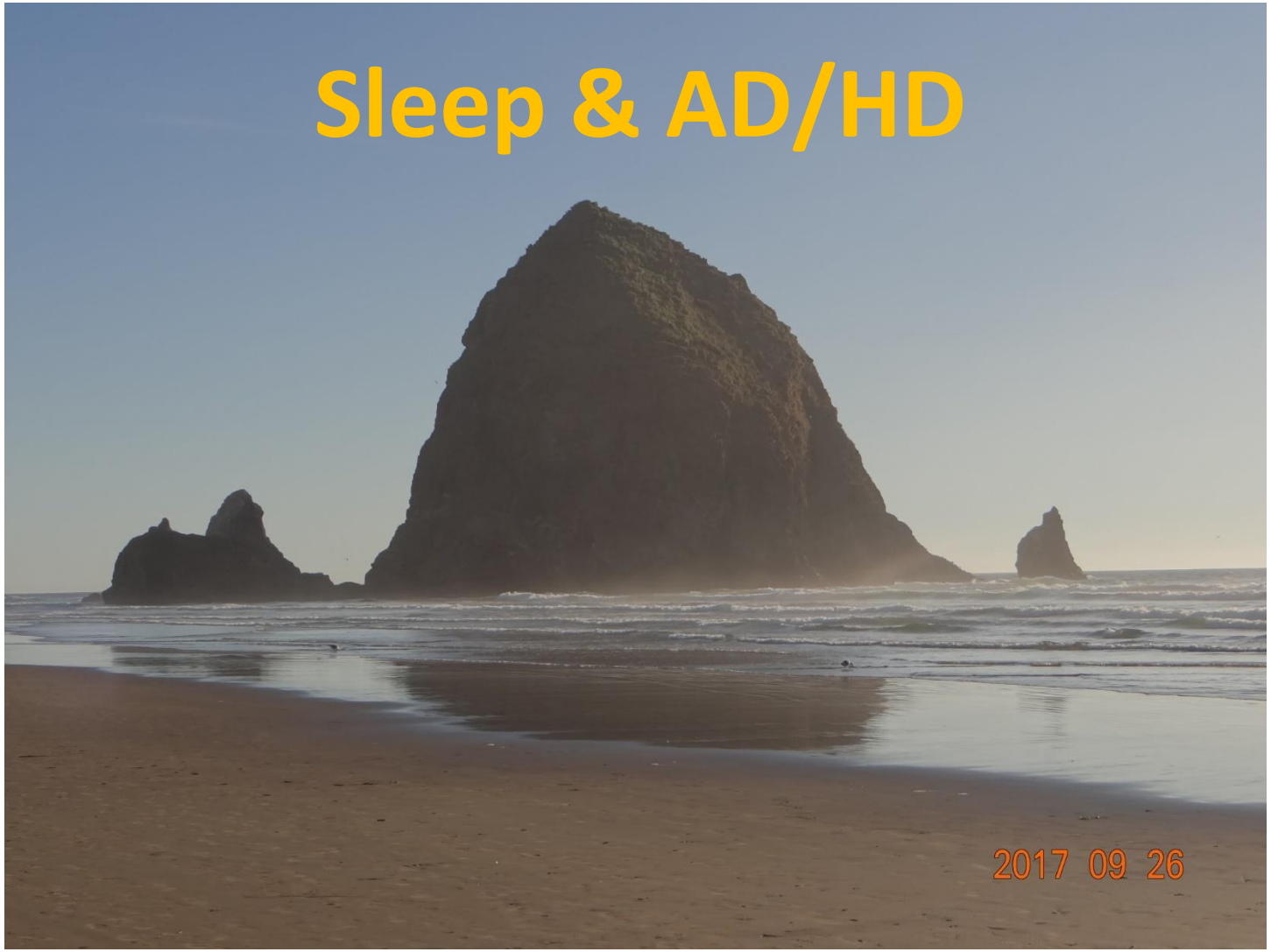
Sleep & AD/HD



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Sleep Disorders and AD/HD

- 30 to 56% of those with AD/HD have sleep disorders
- Stimulant medications can lengthen sleep onset
- Sleep problems may exacerbate academic/work problems, but if academic/work problems not caused by Sleep problem, better sleep may not translate to fewer waking problems.
- Significantly more problems with wrestles legs, etc.

Barkley, R.A. (2012). ADHD: Cutting Edge Understanding and Management. Seminar sponsored by J&K Seminars, L.L.C., 1861 Wickersham Lane, Lancaster, PA 17603-2327, p. 28.

Bajorvatn, B. et al. (September 20, 2017). Adults with Attention Deficit Hyperactivity Disorder Report High Symptom Levels of Troubled Sleep, Restless Legs, and Cataplexy. Frontiers in Science. DOI: 10.3389/fpsyg.2017.01621.

Diaz-Roman, A. et al. (June, 2018). Sleep in adults with ADHD: Systematic review and meta-analysis of subjective and objective studies. Neuroscience and Biobehavioral Reviews. 89, 61-71. DOI: 10.1016/j.neubiorev.2018.02.014.

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Treatment of AD/HD

"ADHD is currently understood as a neurodevelopmental syndrome with symptoms that are highly heritable and neurobiological in origin. Pharmacotherapy stands alone as the single most efficacious treatment for ADHD for individuals of all ages. Medications, psychostimulants in particular are effective in reducing the core symptoms of inattention, hyperactivity and impulsivity." (p. 3)

Ramsay, R. (2010). Nonmedication Treatments for Adult ADHD. Washington, DC: American Psychological Association Press, p. 3.

1. **Diagnosis (Step 1: Get Evaluated)**
2. **Psychoeducation about AD/HD (Step 2: Change Your Mind Set)**
3. **Medication (Step 3: Change Your Brain)**
4. **Accommodation: (Change Your Life –Rules for success)**

Barkley, R.A. (2010). Taking Charge of Adult ADHD. New York, NY: Guilford.

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The Multimodal Treatment Study of Children with Attention Deficit Hyperactivity Disorder

(*MTA Study = Multimodal Treatment Assessment of AD/HD)*

1999

Jensen, P.S., et al. (February, 2001). Findings From the NIMH Multimodal Treatment Study of ADHD (MTA): Implications and Applications for Primary Care Providers. Journal of Developmental and Behavioral Pediatrics, 22 (1), pp. 60-73.

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The MTA Study

- Mid-1990s
- 579 AD/HD, Combined Type Children
- Demographics matched the 1990 US Census
- Randomly assigned to one of four groups
- After assigned to group each child was thoroughly reassessed to make sure they were AD/HD, CT

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The MTA Study

- **Group 1: "Experimental Medication"**
  - **Three medications used**
    - **Methyltphenidate (Ritalin)**
    - **D Amphetamine (Dexedrine)**
    - **Pemoline (Cylert)****
      - **If medication one did not work or there was a side effect, changed to the next medication and so on.**
      - **Each month parent and child was seen by physician. Child checked for response to treatment and side effects. Each month questionnaires given to parents and teachers.**

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The MTA Study

- **Group 2: Behavior Modification**
  - **Parents taught how to use token economies at home and daily report cards, teachers taught how to teach AD/HD child, how to use token economies in the classroom, and daily report cards, AD/HD children were sent to special camp for AD/HD kids, parents and teachers given "800" number for consultation 24/7, continued on for 14 months!**

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The MTA Study

- **Group 3: "Experimental Medication Plus Behavior Modification Group"**
- **Group 4: "Community Services"**
  - **The parents are told their child has Combined Type AD/HD and they are encouraged to go out to their community and get what services they want for their child…This was the "Control Group."**
    - **Medication, aroma therapy, etc.**

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MTA Study

- **Medication Management Treatment Group did best with a 50% decline in symptoms.**
- **Medication with Behavioral Modification Group did no better.**
- **Behavior Modification Group did better than placebo.**
- **Community Treatment had only a 25% decline in symptoms.**
- **Medication helps with social interaction.**

Author (December, 1999). A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder. The MTA Cooperative Group. Multimodal Treatment Study of Children with ADHD. Achieves of General Psychiatry, 56(12), 1073-1086.

Author (December, 2009). The Multimodal Treatment of Attention Deficit Hyperactivity Disorder Study (MTA): Questions and Answers . Bethesda, MD: National Institute of Mental Health (NIMH). From website: https://www.nimh.nih.gov/funding/clinical-research/practical/mta/the-multimodal-treatment-of-attention-deficit-hyperactivity-disorder-study-mta-questions-and-answers.shtml.

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MTA Study

"In that study (MTA Cooperative Group, 1999) psychosocial treatment alone was very poor compared to medication effects and psychosocial treatment with methylphenidate was no better than methylphenidate alone…Medication was found to reduce negative social interactions both by the treated children and by their peers toward the child with ADHD." (p. 55)

Semrud-Clickman, M. (2007). Social Competence in Children. New York, NY: Springer, p. 55.

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AD/HD Response Rate to Stimulant Titration

- **"If methylphenidate (sic., Ritalin) is not effective or if there are side effects then the next alternative is dextroamphetamine (sic., Dexedrine)…If the diagnosis has been appropriately made, the response rate is about 80% to 96%."**
- **They improve 70 to 90 percent of clinical and normalize 50 to 60 percent of those while on a therapeutic dose.**
- **"When the discussion is specifically reserved to symptom relief and impairment reduction for ADHD, this series of articles adds to an impressive body of scientific literature…**

"…demonstrating that medication treatment, in the case of methylphenidate, is cost efficient and may be all that is needed for good responders." (p. 3)

Mahoney, W. (2002). The Use of Stimulant Medication in the Treatment of Attention Deficit Hyperactivity Disorder. Pediatrics & Child Health, 7 (1), pp. 693-696.

Barkley, R.A. (2012). Executive Functions: What They Are, How They Work, and Why They Evolved. New York, NY: Guilford.

Goldstein, S. (December, 2004). Do Children with ADHD Benefit from Psychosocial Intervention, ADHD Report, 12 (6), 1-3.

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AD/HD Persistence in Follow-Up Study of Subjects from the MTA Study

Researchers recently conducted a follow-up study of the children, now adults (average age 25) who were in the MTA AD/HD study in the 1990's. They found those who persisted in their impairing AD/HD symptomatology in adulthood were the ones who had more symptom severity in childhood, more childhood comorbidities, and more parents with mental health issues than did non-persisters.

Hecthman, R.A. et al. (November, 2016). Functional Adult Outcomes 16 Years After Childhood Diagnosis of Attention-Deficit/Hyperactivity Disorder: MTA Results. Journal of American Child and Adolescent Psychiatry, 55(11), 945-952e2. DOI: 10.1016/j.jaac.2016.07.774

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German MTA Study of AD/HD

- **The Cologne Adaptive Multimodal Treatment (CAMT) study of AD/HD initially found the same results as the American MTA study and at the 18 month follow-up.**
- **The same was true of the German's 8 year follow up.**

Dopfner, M. et al. (February, 2015). Adaptive multimodal treatment for children with attention-deficit-/hyperactivity disorder: an 18 month follow-up. Child Psychiatry and Human Development, 46(1), 44-56. DOI: 10.1007/s10578-014-0452-8.

Dopfner, M. et al. (July 22, 2016). Long-Term Course After Adaptive Multimodal Treatment for Children With ADHD: An 8-Year Follow-Up. Journal of Attention Disorders. DOI: 10.1177/1087054716659138.

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Long-Term Medication Treatment and Adult AD/HD

Researchers found that adults with AD/HD between the ages of 18 and 54 have structural changes in their cool executive functioning network. It is thought to demonstrate an improvement in this type of executive functioning. This appears to be due to long-term treatment with stimulant medication. Hence, this is another study that demonstrates that stimulant treatment for AD/HD in neuroprotective.

Moreno-Alcazar, A. et al. (August 30, 2016). Brain abnormalities in adults with Attention Deficit Hyperactivity Disorder revealed by voxel-based morphometry. Psychiatry Research. DOI: 10.1016/j.pscychresns.2016.06.002.

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Roy, A. et al. (November, 2016). Childhood Factors Affecting Persistence and Desistence of Attention - Deficit/Hyperactivity Disorder Symptoms in Adulthood: Results From the MTA. Journal of the American Academy of Child and Adolescent Psychiatry, 55(11), 937-944.

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AD/HD College Students and Quality of Life

Researchers from Pennsylvania found college students indicated they had a significantly lower quality of life than their non-impaired peers. This had nothing to do with their drug use, comorbidities, treatment and use of medication.

Pinho, T.D. et al. (October 1, 2017). Predictors and Moderators of Quality of Life Among College Students With ADHD. Journal of Attention Disorders. DOI: 10.1177/1087054717734645.

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Quality of Life In Adults With AD/HD

Spanish scientists investigated the quality of life of AD/HD adults compared to their non-impaired peers. They found that with AD/HD adults without comorbidities had higher symptoms of impulsivity, and more symptoms of depression and anxiety than non-impaired adults. They also found that adults with AD/HD and comorbidities had less depression and anxiety and a bit higher quality of life than those adults who were recently diagnosed. They concluded that previous diagnosis may have a positive effect on mood and quality of life.

Quintero, J. et al. (October 1, 2017). The Impact of Adult ADHD in the Quality of Life Profile. Journal of Attention Disorders. DOI: 10.1177/1087054717733046.

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GeneSight for AD/HD, & Mood Disorder

Developed through research at the Mayo and Cleveland Clinics. Swab inside of your cheek for DNA. Sample sent to GeneSight lab. Within 36 hours doctor gets report. Can choose appropriate medication and dose by your genes.

- www.genesight.com
- http://mayoresearch.mayo.edu/center-for-individualized-medicine/drug-gene-testing.asp

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Diagnosis

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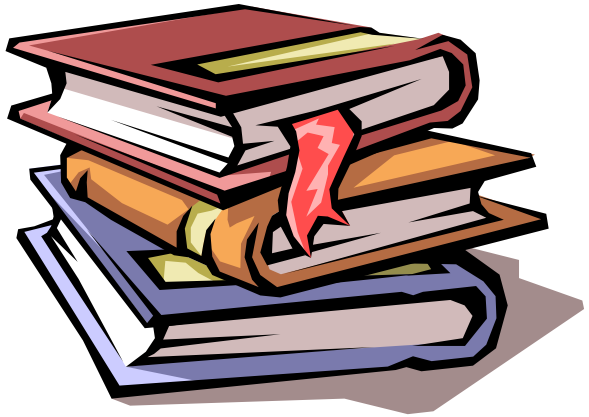
Barkley stated:

Those who diagnose AD/HD should have training in the differential diagnosis of Mental Disorders and in AD/HD using either the DSM and/or ICD format(s).



Barkley, R.A. (1998). AD/HD in Children, Adolescents, and Adults: Diagnosis, Assessment and Treatment. New England Educational Institute, Cape Cod Symposium, August, Pittsfield, MA.

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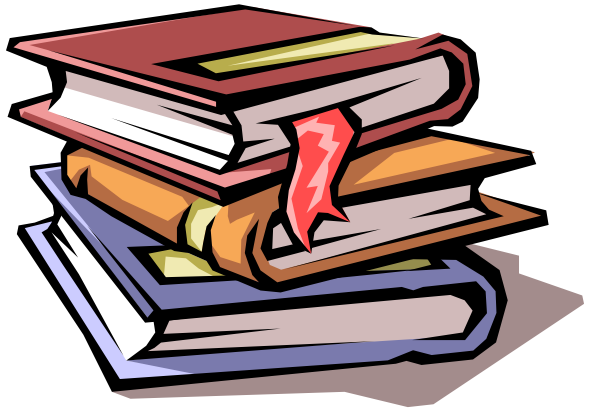
THE THREE MOST IMPORTANT THINGS IN DIAGNOSING AD/HD:

- ***HISTORY***
- ***HISTORY***
- ***HISTORY***



Barkley, R.A. (1998). AD/HD in Children, Adolescents, and Adults: Diagnosis, Assessment and Treatment. New England Educational Institute, Cape Cod Symposium, August, Pittsfield, MA.

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Get Extensive Information From Collaterals

- Parents
- Significant Others/Spouses
- Employers
- Teachers/Professors
- Friends

Barkley, R.A. (1998). AD/HD in Children, Adolescents, and Adults: Diagnosis, Assessment and Treatment. New England Educational Institute, Cape Cod Symposium, August, Pittsfield, MA.

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Diagnosing Adult AD/HD

- **Have them complete information relating to client's past and present history and behavior using:**
- **Checklists**
- **Questionnaires**
- **Semi-structured Interview**

Barkley, R.A. (1998). AD/HD in Children, Adolescents, and Adults: Diagnosis, Assessment and Treatment. New England Educational Institute, Cape Cod Symposium, August, Pittsfield, MA.

Mapou, R.L.(2009). Adult Learning Disabilities and ADHD: Research-Informed Assessment. New York, NY: Oxford University Press.

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Instruments for AD/HD Dx

- Barkley Adult ADHD Rating Scale—IV (BAARS-IV)
- Barkley Deficits in Executive Functioning Scale (BDEFS for Adults)
- Barkley Functional Impairment Scale (BFIS for Adults)
- Barkley's Quick Check for Adult ADHD Diagnosis
- Adult Concentration Inventory (ACI)

Becker, S.P. et al. (March, 2018). Sluggish cognitive tempo in adults: Psychometric validation of the Adult Concentration Inventory. Psychological Assessment. DOI: 10.1037/pas0000476.

- Conners' Adult ADHD Diagnostic Interview for DSM-IV™
- Conners' Adult ADHD Rating Scales (CAARS)
- Brown Attention Deficit Disorder Scales for Adults (BADDS-A)
- For SCT Dx in adults Barkley recommends 6/9 inattentive symptoms from DSM-5 and major life impairment

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DSM-5 Assessment Measures

- DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure-Adult (p. 738-739)
- Parent/Guardian-Rated DSM-5 level 1 Cross-Cutting Symptom Measure-Child 5-17 (p. 740-741)
- Clinician-Rated Dimensions of Psychosis Symptom Severity (p. 743-744)

Author (May 18, 2013). Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). Washington, DC: American Psychiatric Association.

- World Health Organization Disability Assessment Schedule 2.0 (WHODAS2.0) (p. 745-748).
  - Self-Administered impairment rating in DSM-5.
- Barkley has one for adults with AD/HD

Barkley, R.A. (February, 2011). Barkley Functional Impairment Scale. New York, NY: Guilford.

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Diagnosing AD/HD

- **Review Teacher's Comments on Past Report Cards**
- **Review Past Reports of Evaluations**
- **Contact Past Mental and Medical Health Professionals Who Worked with Client**

Barkley, R.A. (1998). AD/HD in Children, Adolescents, and Adults: Diagnosis, Assessment and Treatment. New England Educational Institute, Cape Cod Symposium, August, Pittsfield, MA.

- **Client Completes Questionnaires, and checklists about past and present history and behavior**
- **Client completes Inventory(s) to Screen Mental Health Status (i.e., SCL-90R, MMPI-2, etc.) Hamilton Depression/Anxiety; Beck Depression/Anxiety, etc.**

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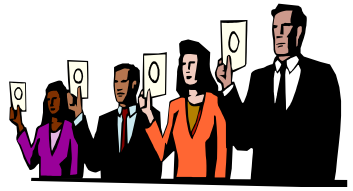
Why Use a Collateral in AD/HD Evaluations?



- **Follow-up studies of AD/HD children as adults:**
- **Interview Patient-5% still AD/HD**
- **Interview Parents-66.7% still AD/HD (Age adj. DSM)**
- **When both are compared to driving records, criminal records, insurance records, transcripts, interviews about social life, and employer interviews, the parents' reports correlate; patient's do NOT!**

Barkley, R.A. (2002) Mental and Medical Outcomes of AD/HD. Pre-Conference Institute, # TPA1, Thursday October 17, 2002, 14th Annual CHADD International Conference, Miami Beach, FL.

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Barkley On Collaterals

"Nevertheless, the combined results of these studies suggest that agreement between self-reported information and that given by others about ADHD may increase with age and be of acceptable levels especially by the early 30s. Such information should not be trusted as reliable (agreeing with others), however, in those with ADHD in their teens and early 20s." (p. 127)

Barkley, R.A., Murphy, K.R. and Fischer, M. (2008). ADHD In Adults: What The Science Says. New York, NY: Guilford.

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Non-Medical AD/HD Treatments

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Cogmed and AD/HD

Canadian researchers randomly assigned adults with AD/HD to one of two groups. One received working memory training from a fake copy of the Cogmed program the other group was exposed to the real program.

The group trained with the real program experienced improvement in their visual-spatial working and verbal working memories that were found to be maintained at six month follow-up. This was not seen in the control group. However, the treatment group's improvements did not generalize to their real life environment.

Dentz, A. et al (August 31, 2017). Working Memory Training for Adults With ADHD. Journal of Attention Disorders. DOI: 10.1177/1087054717723987.

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Psychotherapy and AD/HD

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ADULT AD/HD & TREATMENT

- **Cognitive Behavioral Therapy works with AD/HD adults because they have better developed frontal lobes than children. They still need medication, however.**
- **This means adults with AD/HD can get some good out of social skills training whereas AD/HD children typically do not.**

Barkley, R.A. (2006). Attention-Deficit Hyperactivity Disorder, A Handbook for Diagnosis and Treatment, Third Edition. New York, NY: Guilford.

Ramsay, R. (2010). Nonmedication Treatments for Adult ADHD. Washington, DC: American Psychological Association Press.

- **Recently it was found a combination of cognitive behavioral therapy (CBT) and dialectical behavioral therapy (DBT) was able to lower depression, anxiety and stress in adults with AD/HD over a 6 month period.**

Nasri, B. et al. (February 8, 2017). Group Treatment for Adults With ADHD Based on a Novel Combination of Cognitive and Dialectical Behavior Interventions: A Feasibility Study. Journal of Attention Disorders. DOI: 10.1177/1087054717690231.

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Adult AD/HD, Cognitive Behavioral Therapy, and Medication

A group of Canadian and American scientists found that cognitive behavioral therapy (CBT) and medication controlled AD/HD symptoms in adults better than CBT alone. This included AD/HD symptoms, organizational abilities and self-esteem. However, over time the improvement over CBT alone was not as great.

Cherkasova M.V., et al. (October 6, 2016). Efficacy of Cognitive Behavioral Therapy With and Without Medication for Adults With ADHD. Journal of Attention Disorders. DOI: 10.1177/1087054716671197.

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Psychotherapy and AD/HD

Wilens, Spencer, and Prince wrote, "…non-pharmacological treatment of ADD in adults remains more speculative…Adults with the disorder who have an addiction, or those who report distress related to their ADD…should be directed to appropriate psychotherapeutic intervention with clinicians who are knowledgeable about the disorder" (p. 33)

Wilens, T.E., Spencer, T.J., and Prince, J. (1997). Diagnosing ADD in Adults. Attention!, 3 (4), pp. 27-33.

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Psychotherapy and AD/HD

"As psychotherapists working with persons with learning disabilities, we are presented with the results of the damage due to misunderstanding and mistreatment, and we have to help our clients heal from that damage. Helping our clients to understand what their learning disabilities are, how they have been affected by them, how their strengths and…

"…weaknesses have helped or hindered them in school, and how they help or hinder them in life beyond school—these tasks are at the heart of psychotherapy with persons with learning disabilities" (p. 187).

Wren, C. et al. (2000). Hanging by a Twig: Understanding and Counseling Adults with Learning Disabilities and ADD. New York, NY: W.W. Norton.

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Substance Abuse and AD/HD

Wilens, Spencer, and Prince wrote, "…non-pharmacological treatment of ADD in adults remains more speculative…Adults with the disorder who have an addiction, or those who report distress related to their ADD…should be directed to appropriate psychotherapeutic intervention with clinicians who are knowledgeable about the disorder" (p. 33).

> **"Cognitive-Behavioral based psychotherapeutic interventions, which are gaining in popularity in treating adults' ADD, appear particularly useful in those adults who have a history of addiction" (p. 33).**

Wilens, T.E., Spencer, T.J., and Prince, J. (1997). Diagnosing ADD in Adults. Attention!, 3 (4), pp. 27-33.

> **One to two months of sobriety suggested before medication treatment.**

Murphy, K.R. (2015). Psychological Counseling of Adults with ADHD. In R.A. Barkley (Ed.), Attention-Deficit Hyperactivity Disorder, Fourth Edition. New York, NY: Guilford, 741-757.

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Psychotherapy and AD/HD

“Cognitive-Behavioral based psychotherapeutic interventions, which are gaining in popularity in treating adults’ ADD, appear particularly useful in those adults who have a history of addiction” (p. 33).

Wilens, T.E., Spencer, T.J., and Prince, J. (1997). Diagnosing ADD in Adults. Attention!, 3 (4), pp. 27-33.

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Psychotherapy and AD/HD

Murphy said that AD/HD adults are more apt to follow through with treatment if:

- **They are taught to understand the disorder**
- **They are given a good explanation of what causes it**
- **They understand it is treatable**
- **They know there is hope for them**

Murphy, K.R., and LeVert, S. (1995). Out of the Fog: Treatment Options and Coping Strategies for Adult Attention Deficit Disorder. New York, NY: Hyperion.

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Psychotherapy and AD/HD

Steps in Individual Counseling:

1. **Educate about AD/HD and set goals**
2. **Monitor progress, medication concerns, and treatment approaches**
3. **Teach self-management strategies**
4. **Teach how AD/HD can influence life decisions (+/-)**
5. **Self-knowledge – goodness of fit life decisions**
6. **Be an active pragmatic therapist**
7. **Provide specific training in time management, organizational skills, communication skills, anger control, etc.**

Brown, T.E. (2013). A New Understanding of ADHD in Children and Adults: Executive Function Impairments. New York, NY: Routledge.

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Psychotherapy and AD/HD

"Clinicians trained in more 'traditional' psychotherapy techniques may have a tendency to focus on the psychological 'baggage' of ADHD—depression, anxiety, and low self-esteem—never relating them to the AD/HD issues that generate such feelings. Instead, such feelings may be interpreted psychodynamically, while the real, practical challenges posed by AD/HD go entirely unexplained" (p. 222).

Nadeau, K. (2002). Neurocognitive Psychotherapy for Women with AD/HD. In P.O. Quinn, and K.G. Nadeau (Eds.), Gender Issues and AD/HD: Research, Diagnosis and Treatment. Silver Spring, MD: Advantage, pp. 220-254.

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Psychotherapy and AD/HD

”…consensus seems to be growing…that the self-defeating habits developed by adults with AD/HD can be improved, over time, with a combination of medications, support, environmental manipulations, education, anticipatory guidance, and coaching” (p. 225)

Nadeau, K. (2002). Neurocognitive Psychotherapy for Women with AD/HD. In P.O. Quinn, and K.G. Nadeau (Eds.), Gender Issues and AD/HD: Research, Diagnosis and Treatment. Silver Spring, MD: Advantage, pp. 220-254.

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Psychotherapy and AD/HD

Therapeutic Goals:

- **Improving Cognitive Functions**
- **Developing Compensatory Strategies**
- **Restructuring the environment**

Nadeau, K. (2002). Neurocognitive Psychotherapy for Women with AD/HD. In P.O. Quinn, and K.G. Nadeau (Eds.), Gender Issues and AD/HD: Research, Diagnosis and Treatment. Silver Spring, MD: Advantage, pp. 220-254.

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Psychotherapy and AD/HD

AD/HD Friendly Therapy Session

1. **Provide lots of structure**
2. **No rambling**
3. **Homework assignments**
4. **Memory aids for continuity (e.g., tape, notes)**
5. **Treat comorbitities**

Nadeau, K. (2002). Neurocognitive Psychotherapy for Women with AD/HD. In P.O. Quinn, and K.G. Nadeau (Eds.), Gender Issues and AD/HD: Research, Diagnosis and Treatment. Silver Spring, MD: Advantage, pp. 220-254.

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Comorbidity

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AD/HD, Specific Learning Disorder, and/or Developmental Coordination Disorder

Barkley stated:

- **15% to 30% have Reading Disorder**
- **26% have Spelling Problems**
- **10% to 60% have Mathematics Disorder**
- **Developmental Coordination Disorder-Dysgraphia 60%**

Barkley, R. A. (2002A - Tape 1). ADHD Symposium: Nature, Diagnosis and Assessment - Nature and Comorbidity and Developmental Course of ADHD. University of Massachusetts, January, Westborough, MA: Stonebridge Seminars.

Barkley, R.A. (February 22, 2013). ADHD in Children: Diagnosis and Treatment. Poway, CA: ContinuingEdCourse.net. From website: http://www.continuingedcourses.net/active/courses/course004.php.

An anomaly in the left frontal gyrus, which is connected to atypical hippocampal, parahippocampal, and prefrontal function when compared to dyslexics and controls when processing low frequency words. It appears those with Specific Learning Disorder with Impairment in Reading Comprehension are significantly impaired in lexical-semantic representations during the processing and recognition of low frequency words when compared to dyslexics and controls.

Cutting,L.E. et al. (April 23, 2013). Not All Reading Disabilities Are Dyslexia: Distinct Neurobiology Of Specific Comprehension Deficits. Brain Connectivity. DOI: 10.1089/brain.2012.0116.

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ASD & AD/HD

- 26% of Children with PDD-NOS, or ASD have comorbid Combined Type AD/HD
- 33% of Children with PDD-NOS, or ASD have comorbid Inattentive AD/HD
- 59% of Children with PDD-NOS, or ASD have some type of AD/HD

Sam Goldstein and Jack A. Naglieri (2011). Neurocognitive and Behavioral Characteristics of Children with ADHD and Autism: New Data and New Strategies. The ADHD Report: Vol. 19, No. 4, pp. 10-12. https://doi.org/10.1521/adhd.2011.19.4.10.

A population study of the co-occurrence of AD/HD and autism in adults was conducted by scientists from Great Britton. They found the higher the inattention scores the adults reported the more social and communication difficulties they had. From this they concluded there is somewhat of a common etiology in AD/HD and autism.

Panagiotidi, M., et al. (August 11, 2017). Co-Occurrence of ASD and ADHD Traits in an Adult Population. Journal of Attention Disorders. DOI: 10.1177/1087054717720720.

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AD/HD and Mood Disorders

Brown indicated that those with AD/HD have a 38.3% chance of having a mood disorder during their lifetime which is 5 times more likely than in those without AD/HD.

Brown, T.E. (2013). A New Understanding of ADHD in Children and Adults: Executive Function Impairments. New York, NY: Routledge.

Spanish professors found that the level of emotional lability experienced by adults with AD/HD during childhood predicted the level of adult impairment cause by their AD/HD. They suggested that emotional lability should be assessed when assessing for AD/HD.

Gisbert, L., et al. (July 31, 2017). The Impact of Emotional Lability Symptoms During Childhood in Adults With ADHD. Journal of Attention Disorders. DOI: 10.1177/1087054717719534.

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Major Depression and AD/HD

- **Only the AD/HD children with Major Depression have problems with Low Self-Esteem**
- **Most AD/HD Children have inflated Self-Esteem.**
- **Adults with AD/HD may become demoralized.**

Barkley, R. A. (2002A - Tape 1). ADHD Symposium: Nature, Diagnosis and Assessment - Nature and Comorbidity and Developmental Course of ADHD. University of Massachusetts, January, Westborough, MA: Stonebridge Seminars.

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Anxiety Disorders and AD/HD

Brown wrote that those with ADHD have a 47.1 percent chance of having an anxiety disorder during their lifetimes. This is 3 times more than the general population.

Brown, T.E. (2013). A New Understanding of ADHD in Children and Adults: Executive Function Impairments. New York, NY: Routledge.

- **Barkley reported 24% to 43% of AD/HD adults have "GAD".**
- **Barkley reported 50% of AD/HD adults will have trouble with GAD in their lifetimes.**

Barkley, R.A. (1998). AD/HD in Children, Adolescents, and Adults: Diagnosis, Assessment and Treatment. New England Educational Institute, Cape Cod Symposium, August, Pittsfield, MA.

- **10% of adult with AD/HD meet criteria for PTSD compared to 1.6% of non-AD/HD adults.**

Antsthel, K.M. et al. (March, 2013). Posttraumatic stress disorder in adult attention-deficit/hyperactivity disorder: clinical features and familial transmission. Journal of Clinical Psychiatry. DOI: 10.4088/JCP.12m07698.

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Personality Disorders and AD/HD

Brown indicated that 24.4% of those with AD/HD have at any one time a DSM-IV Cluster B disorder (Borderline, Antisocial, Histrionic and/or Narcissistic Disorder) compared to 9.3% of the general population.

Brown, T.E. (2013). A New Understanding of ADHD in Children and Adults: Executive Function Impairments. New York, NY: Routledge.

- **Brown (2013) indicated 24.4% of those with AD/HD have comorbid DSM-IV Cluster C Personality Disorders (avoidant, dependant and/or obsessive compulsive disorders) compared to 9.5% of controls.**
- **Brown (2013) continued, there was no difference between controls and those with AD/HD in Cluster A Personality Disorders (paranoid, schizoid and/or schizotypal).**

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ADHD and Criminality

"The ADHD group showed higher proportions of physical aggression, substance use, previous problems including aggression, sexual offences and property offences, birth problems and abuse in childhood. Effect sizes were small…Attention deficit hyperactivity disorder with conduct disorder is associated with a greater degree and history of problematic behaviour in offenders with intellectual disability" (p. 71).

Lindsay, W.R. et al (December 18, 2012). The Impact of Known Criminogenic Factors on Offenders with Intellectual Disability: Previous Findings and New Results on ADHD. Journal of Applied Research In Intellectual Disabilities, 26(1), 71-80. From website: http://onlinelibrary.wiley.com/doi/10.1111/jar.12011/abstract.

"Among patients with ADHD, rates of criminality were lower during periods when they were receiving ADHD medication. These findings raise the possibility that the use of medication reduces the risk of criminality among patients with ADHD" (p. 2006).

Lichtenstein, P. et al. (November 222, 2012). Medication for attention deficit-hyperactivity disorder and criminality. New England Journal of Medicine. DOI: 10.1056/NEJMoa1203241.

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Substance Abuse and AD/HD

Being treated for AD/HD in childhood does not increase the likelihood of drug abuse in adolescence, or adulthood. In males it actually significantly reduces the risk of substance abuse.

Quinn, P.D. et al. (June 29, 2017). ADHD Medication and Substance-Related Problems. American Journal of Psychiatry. DOI: 10.1176/appi.ajp.2017.16060686.

American scientists found that they were directly able to predict the level of social and personal difficulties caused by alcohol use by college students with AD/HD, by their level of inattention, impulsivity/hyperactivity and impairment.

Elmore, A., et al. (April 26, 2017). Positive alcohol expectancies mediate associations between ADHD behaviors and alcohol - related problems among college students. Attention Deficit Hyperactivity Disorder. DOI: 10.1007/s12402-017-0231-z.

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AD/HD and Sensory Perception

Dutch and German researchers found that children and adults with AD/HD have heightened sensitivity to smells, but lower levels of visual and speech perception than do their normally developing peers.

Hupen, P., et al. (April 11, 2017). Perception in attention deficit hyperactivity disorder. Attention Deficit Hyperactivity Disorder. DOI: 10.1007/s12402-017-0230-0.

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AD/HD Identity

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The Adult LD/AD/HD "Identity"

Rodis offered the Seven Stages of Identity Formation for Persons with LDs:

1. **The Problem-Without-A-Name Stage**
2. **Diagnosis**
3. **Alienation**
4. **Passing**
5. **Crisis and Reconfrontation**
6. **"Owning and Outing"**
7. **Transcendence**

Rodis, P., Garrod, A., and Boscardin, M.L. (2001). Learning Disabilities and Life Stories. Boston, MA: Allyn and Bacon.

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AD/HD Identity

“Consequently, some end up attributing their problems to characterological or moral defects in themselves, and pay a heavy emotional price as a result. This underscores the importance of reframing the disorder as neurobiological and not characterological, of rebuilding self-esteem and self-confidence, and instilling hope in the future” (p. 693).

Murphy, K.R. (2006). Psychological Counseling of Adults with ADHD. In R.A., Barkley (Ed.), Attention-Deficit Hyperactivity Disorder, Third Edition. New York, NY: Guilford.

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ADHD Identity

Some AD/HD adults find themselves socially rejected. "In part, because of their impulsivity, interrupting, forgetfulness, inattention, hyperactivity, difficulty reading social cues, temper, and/or mood swings, adults with ADHD frequently report having difficulty maintaining relationships" (p. 693).

Murphy, K.R. (2006). Psychological Counseling of Adults with ADHD. In R.A., Barkley (Ed.), Attention-Deficit Hyperactivity Disorder, Third Edition. New York, NY: Guilford.

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AD/HD Coaching

"Coaching is a supportive, pragmatic, and collaborative process in which the coach and adult with ADHD work together via daily 10-to-15 minute telephone conversations to identify goals and strategies to meet those goals." (p. 590)

Murphy, K.D. (1998). Psychological Counseling of Adults with ADHD. In R.A. Barkley (Ed.), Attention-Deficit Hyperactivity Disorder, Second Edition. New York, NY: Guilford.

WHAT DOES AN AD/HD COACH DO?

"1. Help people set better goals and then reach goals.

2. Ask their clients to do more than they would have on their own.

3. Focus their clients better to more quickly produce results.

4. Provide the tools, support and structure to accomplish more.

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AD/HD Coaching

AD/HD COACHING (CONTINUED)

5. Help clients re-build self-esteem and recover from a lifetime of doubt.

* **Through shared understanding of the implications of the client's ADD issues and the development of strategies and systems to get things done despite ADD challenges.**
* **Through understanding of the client's best learning styles, dominant and preferred modalities and how to use these to their advantage.**
* **Through the implementation of a structure and gentle reminders of the client's shared goals and objectives.**

- **Need skills and abilities goodness-of-fit!**

Murphy, K.D. (1998). Psychological Counseling of Adults with ADHD. In R.A. Barkley (Ed.), Attention-Deficit Hyperactivity Disorder, Second Edition. New York, NY: Guilford.

- **Psychotherapists/vocational counselors should consider being client's advocate with their boss/employer when appropriate.**

Everett, A.A., and Volgy-Everett, S. (1999). Therapeutic Interventions for Adults with ADHD and their Families, Family Therapy for ADHD: Treating Children, Adolescents, and Adults. New York, NY: Guilford, pp. 221-264

"Conclusion: ADHD coaching helped participants enhance their self-control as they responded to the multifaceted demands of undergraduate life."

Parker, D.R. et al (December 15, 2011). Self-control in postsecondary settings: students' perceptions of ADHD college coaching. Journal of Attention Disorders. DOI: 10.1177/1087054711427561.

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Professional Organizers and AD/HD

"Generally speaking a professional organizer differs from a coach by providing on-site, hands-on help with organizing. Typically, the primary focus is on helping a client to organize her environment, rather than teaching her how to remain organized." (p. 256)

Nadeau, K. (2002). Neurocognitive Psychotherapy for Women with AD/HD. In P.O. Quinn, and K.G. Nadeau (Eds.), Gender Issues and AD/HD: Research, Diagnosis and Treatment. Silver Spring, MD: Advantage,

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Exercise & ADHD

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Exercise and AD/HD

- After 20 minutes of exercise AD/HD children:
  - Greater response accuracy
  - Better regulation
  - Seated longer
  - Duration of reading
  - Better reading and math
  - Better inhibitory control
  - Sign. Bigger than controls

Pontifex, M.B. et al. (March, 2013). Exercise Improves Behavioral, Neurocognitive, and Scholastic Performance in Children with Attention-Deficit/Hyperactivity Disorder. Journal of Pediatrics, 162(3), 543-551.

- Have children with ADHD take their toughest classes in the morning after aerobic exercise.
- After the more difficult class take fun/easier class.
- If they have a choice to cram 20 extra minutes for an exam or exercise 20 minutes, it would be better to exercise.

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Mindfulness Training and AD/HD

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Mindfulness Training and AD/HD

"Our study shows preliminary evidence for the effectiveness of mindfulness for children with ADHD and their parents, as rated by parents. However, in the absence of substantial effects on teacher-ratings, we cannot ascertain effects are due to specific treatment procedures." (p. 139)

Van der Oord, S. Bogels, S.M. And Peijnenburg, D. (February, 2012). The Effectiveness ofMindfulness Training for Children with ADHD and Mindful Parenting for their Parents. Journal of Child and Family Studies, 21(1), 139-147. From website: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3267931/.

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Mindfulness Training and AD/HD

Dutch researchers found 24 adult with AD/HD that were taught mindfulness reported better EF, a reduction in AD/HD symptoms, better self-respect and mental health. These were seen as initial results and they suggested more research to demonstrate efficacy.

Jansen, L. et al. (February 28, 2018). Mindfulness-based cognitive therapy v. treatment as usual in adults with ADHD: a multicentre, single-blind, randomised controlled trial. Psychological Medicine. DOI: 10.1017/S0033291718000429.

Chinese scientists compared a group od college students with AD/HD that received a treatment of mindfulness and cognitive behavioral therapy to a wait list control group of students with AD/HD. The treatment group showed more of a normalization win response time and made fewer impulsive errors. They also had better sustained attention.

Gu Y. et al. (December 1, 2016). A Randomized Controlled Trial of Mindfulness-Based Cognitive Therapy for College Students With ADHD. Journal of Attention Disorders. DOI: 10.1177/1087054716686183.

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In-Born Errors of Metabolism

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AD/HD and In-Born Errors of Metabolism

There may be some evidence that some people with AD/HD may have in-born errors of metabolism, which could cause a need for metabolic nutrients due to gastrointestinal inflammation and mitochondrial dysfunction. This may explain why through the years a small group of people with AD/HD appear to improve with special diets. Some with AD/HD may need to be treated with broad spectrum micronutrients.

RucklidgeJ.J. et al. (December 2016). The Role of Diet and Nutrient Supplimentation in the Treatment of ADHD. The ADHD Report, 24(8), 1-8.

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Dogs & AD/HD

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Canine Assisted Therapy and AD/HD

Researchers from California created a 12 week cognitive behavioral intervention to AD/HD children with and without canine assisted therapy. The children were randomly assigned to groups and their parents simultaneously attended weekly parenting groups. Both groups saw a significant decline in the AD/HD symptomatology, but the group that also received canine assisted therapy saw a more significant decline in symptom severity than that control group.

Schuck, SE et al. (February 19, 2015). Canine - assisted therapy for children with ADHD: preliminary findings from the positive assertive cooperative kids study. Journal of Attention Disorders. DOI: 10.1177/1087054713502080.

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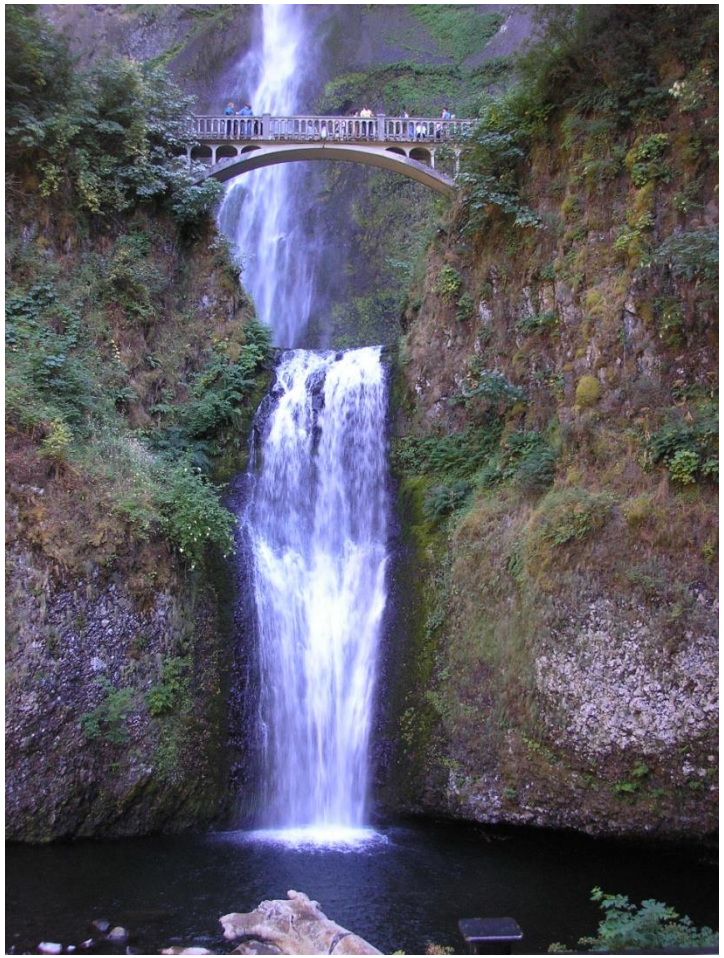
Academic Accommodations for College Students with AD/HD



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College Accommodations and AD/HD

"Treat them like a 13 year old."

1. **SMALLER CLASSES**
2. **Fewer Classes**
3. **Hand pick faculty**
4. **More curricular materials like videos and handouts**
5. **Studying with older student who already took the course perhaps**
6. **Taking five years to complete a B.A. rather than four."**

Barkley, R. A. (2002A - Tape 1). ADHD Symposium: Nature, Diagnosis and Assessment - Nature and Comorbidity and Developmental Course of ADHD. University of Massachusetts, January, Westborough, MA: Stonebridge Seminars.

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College Accommodations and AD/HD

1. Formal Tutoring
2. Attending all faculty extra help sessions
3. Taking a time management seminar
4. Taking advantage of disability support services
5. Individual psychotherapy

Barkley, R. A. (2002A - Tape 1). ADHD Symposium: Nature, Diagnosis and Assessment - Nature and Comorbidity and Developmental Course of ADHD. University of Massachusetts, January, Westborough, MA: Stonebridge Seminars.

6. Alternative method exams
7. Get an AD/HD coach
8. Ask faculty to post assignments weekly on website
9. House in a substance-free dorm
10. Career counseling several years before graduation

➢No extended time, but breaks

Barkley, R. A. (2008). Classroom Accommodations for Children with ADHD. The ADHD Report, 16(4), 7-10.

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Employment

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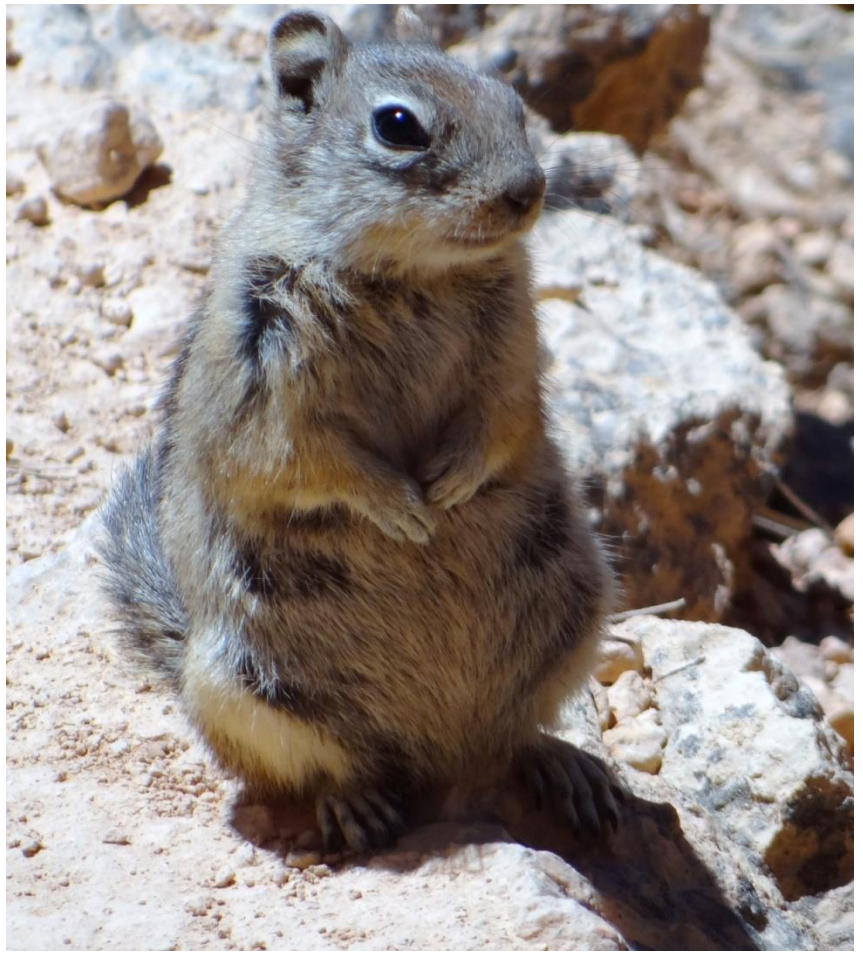
Barkley's Recommendations for Employers of Adults With AD/HD



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Barkley's Recommendations for Employers of Adults With AD/HD

1. Understand AD/HD is a neurobiological disorder
2. AD/HD Adults have a deficit in self-regulation compared to others
3. AD/HD employees need directions spoken and written for them
4. AD/HD employees have *time blindness* and need external time reminders
5. Long-term projects need to be broken down into many short-term projects
6. AD/HD employees need to check in with bosses much more than others
7. Working in teams can help them stay on task
8. AD/HD adults may do better with self-employment, commission work, and hourly wages
9. The AD/HD adult can set up their own *self-reinforcement"* system
10. AD/HD adults tend to do better with physical work and work with social interaction

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Barkley's Recommendations for Employers of Adults With AD/HD

11. AD/HD adults do poorly at tedious, boring and repetitive work. They do better with variety.
12. Often they do not do well in team leadership positions due to their impulsivity
13. Some AD/HD adults may need vocational assessment and counseling
14. Some may need an AD/HD coach and/or professional organizer

Barkley, R.A. (March, 2013). Recommendations for Employers Concerning the Management of Employees with ADHD. ADHD Report, 21(2), 6-7, 13.

15. Research has shown many with AD/HD are more alert in the mid-afternoon and evening; second shift work may work better
16. Frequent short breaks and having a non-distracting work environment may be helpful
17. Using sound suppression and/or music to block out distracting noise can help
18. Encourage them to take medication if it has been found to be helpful for them
19. Give reasonable accommodations under ADAAA

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Work & AD/HD

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Work, AD/HD, & EF

- AD/HD symptoms are often more damaging in work environments than school
  - Particularly for those with significant hyperactive symptoms
  - If you have hyperactivity stay away from desk jobs; move!
  - Medication
- Accept your AD/HD and seek "outside help"
  - Life Coach, Vocational Counselor with knowledge of AD/HD
- Hyper-organize your day:
  - Time-management in small chunks
  - Keep all distractions to a minimum: Sight, Sound, Touch, Smell, Temperature, etc.
  - Publically display in bright colors your to do list
  - Keep social distractions to a minimum: Close door, Block people from coming in, check texts, voicemail, e-mail three times a day for 5 minutes.

Barkley, R.A. (2010). Taking Charge of Adult ADHD. New York, NY: Guilford.

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Work, AD/HD, & EF

- Organize materials for work so they are easily found:
  - Everything has a home
  - Everything so it can be seen (e.g., clear files, etc.
  - Consult with a professional organizer; periodically
- Externalize time for time blindness
  - Clock on wall (chime?)
  - Smart devices
  - Have someone check on you
  - Journal time
- Questions for job interview:
  - "How long should it take me to finish X Task?"
  - "How much advanced notice will I get regarding deadlines?"
  - "How often will I check in with supervisor?"
  - "How do you want reports?"
  - "Will I be on a team, or by myself?"
- A job with built in rewards for merit will work best.

Barkley, R.A. (2010). Taking Charge of Adult ADHD. New York, NY: Guilford.

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Work, AD/HD, & EF

- During interview learn:
  - As much as possible about your supervision on the job:
    - Face to face?
    - Every day?
    - Phone/e-mail/text
    - How often will see supervisor?

Barkley, R.A. (2010). Taking Charge of Adult ADHD. New York, NY: Guilford.

- Should I disclose my disability, or not?
  - Will I need accommodations on the job, or not?

If yes, learn as much about the Americans with Disabilities Act, Amendment Act 0f 2009 as possible:

- National Disability Rights Network (How to find Disability Law Centers in Your State): www.ndrn.org
- Contact Company's Disability expert in HR?

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Work, AD/HD, & EF

- Ask for help from a coworker when new learning is needed
- Find someone who is good at what you are bad at and offer to help them with something you are good at.
- Volunteer to learn more about your job:
  - Helps you with job
  - Shows boss you want to do well
- If you have long meeting take long walk before and take notes during meeting
- Schedule performance reviews every 3 to 6 weeks

Barkley, R.A. (2010). Taking Charge of Adult ADHD. New York, NY: Guilford.

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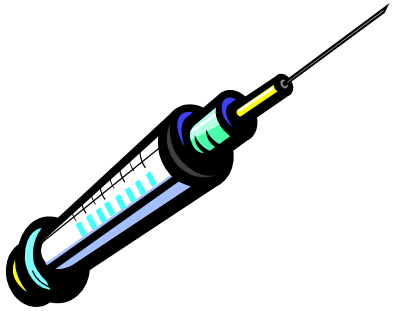
Workplace Accommodations

1. More accountability to others
2. Shorter term goals
3. Externalize time
4. Report many times a day on tasks
5. Medication (drug screening issue, too)



Barkley, R. A. (2002A - Tape 1). ADHD Symposium: Nature, Diagnosis and Assessment - Nature and Comorbidity and Developmental Course of ADHD. University of Massachusetts, January, Westborough, MA: Stonebridge Seminars.

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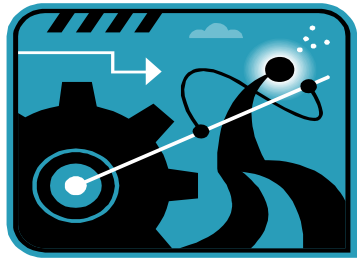
AD/HD and Employment



Difficulty with others is one of the main reasons AD/HD adults loose their jobs.

Ratey, N., and Griffith - Haynie, M. (1998). Coaching to Improve Workplace Performance. Paper presented at the Fourth Annual ADDA Adult ADD Conference, March 26-28, Washington, DC.

One-half of AD/HD adults are unemployed.

Biederman, J. (October 27, 2006). Advances in the Neurobiology of AD/HD. Paper presented at the 18th Annual CHADD International Conference, Chicago, IL.

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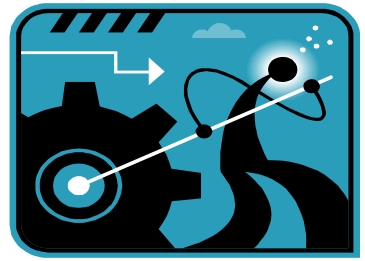
Employment & ADHD



- ADHD workers have significantly lower salaries.
- They are absent from the job more and significantly more underproductive than non-ADHD workers.
- They have more on the job accidents.
- On average ADHD costs the household $10,000 per year of income.

Ramsay, R. (2010). Nonmedication Treatments for Adult ADHD. Washington, DC: American Psychological Association Press.

A 33 year follow-up study of boys diagnosed with AD/HD, now adults found they were 6 times more likely to be homeless than their non-impaired peers. Approximately, 24% of these AD/HD men were homeless.

Murillo, L.G., et al. (November, 2016). Childhood Attention-Deficit/Hyperactivity Disorder and Homelessness: A 33-Year Follow-Up Study. Journal of the American Academy of Child and Adolescent Psychiatry, 55(11), 931-936.

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Vocational Counseling and AD/HD

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Vocational Counseling and AD/HD

"As ADHD children enter adulthood and take on full-time jobs that require skilled labor, independence of supervision, acceptance of responsibility, and periodic training in new knowledge or skills, their deficits in attention, impulse control, and regulating activity level as well as their poor organizational and self-control skills could begin to handicap them. The findings from the few outcome studies that have examined job functioning suggests this may be the case." (p. 208)

Barkley, R.A. (1998). Developmental Course, Adult Outcome, and Clinic Referred ADHD Adults. In R.A. Barkley (Ed.), Attention-Deficit Hyperactivity Disorder, Second Edition. New York, NY: Guilford, p. 208.

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Vocational Counseling and AD/HD

Roadblocks AD/HD Adults Have with Work:

- Pervasive feeling of underachievement
- Feeling lazy, stupid, irresponsible
- Feel overwhelmed with life
- Always feeling like a misfit
- Lack of self-esteem

Sterns, S. (1995). Career Planning for Adults with Learning Disabilities and Attention Deficit Disorders. The Rebus Institute Report. 4(1), pp. 1-2.

"Sometimes the difficulty lies with the lack of organizational and communication skills of many people with ADD. In other cases, the need for constant stimulation leads those with ADD to feel bored and frustrated at work, and hence more likely to quit or fail to flourish in their position" (p. 115).

Brown, T.E. (2013). A New Understanding of ADHD in Children and Adults: Executive Function Impairments. New York, NY: Routledge.

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Vocational Counseling and AD/HD

"…the most important functions in career counseling with ADD/LD adults is to rebuild self confidence and self-esteem following their prolonged academic struggles and years of facing the prejudices of educators and employers." (p. 312)

Nadeau, K. (1995). A Comprehensive Guide to Attention Deficit Disorder in Adults: Research, Diagnosis, and Treatment. New York, NY: Routledge.

Lack of education gets in the way of ADHD adults career wise. Usually the more *exciting* jobs require a better education.

Brown, T.E. (2013). A New Understanding of ADHD in Children and Adults: Executive Function Impairments. New York, NY: Routledge.

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Vocational Counseling and AD/HD

AD/HD Adults:

- Have lower job ratings
- Have lower socioeconomic status
- Change jobs more frequently

Barkley, R.A. (1998). Developmental Course, Adult Outcome, and Clinic Referred ADHD Adults. In R.A. Barkley (Ed.), Attention-Deficit Hyperactivity Disorder, Second Edition. New York, NY: Guilford, p. 208.

"The manifestations of attention deficits in adults are most noticeable in the workplace environment, for it is at work that the greatest demands for planning, memory, organization, teamwork, and precision are placed on us." (p. 308).

Nadeau, K. (1995). A Comprehensive Guide to Attention Deficit Disorder in Adults: Research, Diagnosis, and Treatment. New York, NY: Routledge.

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Vocational Counseling and AD/HD

Things to Consider in AD/HD Career Evaluation:

1. **Difficulty with transitions**
2. **Difficulty with time management**
3. **Difficulty with disorganization**
4. **Difficulty with self-image**
5. **Difficulty with others**

6. **Lack of understanding of AD/HD**
7. **Inconsistency**
8. **Lack of self-management**
9. **Lack of self-advocacy**
10. **Lack of job life skills**

Ratey, N., and Griffith - Haynie, M. (1998). Coaching to Improve Workplace Performance. Paper presented at the Fourth Annual ADDA Adult ADD Conference, March 26-28, Washington, DC.

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How to Connect Accommodations

- **Use Gordon, Lewandowski, and Lovett's (2015) "ADHD Accommodations Matrix" when suggesting academic/work accommodations given how the person with AD/HD is impaired compared to the "Average American" under the American's with Disabilities Act, Amendments Act of 2008.**

Gordon, M., Lewandowski, L., and Lovett, B. (2015). Assessment and Management of ADHD in Educational and Workplace Settings in the Context of ADA Accommodations. In R.A. Barkley (Ed.), Attention-Deficit Hyperactivity Disorder: A Handbook for Diagnosis and Treatment. New York, NY: Guilford, p. 785.

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Workplace Accommodations

Job Accommodations Network

P. O. Box 6080

Morgantown, WV 26506-6080

Voice/TTY (in US): 1-800-526-7234

Voice/TTY (Worldwide): 1-304-293-7186

Fax: 1-304-293-5407

E-mail: jan@jan.icdi.wvu.edu

Web: www.jan.wvu.edu/english/

- **U.S. Equal Employment Opportunity Commission**

  1801 L Street, NW

  Washington, DC 20507

  www.eeoc.gov

- **Office of Civil Rights**

  Department of Health and Human Services

  200 Independence Avenue Southwest

  Washington, DC 20201

  www.hhs.gov/ocr/office/index.html

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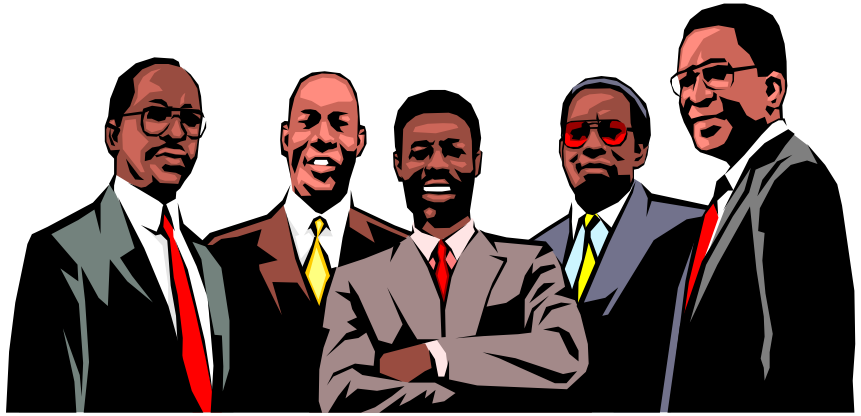
Vocational Counseling and AD/HD

High-Risk, Fast-Paced Jobs:

- Sales
- Advertising
- Creative arts
- Entrepreneurship



Brown, T.E. (2013). A New Understanding of ADHD in Children and Adults: Executive Function Impairments. New York, NY: Routledge.

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Social Interaction and AD/HD

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Adults with AD/HD and Emotional Intelligence

Scientists found that newly diagnosed adults with AD/HD and comorbidities had significantly lower emotional intelligence than those who were diagnosed in childhood. Severity of symptoms across the lifespan was not found to be a factor. The scientists suggested emotional intelligence training for newly diagnosed adults.

Quintero, J. et al. (October 3, 2017). The Impact of Adult ADHD in the Quality of Life Profile. Journal of Attention Disorders. DOI: 10.1177/1087054717733046.

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AD/HD Women and Interpersonal Behavior

Recently, American researchers reviewed what little literature regarding the relationship difficulties women hove who have AD/HD and they found the following: AD/HD is found in 2 to 9 time more boys than girls, but the numbers are even in women and men. Women with AD/HD have earlier occurrences of depression and more severe and recurrent bouts of it than non-AD/HD women. Women with AD/HD experience more domestic abuse, self-injury and suicide attempts than men with AD/HD. Women with AD/HD experience 6 times more domestic violence than their non-impaired peers.

Women with AD/HD suffer more relationship difficulties than their non - impaired counterparts. Women with AD/HD engage in much more risky sexual behavior: They have significantly more lifetime partners. Earlier sexual relations and intercourse . More unprotected sex . More STDs, more casual sex, and more unwanted pregnancies. AD/HD women have more difficulties with parenting than non-AD/HD women.

Babinshi, D.E. et al. (November 2016). The interpersonal Difficulties of Women with ADHD. The ADHD Report, 24(7), 1-8.

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Social Interaction and AD/HD

- AD/HD individuals are less adept at interpreting the emotions of others and identifying their own emotions than are the non-disabled.

Brown, T. E. (October 11, 2001). Assessment and Treatment of Complicated ADHD Across the Lifespan. Seminar Presented at the Arizona Association of School Psychologists 33rdAnnual Conference, Mesa, AZ.

- Literature review of facial expression recognition in adults with AD/HD shows no improvement with age.

Borhani, K. et al. (February 2018). Emotional face recognition in individuals with attention-deficit/hyperactivity disorder: a review article. Developmental Neuropsychology. DOI: 10.1080/87565641.2018.1440295.

- AD/HD adults have deficits in their ability to identify facial expressions in others.
- AD/HD adults experience emotions more intensely.
- The more intense the emotion the worse they are at identifying facial expressions.

Rapport, L.J. et al. (July 2002). Experienced emotion and affect recognition in adult attention-deficit hyperactivity disorder. Neuropsychology, 16(1), 102-110.

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Social Interaction and AD/HD

AD/HD individuals over-emote facial expressions. When medicated properly this is corrected. It is dose dependent. Even the AD/HD individuals say they emote what they want to when they see videos of themselves medicated.

Kuehle, H.J., Hoch, C. and Jansen, F. (2002). Video Assisted Observation of Visual Attention, Facial Expression of the Individual Stimulant Dosage and Motor Behavior for the Diagnosis and for the Determination in Children with AD/HD. Obtained from: Kuehle, H. (October 17, 2002). Video Assisted Observation of Visual Attention and Motor Behavior for the Diagnosis and Determination of the Individual Stimulant Dosage in Children with AD/HD. Research Poster Session, 14th Annual CHADD International Conference, Miami Beach, FL.

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Romantic Relationships and AD/HD

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Mirror Neurons

How does this relate to ADHD?

Barkley (2008) said that those with Combined Type AD/HD and comorbid Alexithymia typically have intact mirror neurons, they just do not use their mirror neurons due to their frontal lobe difficulties.

Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

- **AD/HD Combined Type men married less, reported interpersonal and sexual problems, had general difficulties with socialization, difficulties with heterosocial responses and problems with assertiveness (Weiss and Hechtman, 1993)**
- **Those with AD/HD often have problems with emotional regulation. This causes problems, too.**

Weiss, G. and Hechtman, L. (1993). Hyperactive Children Grown Up. New York, NY: Guilford.

Canu, W.H. and Carlson, C.L. (April, 2004). ADHD and Social Adaptation: From Childhood to Adulthood. ADHD Report, 12(2), 1-5.

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Romantic Relationships and AD/HD

American scientists found those with AD/HD had significantly more difficulty with romantic relationships than their non-impaired peers. Inattentive symptoms were related to seeking new relationships (wandering eye) and less constructive behavior during arguments. Hyperactivity and impulsivity was related to poor arguing behavior also.

VanderDrift, L.E. et al. (Mya 10, 2017). Inattention and Hyperactivity-Impulsivity: Their Detrimental Effect on Romantic Relationship Maintenance. Journal of Attention Disorders. DOI: 10.1177/1087054717707043.

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Social Interaction Difficulties

- Incessant talking and talking in circles
- Poor listening
- Little pragmatics, if any
- No mental filter; in the brain out the mouth
- Etiquette failures

Kuehle, H.J., Hoch, C and Jansen, F. (2002). Video Assisted Observation of Visual Attention, Facial Expression of the Individual Stimulant Dosage and Motor Behavior for the Diagnosis and for the Determination in Children with AD/HD. Obtained from: Kuehle, H. (October 17, 2002). Video Assissted Observation of Visual Attention and Motor Behavior for the Diagnosis and Determination of the Individual Stimulant Dosage in Children with AD/HD. Research Poster Session, 14th Annual CHADD International Conference, Miami Beach, FL.

- Problems reading and making facial expressions accurately
- Problems making and reading body language accurately
- Poor perception of verbal tone
- Quick to anger

Barkley, R.A. (2010). Taking Charge of Adult AD/HD. New York, NY: Guilford.

Kuhle, H.J., Hoch, C., Rautzenberg, P. and Jansen, F. (2001). Short-Term Video-Based Observation of Behavior with Special Reference to Eye-Contact, Facial Expression and Motor Activity in Diagnosis and Therapy of Attention Deficiency/ Hyperactivity Syndrome (ADHS). (First Published in): Praxis der Kinderpsychologie und Kinderpsychiatrie 50: 607-621. Obtained from: Kuehle, H. (October 17, 2002). Video Assissted Observation of Visual Attention and Motor Behavior for the Diagnosis and Determination of the Individual Stimulant Dosage in Children with AD/HD. Research Poster Session, 14th Annual CHADD International Conference, Miami Beach, FL.

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Intimate Relationships and AD/HD

- **Problems Often Caused by AD/HD**
  - **4 to 5 times more likely to have poor dating relationships**
  - **Twice as often have poor marital relationships**
  - **Extramarital affairs**
  - **Dominating conversations**
    - **No give and take in conversations**
    - **Not listening**
    - **Tactless**
    - **Fail simple social etiquette**
  - **Lack persistence**
  - **Impulsive**
  - **Avoid multi-step task-can look selfish**
  - **Reliably unreliable**
  - **Poor reading of body language and/or facial expressions**

Barkley, R.A. (2010). Taking Charge of Adult ADHD. New York, NY: Guilford.

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Helpful Suggestions

- Do your share of chores
- Listen:
  - Learn active listening skills*
- Remember important dates and appointments
- Be you "Best Self"
- Remember what is hurtful and helpful
- Count to 10
- Be courteous and use manners

Barkley, R.A. (2010). Taking Charge of Adult ADHD. New York, NY: Guilford.

5 Factors to address in marital therapy:

1. Family of origin issues
2. Skills deficits
3. Amount of impairment
4. Cognitive distortions
5. Comorbidity

*Intimacy?

Pera, G. (2014). Counseling Couples Affected by Adult ADHD. In R.A. Barkley (Ed.), Attention-Deficit Hyperactivity Disorder, Fourth Edition, 795-825.

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Parenting

- Take care of self and your AD/HD
- Think of child first
- Control your emotions. Remember children are not neurologically good at doing this.
- Give your child time to put their thoughts into words.
- Learn give and take skills.

Barkley, R.A. (2010). Taking Charge of Adult ADHD. New York, NY: Guilford.

- Reward you child more.
- Use a timer to check I on your child.
- Write down family rule and "fridge post" them. Refer to them in heated moments.
- Consequences are stated before infraction.
- Take a parenting class.
- Know when you are overwhelmed and put yourself in time out.
- Time away for kids every week.

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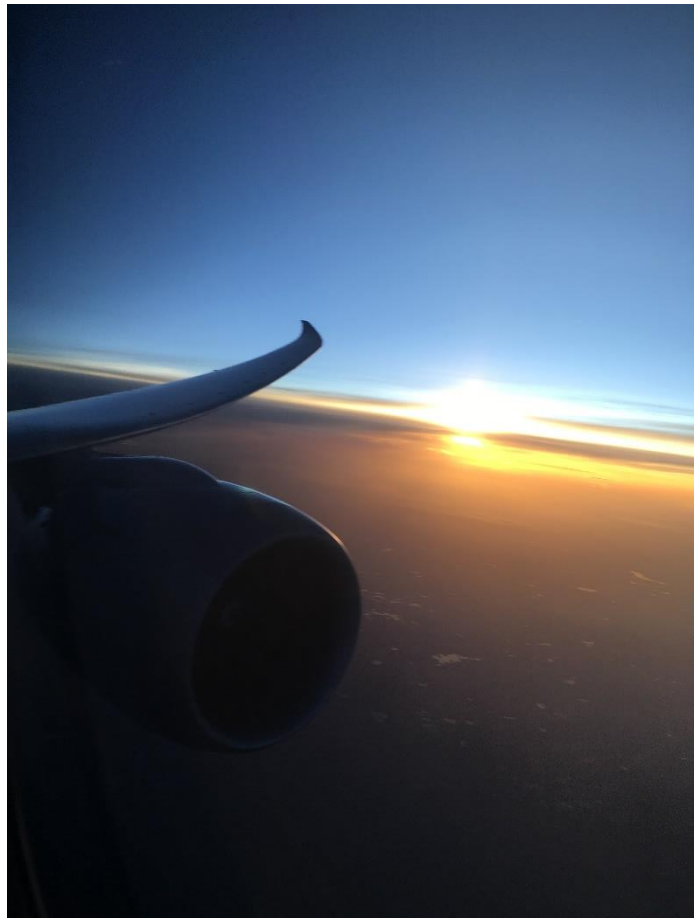
Thank You!



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