

What's New With Attention-Deficit/Hyperactivity Disorder In Adults?

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ADHD is NOT new!

**Crichton wrote
about what we
call ADHD in
1798!**



Crichton, A. (2008). An inquiry into the nature and origin of mental derangement: On attention and its diseases. Journal of Attention Disorders, 12, 200-204 (Original work published 1798).

ADHD is NOT new!

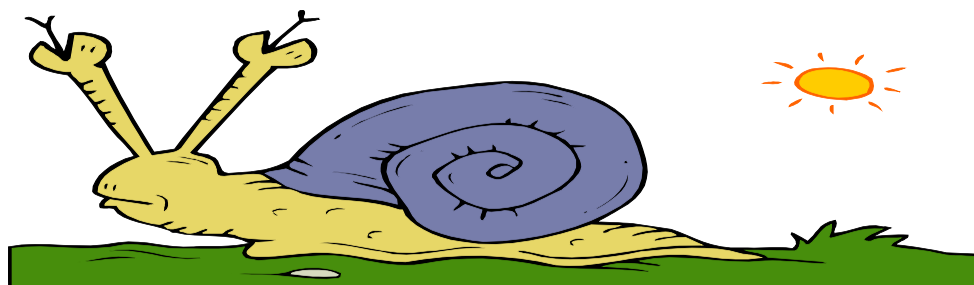
- In 1770 Melchor Adam Weikart, of Germany described syndrome very similar to AD/HD. He recommended horseback riding and exercise as treatment. He corresponded with Alexander Crichton.



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.1.

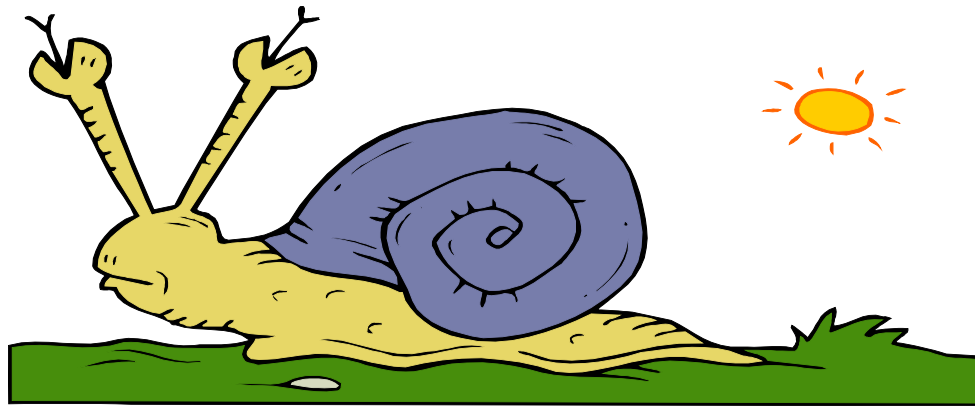
The Four Types of AD/HD in DSM-IV, TR®

- **Attention-Deficit/Hyperactivity Disorder, Combined Type**
- **Attention-Deficit/Hyperactivity Disorder, Predominately Inattentive Type**
- **Attention-Deficit/Hyperactivity Disorder, Predominately Hyperactive/Impulsive Type**



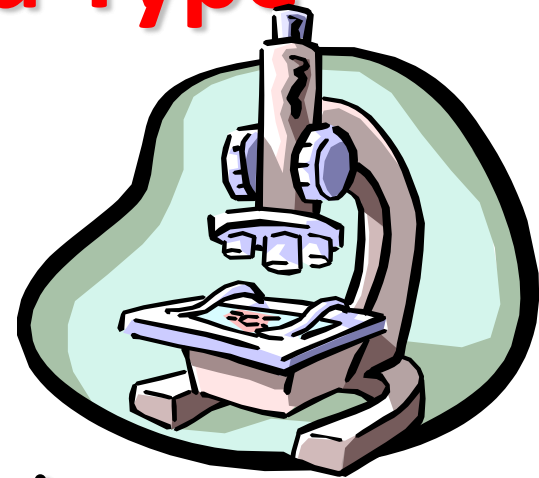
DSM-IV, TR[®] ADHD Subtypes (Continued)

- **Attention-Deficit/Hyperactivity Disorder, Not Otherwise Specified**



American Psychiatric Association (2000). Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision. Washington, DC: American Psychiatric Association.

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*

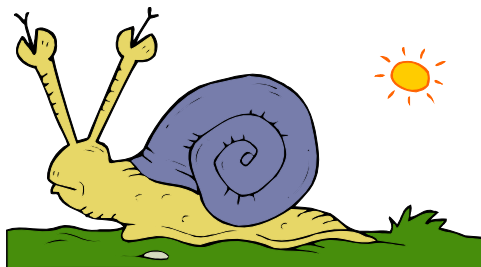
Barkley, R.A. (1997). ADHD and the Nature of Self-Control. New York, NY: Guilford.

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

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

Brown believes the following are the areas of difficulty in the Combined Type of AD/HD:

- 1. Difficulty organizing and activating for work**
- 2. Problems sustaining attention and concentration**
- 3. Problems sustaining energy and effort**



Brown Brown's Theory (Continued)



- 4. Problems managing affective interference**
- 5. Problems utilizing working memory and accessing recall**
- 6. Problems being able to predict the reaction of others due to their behavior (Lack of 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.

Executive Functions and AD/HD



- **It appears the problems those with AD/HD have with academic achievement and social communication and behavior are related to EF (Executive Functions) difficulties.**
- **This does not appear to be the case in those with ODD and/or CD without AD/HD.**

Clark, C., Prior, M. and Kinsella, G. (2002). The Relationship Between Executive Function Abilities, Adaptive Behavior, and Academic Achievement in Children with Externalizing Behavior Problems, Journal of Child Psychology and Psychiatry, 43, p. 785-796. From: (June, 2003). Executive Function and Communication Difficulties May Contribute to Adaptive Behavior Problems. ADHD Report, p. 12-13.

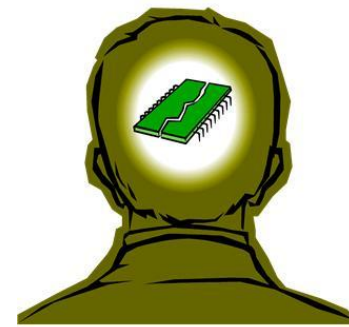
Note!



- **55% of those with AD/HD have comorbid Oppositional Disorder**
- **45% of those with AD/HD have comorbid Conduct Disorder**

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. 14.

Executive Memory Function 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. 1692-1695.

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

Working Memory and AD/HD



- “AD/HD kids are not ‘clueless’. They’re ‘cueless’.”

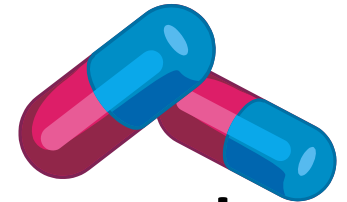
Goldstein, S. (November 20, 1998). Pathways to Success: Evening the Odds in the Treatment of Attention-Deficit Hyperactivity Disorder. Seminar presented in Tucson, AZ.

Executive Function Defined

“The use of self-directed actions so as to choose goals and to select, enact, and sustain actions across time toward those goals usually in the context of others often relying on social and cultural means for the maximization of one’s long-term welfare as a person defines that to be” (p. 171).

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

AD/HD in a Nutshell



“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.

Barkley on Hyperactive/Impulsive ADHD

“The HI-Type (Hyperactive/Impulsive Type ADHD, sic.) is apparently a milder or earlier stage of the C-Type (Combined Type ADHD, sic.), most commonly Identified in preschool age children.” (p. 1)

Barkley, R.A. (October, 2011). Sluggish Cognitive Tempo Is a Distinct Disorder from ADHD in Adults. The ADHD Report, 19(5), 1-6.

Changes in AD/HD Subtypes Over Time

“We found two hyperactivity-impulsivity trajectories (low, high/decreasing) and two inattention trajectories (low, high/increasing). Twin modeling revealed a substantial genetic component underlying both the hyperactivity-impulsivity and the inattention trajectory. Joint trajectory analyses identified four groups of adolescents with distinct developmental patterns of hyperactivity-impulsivity and inattention: a low/low group, a primarily hyperactive, a primarily inattentive and a combined (high/high) trajectory type...”

Changes in AD/HD Subtypes Over Time (Continued)

“... These trajectory combinations showed discriminant relations to adjustment problems in early adulthood. The hyperactive, inattentive and combined trajectory subtypes were associated with higher rates of family risk environments compared to the low/low group” (p. 254).

Larsson, H., Dilshad, R., Lichtenstein, P., and Barker, E.D. (September 2011). Developmental trajectories of DSM-IV symptoms of attention-deficit/hyperactivity disorder: genetic effects, family risk and associated psychopathology. Journal of Child Psychology and Psychiatry, 52(9), 954-963.

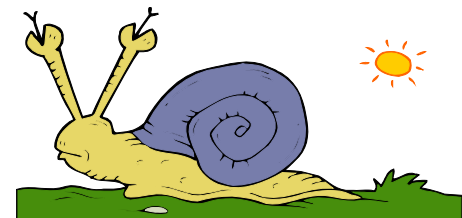
Attention-Deficit/Hyperactivity Disorder, Predominately Hyperactive-Impulsive Type

- **Tzelepis stated she has only seen Combined Type adults in her work and doubts the Predominately Hyperactive-Impulsive Type exists in adults.**

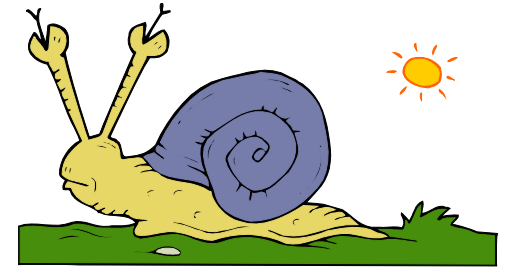
Tzelepis, A. and Mapou, R. (1997, May). Assessment. Paper presented at the Pre-Conference Professional ADD Institute of the 3rd Annual National ADDA Adult ADD Conference, St. Louis, MO.

- **Barkley, Murphy and Fischer make similar observations.**

Barkley, R.A., Murphy, K.R., & Fischer, M. (2008). ADHD in Adults: What The Science Says. New York, NY: Guilford, p. 37-38.



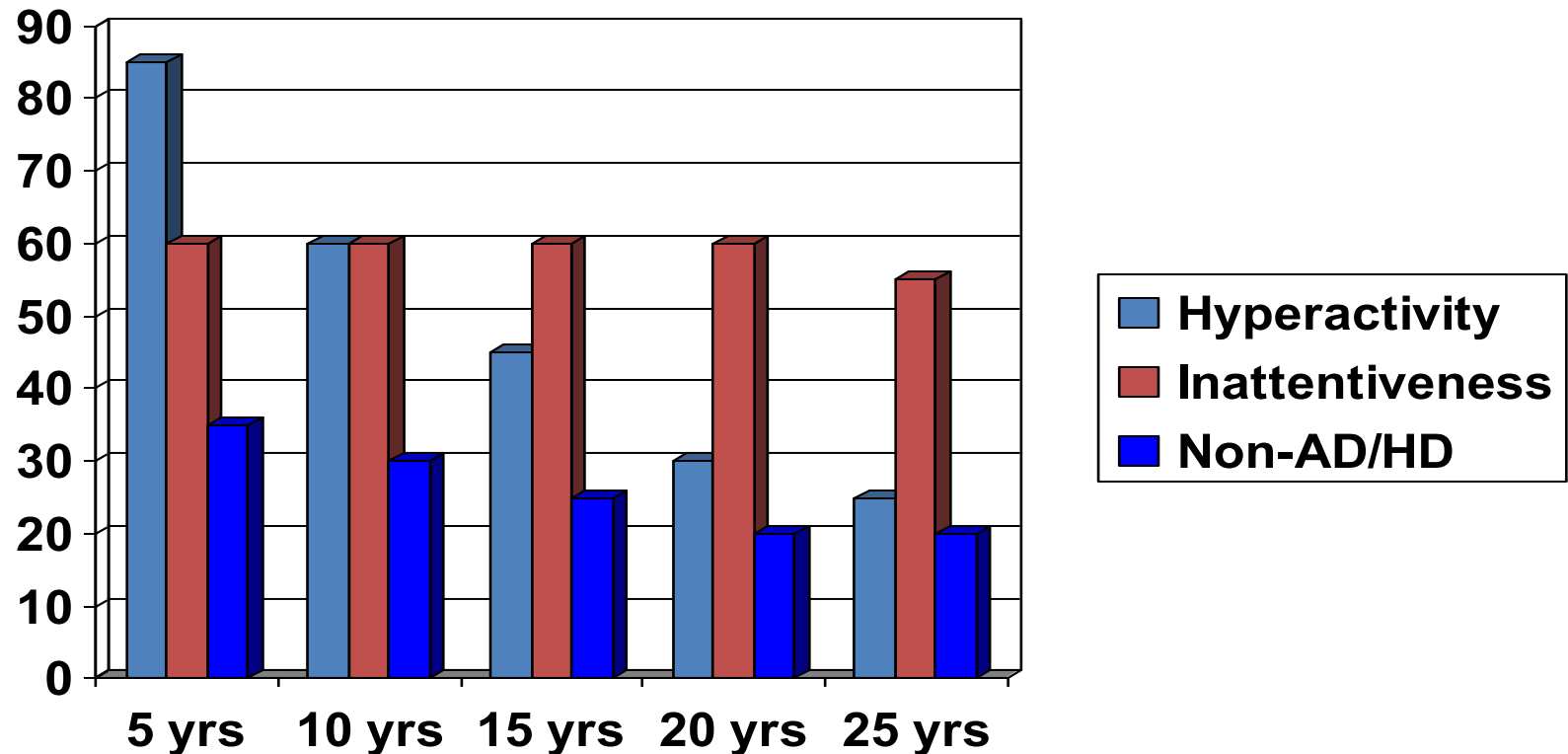
Brown



Brown called those who met DSM criteria for Hyperactive-Impulsive Type or Combined Type in Childhood, but only met criteria for Inattentive Type in Adulthood, 'CROSSOVERS'.

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

Crossovers? What Longitudinal Studies How



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

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

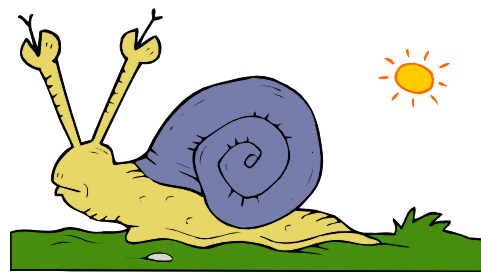
Crossovers (Continued)

Barkley wrote when the Combined Type changes to the Inattentive Type by adolescence or adulthood then the person should be thought of as having the Combined Type.

Barkley, R.A. (2002). ADHD and Oppositional Defiant Children. Seminar presented, February 19-20, Phoenix, AZ., The Institute for Continuing Education, Fairhope, AL.

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

Barkley, R.A., Murphy, K.R., & Fischer, M. (2008). ADHD in Adults: What The Science Says. New York, NY: Guilford, p. 37-38.



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.**

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.

AD/HD, Combined Type Genes

- DRD4 – 7 + Repeat
- DAT1 – 480 bp
- DBH – TaqI (A2 allele)
- DRD2
- SNAP25
- MAO-A
- 13 other possible genes



Barkley, R.A. (2008). ADHD: Advances in, Nature, Diagnosis, and Etiology. Handout for seminar: 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, p. 9 (Handout).

The Neurology of the Combined Type of AD/HD

Barkley stated there are three areas of the brain that are significantly different in those who are AD/HD:

1. The ***Orbital Prefrontal Cortex-Primarily the Right Side***
2. The ***Cerebellar Vermis-Primarily the Right Side***
3. The ***Basal Ganglia-Striatum and Globus Pallidus***

Barkley, R.A. (2002B). ADHD and Oppositional Defiant Children. Seminar presented February 19-20, Phoenix, AZ.

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

What The Cerebellum Does

Allen indicated neuroimaging studies show the Cerebellum is involved in the following functions:

- Attention
- Forms of Learning
- Memory tasks
- Conditional anxiety
- Complex reasoning and problem solving
- Sensory and Motor Tasks



Allen, G. (March 11, 1998). Functional Diversity of the Cerebellum. Paper presented at the New Angles on Motor and Sensory Coordination in Learning Disabilities Topical Medical Workshop; Learning Disabilities Association, International Conference, Washington, DC; Infomedia, tape R130-W1A, Garden Grove, CA.

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...”

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.

European Perspectives of AD/HD



Disorder of Attention, Motor Control and Perception (DAMP):

Swedish researchers have been doing longitudinal research since 1977 with a group of children with AD/HD and Developmental Coordination Disorder which they view as one disorder called DAMP. At age 22 30% of the children still met criteria for AD/HD and DCD.

Gillberg, C. (2001). ADHD with Comorbid Developmental Coordination Disorder: Long-Term Outcome in a Community Sample, ADHD Report, 9 (2), pp. 5-9

Gillberg, C. and Kadesjo, B. (2000). Attention-Deficit/Hyperactivity Disorder and Developmental Coordination Disorder. In T.E. Brown (Ed.), Attention-Deficit Disorders and Comorbidities in Children, Adolescents and Adults. Washington, DC: American Psychiatric Press, pp. 393- 406.

What does “Neurobiological” mean?

- 65 to 75% of the cases of Combined Type ADHD are caused by genetic anomalies.
- These people with ADHD are said to have “developmental ADHD.”

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.

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

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.





“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.**

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

“Acquired” AD/HD



- **Nigg and colleagues found while doing NIH funded research that Combined Type AD/HD children had significantly higher blood lead levels than non-AD/HD children. The same was not found with Inattentive Type AD/HD children. The researchers believed the lead was realate to hyperactivity, but not inattentive symptoms.**

Nigg, J.T., Knettnerus, G.M., Martel, M.M., Nikolas, M., Cavanagh, K., Karmaus,W. and Rappley, M.D. (2008). High Blood Lead Levels Associated with Clinically Diagnosed Attention-Deficit/Hyperactibity Disorder and Mediated by Weak Cognitive Control. Biological Psychiatry, 63 (3), pp. 325-331.

“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.

What does “Neurobiological” mean?

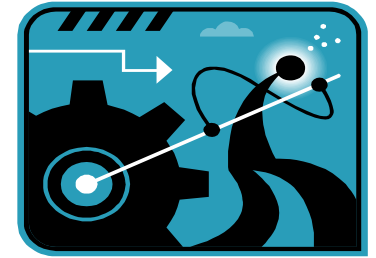
1. **Damage to different neural networks may cause AD/HD symptoms.**
2. **Differences in Brain Development may cause them, too (more common).**
3. **AD/HD, “...is a condition of the brain produced by genes.”**
4. **ADHD has multiple causes**

Swanson, J. and Castellanos, X. (1998). Biological Basis of Attention Deficit Hyperactivity Disorder: Neuroanatomy, Genetics, and Pathophysiology. Available from-
<http://addbalance.com/add/nih/19981118c.htm>.

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

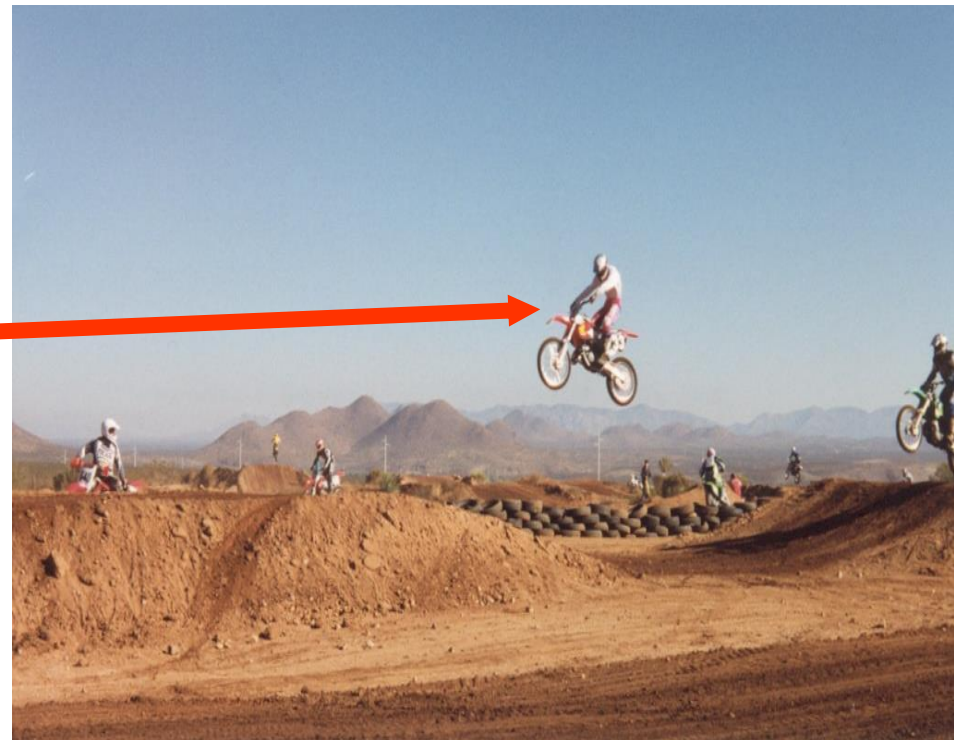
Barkley, R.A. (2008). Advances in ADHD: Theory, Diagnosis and Management. J & K Seminars, L.L.C., 1861 Wichersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

ADHD and Employment

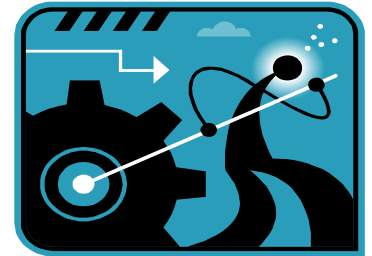


- 80% of AD/HD children suffer social rejection by second grade.
- Impulsivity?

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

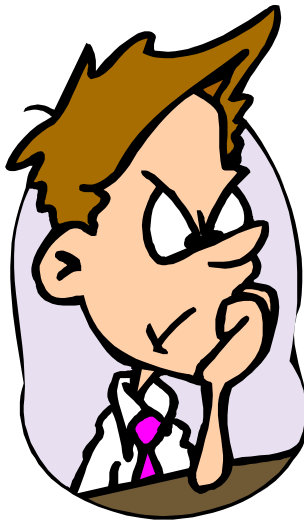


ADHD and Employment



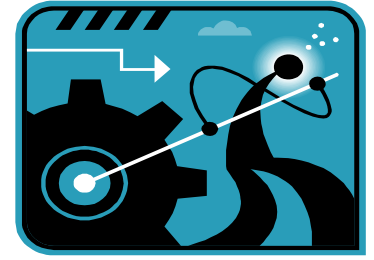
- **Difficulty with others is one of the main reasons AD/HD adults loose their jobs.**

..



**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.**

AD/HD and Employment



- **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.



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. J. (2010). Non-Medication Treatments for Adult ADHD. Washington, DC: American Psychological Association, p. 79.

Mirror Neurons & Executive Functions



“Studies show that the capacity to imitate the actions of others is now virtually an instinct at the level of neuronal functioning. The PFC (Prefrontal Cortex, sic) responds to viewing others’ actions by activating the same sensory-motor regions of the brain as the acting person is using to create the behavior. The mirror-neuronal system has been linked to theory of mind and to empathy, among other human attributes related to EF (Executive Functions, sic.)” (p. 117).

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

Mirror Neurons



How does the following relate to AD/HD?:

“If the mirror neuron system serves as a bridge in this process, then in addition to providing an understanding of other peoples intentions, it may have evolved to become an important component in the human capacity for observation-based learning and sophisticated cognitive skills.” (p. 61)

Rizzolatti, G., Fogassi, L. and Gallese, V. (November, 2006). Mirrors in The Mind. Scientific American, 296 (5), pp. 54-61.

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 Wickersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

Memes & AD/HD



- **Barkley spoke of how many of those with AD/HD have difficulty with the internalization of speech, and how this in turn can make AD/HD people vulnerable to others “stealing their ideas.”**
- **In addition, their impulsivity may cause problems with vicarious learning. Those with AD/HD may have trouble “stealing” the ideas of others.**

Barkley, R.A. (February 19-20, 2002). ADHD and Oppositional Defiant Children. Seminar presented in Phoenix, Arizona.

Barkley, R. A. (2006). Attention-Deficit Hyperactivity Disorder, Third Edition. New York, NY: Guilford, p. 310



Dyssemia

- Those with AD/HD have trouble with vicarious learning and would be expected to have trouble learning non-verbal social interaction which is not directly taught. Their impulsivity would make it difficult for them to attend to the non-verbal cues of others, too.

Barkley, R.A. (February 19-20, 2002). ADHD and Oppositional Defiant Children. Seminar presented in Phoenix, Arizona.

Mimicry



- **“Our talent for mimicry may serve an important purpose. Some studies imply that spontaneous imitation acts as a ‘social glue’ promoting feelings of friendliness and a sense of togetherness.” (p. 55)**
- **If you mimic someone you are seen as friendly; if not, you are seen as less friendly.**
- **You must inhibit imitation to coordinate interactions with others. Those with AD/HD have trouble with this.**

Sebanz, N. (December 2006/January 2007). It Takes 2 To...Scientific American: Mind. 17 (6), pp.52-57.



Dyssemia

In DSM-5® AD/HD can be comorbid with Autism Spectrum Disorders.

Brown, T.E. (2000). Attention-Deficit Disorders and Comorbidities in Children, Adolescents and Adults. Washington, D C: American Psychiatric Press.

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

Author (2010). Asperger Disorder. Washington, DC: American Psychiatric Association; www.dsm5.org/Proposed/Revisions/Pages/proposedrevision.aspx?rid=97#.

Author (2010). Autistic Disorder. Washington, DC: American Psychiatric Association; www.dsm5.org/Proposed/Revisions/Pages/proposedrevisions.aspx?rid=94

AD/HD and Autism Spectrum Disorders (ASD)

- **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**

Goldstein, S. and Naglieri, J.A. (August, 2011). Neurocognitive and Behavioral Characteristics of children with ADHD and Autism: New Data and Strategies. The ADHD Report, 19(4), 10-12,16.

Barkley's 30% Rule for Combined AD/HD

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

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

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.

Warning for Driver's Education Instructors with AD/HD Combined Types Students!

- The average 16 year old with Combined Type AD/HD functions like an 11 year old when it comes to controlling their hyperactivity, impulsivity and inattentiveness.
- How many of you would want an 11 year old behind the wheel of a car?



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

Warning for Driver's Education Instructors with AD/HD Combined Type Students!



- AD/HD teens are more likely to have driven a car illegally before they have their drivers license.
- They are less likely to be employing good driving habits.
- They will incur many more traffic citations, especially for speeding.
- They are four times more likely to be in an accident.
- They will have even more problems if they have Oppositional Defiant Disorder and/or Conduct Disorder with their AD/HD.
- Unmedicated people with AD/HD who are sober handle a car as well as a person who is not AD/HD who is legally drunk!

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

Warning: Driving and AD/HD

“Fortunately, the driving performance of adults with ADHD has been shown to improve with medication management, at least those aspects of poor driving likely to derive from ADHD itself.” (p. 376)



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

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.

Barkley, R.A. (1998). Attention-Deficit Hyperactivity Disorder, Second Edition. New York, NY: Guilford.

Barkley, R.A. (2006). Attention-Deficit Hyperactivity Disorder, Third Edition. New York, NY: Guilford, p. 165.

- 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.

Sleep Disorders and AD/HD

❖ Children with AD/HD:

- Up to 39% sleep walk
- 56% have trouble going to sleep
- Have fewer sleep hours than non-AD/HD children
- Have more movement during sleep
- Have more periods of sleepiness during the day

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

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.**

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.

Social Disorders



- **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.T. (1993). Hyperactive Children Grown Up (Second Edition). 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), pp. 1-6.

Decoding Skill and Facial Expression



- **Brown (2001) indicated AD/HD children are less accurate in facial expression identification than their non-AD/HD peers.**

Brown, T. E. (2001). Social Ineptness & “Emotional Intelligence” in ADHD. Paper presented at the 13th Annual Children and Adults With Attention Deficit Disorders International Conference, October 18-20 2001, Anaheim , CA.

Problems Making the Appropriate Facial Expression to Match How One Feels and What is Appropriate to The Situation

- **Unmedicated AD/HD, Combined Type people have difficulty making facial expressions to match how they feel. They tend to “over-emote” their facial expressions. (Kuehle, et.al., 2002).**

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.

Facial Expression and Social Ability



- **Regarding facial expressions in children and adults with AD/HD Kuhle, Hoch, Rautzenberg and Jansen (2001) concluded, “Altogether, ... the facial expressions, are uncontrolled and jerky and are often wrongly dimensioned in time and space.” (p. 6)**

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 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.

Facial Expressions and AD/HD



- **AD/HD childrens' eyes drift away from those they are in conversation with.**
- **This usually interrupts the flow and their comprehension of the conversation.**
- **Often parents feel rejected by AD/HD children when they do this.**

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.

Facial Expressions and AD/HD

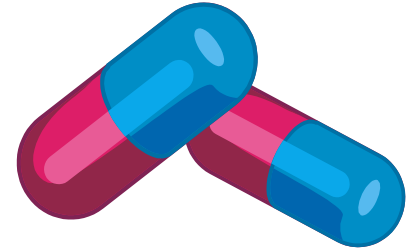


- **AD/HD children smile abruptly.**
- **There is little or no transition between emotional states.**
- **Sometimes their facial expression bleeds over into the next emotional state.**
- **Expression of emotion often appears exaggerated. The quality of expression can be limited due to this.**
- **Even body movements are jerky and uncontrolled.**

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.

Possible Treatment of Problems with Facial Expression and AD/HD

- Optimal dosing of a stimulant medication causes a significant reduction in visual attention loss.
- Facial expressions will become smooth and variable.
- Too high a dose can cause a return of the symptoms.
- Can properly ID 80% of the AD/HD children with video procedure.



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 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.

ADHD & Amygdala/Frontal Lobe

“Our findings demonstrate that in adolescents with ADHD, a neural substrate of fear processing is atypical, as is the connectivity between the amygdala and LPFC (lateral prefrontal cortex, sic.). These findings suggest possible neural substrates for the emotional reactivity that is often present in youths with ADHD, and provide putative neural targets for the development of novel therapeutic interventions for this condition”. (p. 828)

Posner, J. Nagel, B.J., Maia, T.V., Oh, M., Wang, Z., and Peterson, B.S. (August 2011). Journal of the American Academy of Child & Adolescent Psychiatry, 50(8), 828-837.

AD/HD and Active Forgetting

- **ADHD people appear to have more difficulty actively forgetting than the non-impaired because their prefrontal cortex is under activated when forgetting. Hence, their amygdali and hippocampus' are not blocked and record the memories. Thus they have less control of their memories. As a result, they are more susceptible to distracting thoughts.**

Wickelgren, I. (2012). Trying To Forget. Scientific American Mind, 22(6), p. 32-39.

ASD Vs AD/HD

On Response Inhibition

- **A study comparing adults with AD/HD and adults with ASD found ASD adults had a slow but accurate response style, but AD/HD adults had an inaccurate and rapid response style.**

Johnston, K., Madden, A. K., Bramham, J. and Russell, A.J. (2011). Response Inhibition in Adults with Autism Spectrum Disorder Compared to Attention Deficit/Hyperactivity Disorder. Journal of Autism and Developmental Disorders, 41 (7), pp. 903-912.

AD/HD and ASD

- **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**

Goldstein, S. and Naglieri, J.A. (August, 2011). Neurocognitive and Behavioral Characteristics of children with ADHD and Autism: New Data and Strategies. The ADHD Report, 19(4), 10-12,16.

AD/HD and Ventral Attention

Helenius and colleagues found that adults with AD/HD have problems switching to stimulus-based reactions during tasks due to reduced activation of the ventral attention system in the temporal lobes.

Helenius, P., Laasonen, M., Hokanen, L., Paetau, R., and Niemivirta, M. (March 1, 2011). Impaired engagement of the ventral attentional pathway in ADHD. Neuropsychologia, 49(7), 1889-1896.

Diagnosing Adult AD/HD With The DSM-IV, TR®

- The AD/HD diagnostic criterion in DSM-IV, TR® were established from a field trial study of individuals ages 4 to 16. They do not apply to adults!
- Use 5 of 9 Hyperactive/Impulsive symptoms and 4 Inattentive symptoms for individuals 19 to 29 as cutoff.
- Use 4 of 9 for both (Hyperactive/Impulsive & Inattentive symptoms) for individuals over 29.

Barkley, R.A. (2006). Attention Deficit Hyperactivity Disorder, Third Edition. New York, NY: Guilford, p. 88-89.

What does “Neurobiological” mean?

- **Russell Barkley, Ph.D. (2008) said regarding Combined Type ADHD, “You cannot train out this disorder, period!” He went on to state 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 Wickersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com.

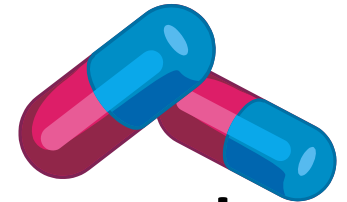


Important Numbers

- **65 to 86 percent of children diagnosed with AD/HD in childhood will meet criteria for it on adulthood**
- **Boy outnumber girls with AD/HD, but there is a 1 to 1 correspondence male to female in adulthood-Don't know why**
- **3 to 4 percent worldwide prevalence of adult AD/HD.**

Barkely, 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.

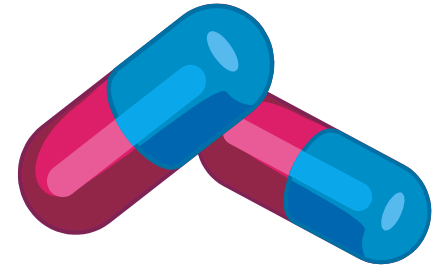
Treatment of AD/HD



“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.

Treatment of AD/HD



1. **Diagnosis**
2. **Psychoeducation about AD/HD**
3. **Medication**
4. **Accommodation**

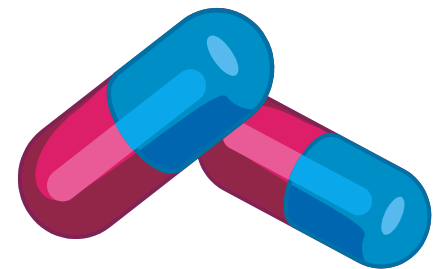
Barkley, R. A. (1998). ADHD in Children, Adolescents, and Adults: Diagnosis, Assessment, and Treatment. New England Educational Institute, Cape Cod Symposia, August, Pittsfield, MA.

Barkley, R.A. (2006). Attention-Deficit Hyperactivity Disorder. New York, NY: Guilford, p. 6

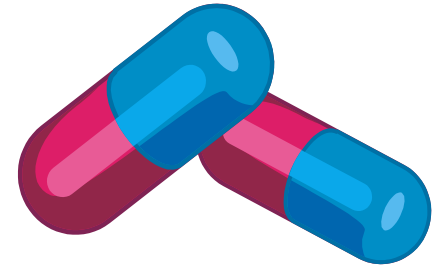
AD/HD Response Rate to Stimulant Titration

“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%.”

Mahoney, W. (2002). The Use of Stimulant Medication in the Treatment of Attention Deficit Hyperactivity Disorder. Pediatrics & Child Health, 7 (1), pp. 693-696;
From website: www.ncbi.nlm.nih.gov/pmc/articles/PMC2796531.



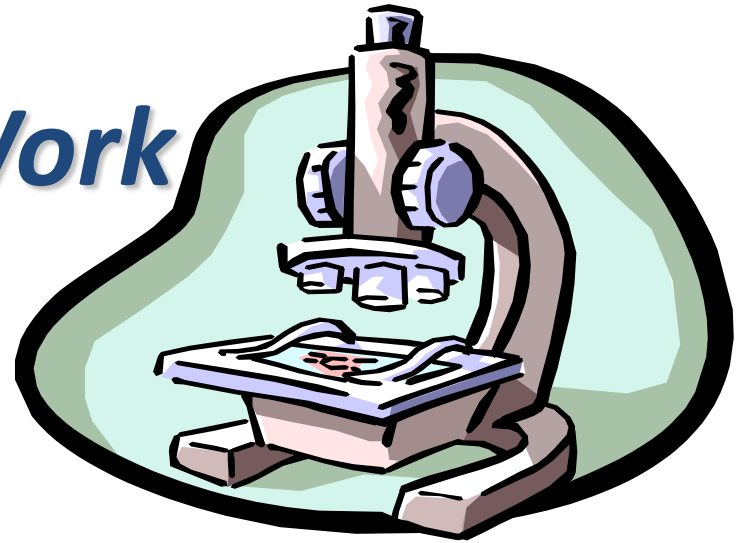
AD/HD and Medication



- **“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)**

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

Your Tax Dollars at Work

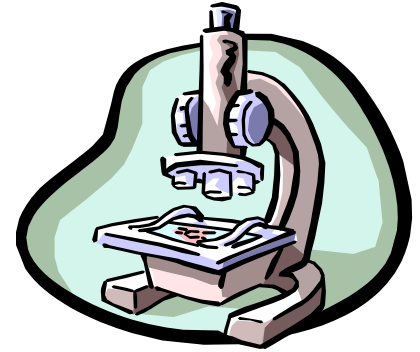


The Multimodal Treatment Study of Children with Attention Deficit Hyperactivity Disorder

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

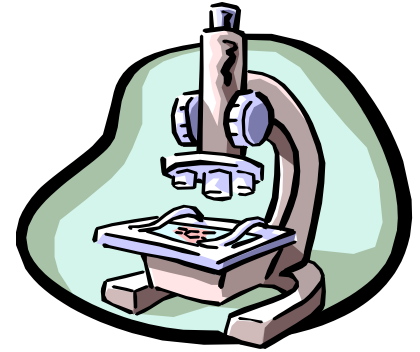
1999

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

The MTA Study



- **Group 1: “Experimental Medication”**
 - **Three medications used**
 - Methylphenidate (Ritalin)
 - D Amphetamine (Dexedrene)
 - 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.**

Warning: Stimulants & AD/HD

- “The FDA’s review of sudden death or cardiovascular incidents in patients taking AD/HD medications found 25 reports of death between 1999 and 2005 and 54 reports of serious cardiovascular problems. Some of these patients had pre-existing heart conditions or hypertension, the report noted.”

Goodman, B. (2/23/2006). FDA Warning on AD/HD Medications “Premature”;
National AD/HD Advocacy Group Urges Further Research. From Website:
www.chadd.org/whatsnew/FDAHearings.htm

Warning: Stimulants & AD/HD

- According to the Center for Disease Control (CDC) about 2,500,000 children between 4 and 17 take AD/HD medications.
- “According to the Surgeon General, medication is effective for about 80 percent of the people who have the disorder.” (sic. AD/HD)

Goodman, B. (2/23/2006). FDA Warning on AD/HD Medications “Premature”;
National AD/HD Advocacy Group Urges Further Research. From Website:
www.chadd.org/whatsnew/FDAHearings.htm

Warning: Cylert & AD/HD

- Cylert (Pemoline) has a low abuse potential, but may cause liver toxicity. Must check liver enzymes every two weeks.
- It now has a PDR Black Box Warning.

Prince, J., and Wilens, T. (2002). Medications Used in the Treatment of AD/HD in Women. In P.O. Quinn, and K.G. Nadeau (Eds.), Gender Issues and AD/HD. Silver Spring, MD: Advantage, pp. 144-182.

Hallowell, E.M., and Ratey, J.J. (2005). Delivered From Distraction. New York, NY: Ballantine, pp. 251.

Connor, D. (2006). Stimulants (Chapter 17), In R.A., Barkley, Ed, Attention-Deficit Hyperactivity Disorder, Third Edition. New York, NY: Guilford, p. 636.

Warning: Strattera and AD/HD

- PDR Warning about liver problems. Two people have had liver function problems who have been placed on this medication.

Surman, C. (May 12, 2005). AD/HD and Comorbidity. Paper presented at the National Attention Deficit Disorder Association Annual Conference, May 12-15, 2005, Tucson, AZ.

Spencer, T.J. (2006). Antidepressant and Specific Norepinephrine Reuptake Inhibitor Treatments, Chapter 18, In R.A. Barkley, Ed., Attention-Deficit Hyperactivity Disorder. New York, NY: Guilford, p. 653.

POPULATIONS

- World's projected population as of 01/01/07:
6,605,046,992 X 5 (Years)
- US Population as of 12/06/06: **300,351,641 X 1 (Year)**

From US Census Bureau World Population Clock Projections:

www.census.gov/main/www/popclockworld.html and
www.census.gov/ipc/popclockworld.html



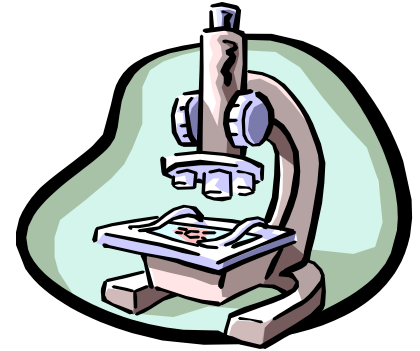
“My daughter died after taking aspirin.”

- **“Health experts have issued a warning that children under the age of 19 should not take aspirin because the risk of a rare but potentially fatal condition called Reye’s Syndrome.”**
- **Each year there are an estimated 7600 deaths and 76,000 hospitalizations from taking non-steroidal anti-inflammatory drugs (NSAID). What is a NSAID? Aspirin!**

BBC News World Edition (10/23/2002). “My Daughter Died After Taking Aspirin”. From website:
www.newsbbc.uk/2/hi/health/2353187.stm

From website: www.drugwarfacts.org/causes.htm#nsaid

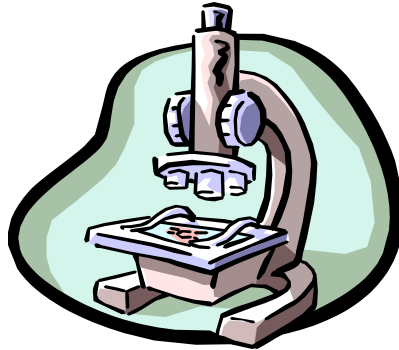
The MTA Study



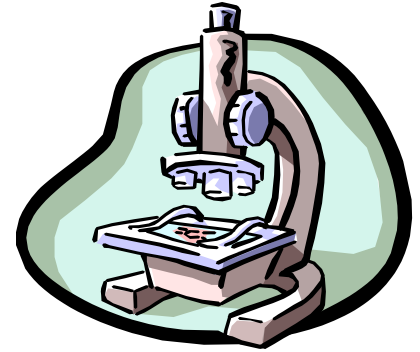
- **Group 2: Behavior Modification**
 - **Parents taught how to use token economies at home and daily report cards, teachers taught how to teach AD/HD child, how to use token economies in the classroom, and daily report cards, AD/HD children were sent to special camp for AD/HD kids, parents and teachers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

The MTA Study

- **Group 3: “Experimental Medication Plus Behavior Modification Group”**



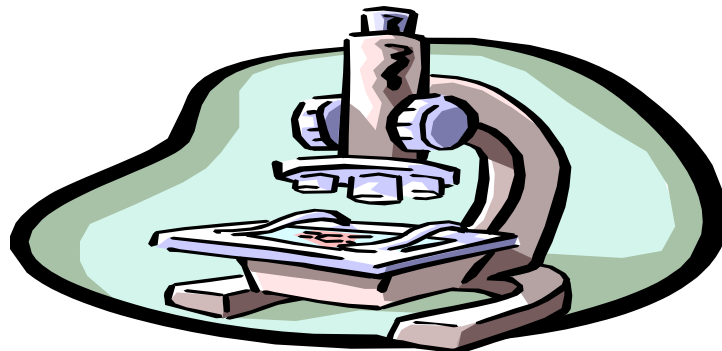
The MTA Study



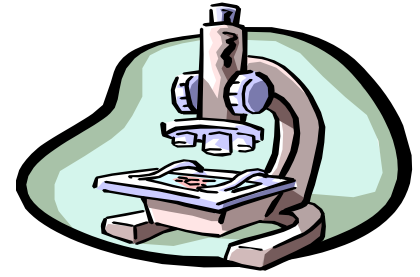
- **Group 4: “Community Services”**
 - The parents are told their child has Combined Type AD/HD and they are encouraged to go out to their community and get what services they want for their child...This was the “Control Group.”
 - Medication, aroma therapy, etc.

MTA STUDY

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.



MTA Study

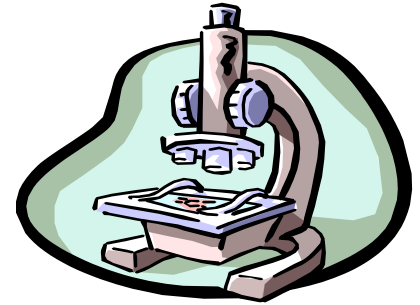


- **Medication Management Treatment Group did best. 50% decline in symptoms.**
- **Medication with Behavioral Modification Group did no better.**
- **Behavior Modification Group did better than placebo.**
- **Community Treatment only had 25% decline in symptoms.**
- **Medication helps with social interaction.**

NIMH Research Treatment for Attention Deficit Hyperactivity Disorder (ADHD): The Multimodal Treatment Study – Questions and Answers. From website:

www.nimh.nih.gov/chilfhp/mt.aqu.cfm

MTA Study



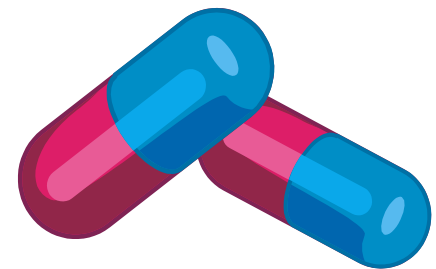
“In that study (MTA Cooperative Group, 1999) psychosocial treatment alone was very poor compared to medication effects and psychosocial treatment with methylphenidate was no better than methylphenidate alone...Medication was found to reduce negative social interactions both by the treated children and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

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

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%.”

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From website: www.ncbi.nlm.nih.gov/pmc/articles/PMC2796531.



MTA Study

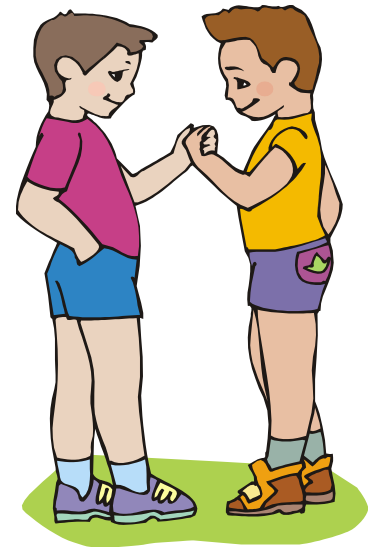
- **“Based on these findings, we concluded that for AD/HD symptoms, a closely monitored medication approach of the MTA was superior to behavioral treatment alone and routine community treatment that included medication. Combined treatment offered slightly greater benefits than medication management alone for AD/HD symptom reduction as well as for other domains, such as peer relations, parent-child relations and academic outcomes.” (p. 64)**
- **Combined group used 20% less medication than Medication Only group.**
- **24-month follow-up same basic results.**

Jensen, P.S., Abikoff, H.B., Arnold, L.E., Epstein, J., Greenhill, L.L., Hechtman, L., Hinshaw, S.P., March, J.S., Newcorn, J.H., Swanson, J.M., Vitello, B., Wells, K. and Wigal, T. (2006-2007). A 24-Month Follow-up to the NIMH MTA Study. The New CHADD Information and Resource Guide to AD/HD. Landover, MD: CHADD, pp. 64-67.

Medication and Social Interaction

- “The medications used to treat AD/HD often have positive social effects; in fact most children feel an improvement in the way they relate to others.” (Aull, April, 2005, p. 36)

Aull, E.B. (April, 2005). Social Skills Improvement with AD/HD Medication. Attention!, 12 (2), pp. 34-37.



AD/HD and Medication

- **“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)**

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

Stimulant Medications Used to Treat AD/HD That Are Approved by the FDA

Methylphenidate (Ritalin)

- Delivery Systems
- ❖ Concerta/OROS
- ❖ Medidate/Diffucaps, microl, SODAS
- ❖ Methapatch/Patch
- ❖ Focalin/isomer

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.

Dexedrine (Amphetamine)

- Delivery Systems
- ❖ Adderall XR/ 4 amphetamine salts
- ❖ Vyvance (lisdexamfetamine) becomes active when combined with stomach acids

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.

Other Medications for AD/HD

Approved by the FDA

- **Atomoxetine/ Strattera-Norepinephrine reuptake inhibitor**
- **Intunive XR/ Guanfacine XR-Anti-Hypertensive**
- **Kapvay/ clonidine hydrochloride-Anti-Hypertensive**

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.

“Typical” Medications Given Off-Label for AD/HD

- **Meth-amphetamine-Addictive**
- **Tricyclic Anti-Depressants-don’t work as well
& cardiac concerns**
- **Welbutrin/bupropion- stimulants work
better**
- **Anti-histamines/Doesn’t work very well**

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.

Stimulants Typically Work with AD/HD, Combined Type

❖ **They improve 70 to 90 percent of clinical and normalize 50 to 60 percent of those while on a therapeutic dose.**

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, page 57.

How Stimulants Work

- **“Our results suggest that enhancing dopamine D4 transmission in the basal ganglia and the thalamus is likely part of the mechanism of the therapeutic effects of psychostimulants on ADHD.” (Quoting David Erlij, M.D., Ph.D., SUNY)**
- **Erlij believes the therapeutic action of psychostimulants in ADHD occurs because the condition is caused by abnormalities of dopamine signaling in the brain. That is, when an individual has ADHD, the dopamine D4 receptor gene is abnormal.**

Nauert, R. (February 8, 2012). Rat Study Suggests How Stimulants Reduce ADHD Symptoms. PsychCentral:
<http://psychcentral.com/news/2012/02/08/rat-study-suggests-how-stimulants-may-reduce-adhd-symptoms/34602.html>.

Long Term Study of Stimulant Medication with AD/HD Adults

- **Typically the longest studies of stimulant medication with adults with AD/HD last several weeks. Recently one was conducted that lasted 2 years.**
- **Prior studies of children with AD/HD indicate that only between 21-34% remain on their medication after 2 years.**
- **Recently researchers did a follow-up study of 133 adults with AD/HD who were on stimulant medication.**

Long Term Study of Stimulant Medication with AD/HD Adults

- The researchers found after 6 to 9 months 80% of the adults were still taking their medication, but after 2 years only 50% were taking their medication. 22% of those who discontinued could not come up with a reason why they did; 16.7% said they quite because of anxiety and/or depression; 15.5% said they believed the medication did not work; and 7.6% said they had negative side effects.**

Long Term Study of Stimulant Medication with AD/HD Adults

- **After 2 years those who remained on the medication had a significant increase in their pulse, but not blood pressure.**
- **For those who remained on their medication they appeared to find it effective and reported minor side effects.**
- **The researchers believed the fact they had follow-up meeting with the research subjects may have raised the rate of those who remained on the medication for two years and suggested clinicians periodically follow-up with their clients to help ensure they are taking their medication.**

References

- **Knouse, L. (June, 2011). Predictors of Adherence to Long-Term Stimulant Treatment in Adults. The ADHD Report, 19(3), 10.**

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, Third Edition. New York, NY: Guilford.

Ramsay, R. J. (2010). Non-Medication Treatments for Adult ADHD. Washington, DC: American Psychological Association.

Barkley's 80%- 20% Rule

- Using Barkley's theory of AD/HD (Combined Type) and his theory of executive functioning he concludes that AD/HD, "...has disconnected the knowing from the doing brain."
- Thus, he says 80% of the effort to manage a person's behavior with AD/HD must be done with environmental modifications (token economies, timers, etc.) The remaining 20% of the management effort goes into training of skills.

Barkley, R.A. (November 12, 2010). The Nature of Executive Functioning in ADHD: Implications for Assessment and Management. Paper Presented at the 22nd Annual CHADD International Conference, Atlanta, GA.

Barkley, R.A. (in press). Attention-Deficit/Hyperactivity Disorder, Executive Functioning, and Self-Regulation. In R.F. Baumeister & K.D. Vohs (Eds.), Handbook of Self-Regulation: Research , Theory and Applications, 2nd Edition. New York, NY: Guilford.

Barkley, R.A. (2011). Executive Functioning in Daily Life Activities: Theory, Integration and Clinical Implications. New York, NY: Guilford.

AD/HD & Coaching

“Students reported that ADHD coaching helped them become more self-regulated, which led to positive academic experiences and outcomes. Students described ADHD coaching as a unique service that helped them develop more productive beliefs, experience more positive feelings, and engage in more self-regulated behaviors.

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

Parker, D.R., Hoffman, S.F., Sawilowsky, S., Rolands (December 15, 2011). Self-Control in Postsecondary Settings: Students’ Perceptions of ADHD College Coaching. Journal of Attention Disorders, doi: 10.1177/1087054711427561

Possible Alternative Medicine Treatment for Working Memory Problems



- **Working Memory Training:**
 - Torkel Klingberg, M.D., Ph.D.
 - Karolinska Institute- Stockholm, Sweden
 - CogMed software company (RM Program)
 - AD/HD deficient in visual spatial working memory. Gets worse with age.
 - **MAY** help relieve executive functioning difficulties and reading comprehension problems in Combined Type AD/HD.
 - ***More Research is needed!***

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.

Ingersoll, B. (October 26, 2006). Complementary Treatments for AD/HD. Paper Presented at the 18th Annual CHADD International Conference, Chicago, IL.

Klingberg, T. and Andersson, M. (October 28, 2006). Computerized Training of Working Memory in Children with AD/HD. Paper presented at the 18th Annual CHADD International Conference, Chicago, IL.

COGMED and ADHD



- Recent study has shown that the use of COGMED with stimulant medication reduces working memory deficits better than medication alone. Children with ADHD went up 1 SD in working memory and results held for 6 months.

Holms, J., Gathercole, S.E., Place, M., Dunning, D.L., Hilton, K.A. and Elloitt, J.G. (2009). Working memory deficits can be overcome: Impacts of training and medication on working memory in children with ADHD. Applied Cognitive Psychology, From Wiley Interscience abstract: www3.interscience.wiley.com/journal/122462190/abstract?CRETRY+1&SRETRY=0

COGMED and ADHD



- **Treatment Group:**
 - Significant gains in all types of working memory, even verbal STM and WM.
Subjects follow directions better, too.
 - No significant drops in 6 months.
 - Significant increases in math and following directions in 6 months.

Holmes, J., Gathercole, S.E., and Dunning, D.L. (2009). Adaptive training leads to sustained enhancement of poor working memory in children. Developmental Science, 12, F9-F15.

COGMED and ADHD



Second study:

- Children with low working memory for their age
- Random assignment into two groups: treatment and sham treatment/control
- Treatment group showed significant improvement in verbal short-term memory and verbal working memory. No difference found on visual-spatial working memory and visual-spatial short-term memory.

Holms, J., Gathercole, S.E., Place, M., Dunning, D.L., Hilton, K.A. and Elloitt, J.G. (2009). Working memory deficits can be overcome: Impacts of training and medication on working memory in children with ADHD. Applied Cognitive Psychology, From Wiley Interscience abstract:
www3.interscience.wiley.com/journal/122462190/abstract?CRETRY+1&SRETRY=0

COGMED

www.cogmed.com



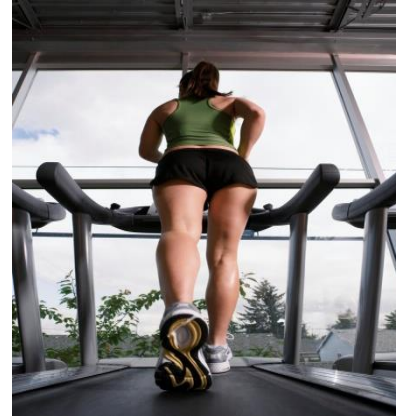
Exercise and ADHD



❖ Ratey (2008) stated that aerobic exercise for 30 minutes a day can increase dopamine and norepinephrine (two neurotransmitters related to ADHD) for up to 90 minutes. “For most of my patients, I suggest exercise as a tool to help them manage their symptoms along with their medication.” (p. 164)

Ratey, J.J. (2008). Spark: The revolutionary new science of exercise and the brain. New York, NY: Little, Brown and Company.

ADHD & Exercise

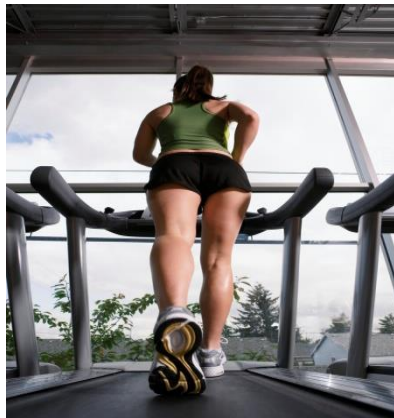


- **Barkley (2008) stated if you have combined type ADHD you should take a run just before an examination instead of review your notes one more time. He recommends people with ADHD have a regular mild aerobic exercise routine, too.**

Barkley, R.A. (2008). Advances in ADHD: Theory, diagnosis and management. J & K Seminars, L.L.C., 1861 Wickersham Lane, Lancaster, PA 17603; 800-801-5415; www.jkseminars.com; disc 7, track 11.

Excellent Book on Exercise and ADHD

- **Ratey, J.J. (2008). Spark: The Revolutionary New Science of Exercise and The Brain. New York, NY: Little, Brown.**

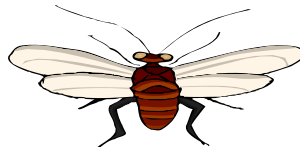


Complementary & Alternative Treatments Not Backed by Research

- Light Therapy
- Repetitive Transcranial Magnetic Stimulation
- Magnetic bed mattresses
- Vestibular and Cerebellar Exercises
- Massage
- Interactive Metronome
- Chiropractic treatment
- Vision therapy
- Acupuncture
- Mirror feedback
- Herbal & Homeopathic Treatments
- Tarantula venom

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

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



Recent Review of Neurobiofeedback Research Results with AD/HD

- **Based on the results and methodologies of published studies, this review concludes that NF for pediatric ADHD can be currently considered as “probably efficacious.”**

Lofthouse, N, Arnold, E., Hersch, S. Hurt, E., and DeBeus, R. (November 16, 2011). A Review of neurobiofeedback Treatment for Pediatric ADHD. Journal of Attention Disorders. doi: 10.1177/1087054711427530 .

Neurobiofeedback and AD/HD

- Ramsay stated that support for neurobiofeedback is, “...tentative and not conclusive, and the precise mechanisms of change remain unclear...” (p.123).

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

- For further discussion of this hotly debated topic go to Dr. Blake’s website’s webinar extra slide page: www.drkevintblake.com.

DSM-5®?



- Types of ADHD:

1. AD/HD (Combined Type)
2. AD/HD, Not Otherwise Specified
3. AD/HD + Conduct Disorder, Callous and Unemotional Specifier
4. Sluggish Cognitive Tempo/Attention Deficit Disorder

The above recently has been changed!

Author (2010). ADHD and Disruptive Behavior Disorders. Washington, DC: American Psychiatric Association; www.dsm5.org/meetus/pages/adhd.aspx.

Author (February 2, 2010). DSM-5: Options Being Considered for ADHD. Washington, DC: American Psychiatric Association; www.dsm5.org/Proposed%20Revision%20Attachments/APA%20Options%20for%20ADHD.pdf.

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.

DSM-5®?



5. Temper Dysregulation Disorder with Dysphoria and Comorbid AD/HD

Recently changed to Disruptive Mood Dysregulation Disorder

Author (2010). Disruptive Mood Dysregulation Disorder. Washington, DC: American Psychiatric Association; <http://www.dsm5.org/proposedrevisions/pages/proposedrevision.aspx?rid=397#>.

Author (February 14-16, 2007). Externalizing Disorders of Childhood (Attention-deficit/Hyperactivity Disorder, Conduct Disorder, Oppositional-defiant Disorder, Juvenile Bipolar Disorder. Washington, DC: American Psychiatric Association; [www.dsm5.org/research/pages/externalizingdisordersofchildhood\(attention-deficithyperactivitydisorder,conductdisorder,oppositional-defiantdisorder,juven.aspx](http://www.dsm5.org/research/pages/externalizingdisordersofchildhood(attention-deficithyperactivitydisorder,conductdisorder,oppositional-defiantdisorder,juven.aspx).

Author (2010). Justification for Temper Dysregulation Disorder with Dysphoria. Washington, DC: American Psychiatric Association; www.dsm5.org/Proposed%20Revision%20Attachments/Justification%20for%20Temper%20dysregulation%20Disorder%20with%20dysphoria.pdf.

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

What should be used by won't be used as the adult symptoms of ADHD for DSM-5®

- 1. “Is often easily distracted by extraneous stimuli**
- 2. Often makes decisions impulsively**
- 3. Often has difficulty stopping activities or behavior when he/she should do so**
- 4. Often starts a project or task without reading or listening to directions carefully**
- 5. Often shows poor follow-through on promises or commitments made to others**
- 6. Often has trouble doing things in their proper order or sequence...”**

What should be used by won't be used as the adult symptoms of ADHD for DSM-5®

- 7. Often more likely to drive a motor vehicle much faster than others**
- 8. Often has difficulty sustaining attention in tasks or leisure activities**
- 9. Often has difficulty organizing tasks and activities” (p. 10)**

Cutoff: 6 of 9; in two settings; onset before age 16

Barkley, R.A. and Murphy, K.R. (August 2006). Identifying New Symptoms for Diagnosing ADHD in Adulthood. ADHD Report, 14 (4), 7-11.

Barkley, R.A. Murphy, K.R. and Fischer, M. (2008). ADHD in Adults: What The Science Says. New York, NY: Guilford, p. 437.

At Last Publishing here is what the DSM-5® Committee is Planning for AD/HD

- ❖ **AD/HD will be diagnosed according to how the person currently presents their symptoms. Hence:**
 - **Combined Presentation**
 - **Predominately Inattentive Presentation (Combined Type “light” mostly adults)**
 - **Hyperactive Impulsive Presentation (Mostly preschoolers)**

<http://www.dsm5.org/ProposedRevision/Pages/proposedrevision.aspx?rid=383>

At Last Publishing here is what the DSM-5® Committee is Planning for AD/HD

- **Hence, there is only one type of AD/HD which is Combined Type AD/HD which manifests its symptoms differently as a person develops neurobiologically throughout life.**
- **There will be 22 symptoms of AD/HD instead of 18**
- **The cutoff age for having some symptoms of AD/HD will be 12; I favor 16, but what do I know?**

<http://www.dsm5.org/ProposedRevision/Pages/proposedrevision.aspx?rid=383>

At Last Publishing here is what the DSM-5® Committee is Planning for AD/HD

- **They will use the same symptoms for adult AD/HD as they will for children (Question: how many 5 year olds have lousy driving records?)**
- **They will probably have the same symptom cutoffs for adults and children. Although they did at one time give every indication that this would not be the case (I don't like this either)**

<http://www.dsm5.org/ProposedRevision/Pages/proposedrevision.aspx?rid=383>.

How Will DSM-5® Deal with SCT?

There will be a diagnosis of “**Attention-Deficit/Disorder Restrictive Presentation**”. Which means the person can never have more than two Hyperactive/Impulsive symptoms during their entire life, but they meet criteria for Inattentive AD/HD. I think this is better than nothing.

What is Attention-Deficit/Hyperactivity Disorder, Inattentive Restrictive & SCT?

For more information about AD/HD, Inattentive Restrictive A.K.A. Sluggish Cognitive Tempo please attend Dr. Blake's webinar through Cross Country Education:

- **Understanding Inattentive AD/HD: recent Updates in Evidence-Based Screening and Treatment Strategies**
- **Please go to the Upcoming Webinars and Seminars page of this website for details.**

The Third Type of AD/HD in DSM-5®

- **“Attention-Deficit/Hyperactivity Disorder Not Elsewhere Classified”** This is the old NOS diagnosis.
- **Those who would come under this diagnosis would be those with an “Acquired AD/HD, and or adults who have gone into remission, do not meet clinical criteria for AD/HD, but are still experiencing significant impairment in major life activities due to their remaining troublesome symptoms.**

<http://www.dsm5.org/ProposedRevision/Pages/proposedrevision.aspx?rid=102>