

Executive Dysfunction:

Effective Strategies & Interventions for Children & Adolescents

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Executive Function & Phineas Gage

2014 03 19

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.
- Odriscoll and Leach (1998)
- Damage to right & left prefrontal lobes = Problems with rational decisions and processing emotion
- Demasio, et al. (1994)

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)

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 (2009)

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).

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).

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).

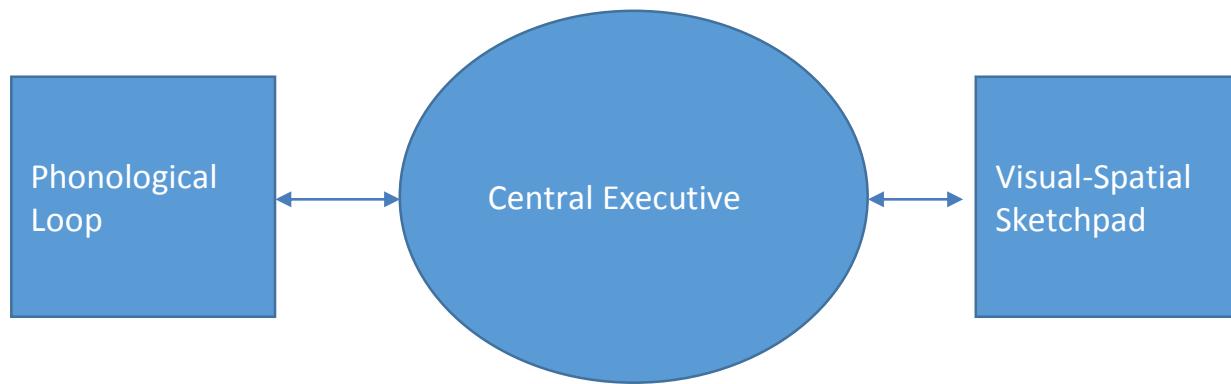
--Baddeley (1992)

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 (1992)

Baddeley's Executive Function Theory (Cont'd)



--Baddeley (1992)

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 (2006); (2007)

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

Barkley's Hierarchy of Executive Capacities

- **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 (2012)

Summary of Tom Brown's Theory Of Executive Function

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

--Brown (1995)

--Brown (2013)

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 (2014)

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)

Brain Areas Involved in EF



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Brain Areas Involved in EF

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

--Barkley (2012)

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. Structural abnormalities have been found in the cerebella of persons with ADHD” (p. 28).

--Brown (2013)

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 (2001)

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 (2014 A)

EF Assessment Instruments

- WISC-V
- Cognitive Assessment System, 2nd Ed. (CAS-II)
- WJ-IV Cognitive Battery
- Children's Psychological Processing Scale (CPPS)
- Behavior Rating Inventory of Executive Function (Brief)
- Psychological Processing Checklist – Revised (Teachers)
- NEPSY-II
- Comprehensive Executive Function Inventory
- Barkley Deficits in Executive Functioning – Children and Adolescents, Daily Activities (BDEFS-CA)
--Dehn (2014 A)

Interventions for Executive Functions



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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 (2014 A)

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); Schacter, D. (2001)

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); Clark, D.B. (1988); Wolf, M., and O'Brien, B. (2001)

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.

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); Karni, Tanne, Rubenstein, Askensay, and Saji, (1994)

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)

-- Strickgold, R., et al. (January 28, 2013); Winerman, L. (January, 2006); Stickgold, R. (2005)

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);
Brown, T. E. (October 11, 2001); Frith, C. D. and Frith, U. (1999); Barkley, R.A. (2008).

Possible Working Memory Computer Training Programs

Working Memory Training:

- **Cogmed:**
www.cogmed.com
--Klingberg (February, 2006);
Barkley, (February, 2006); Ingersoll
(October 26, 2006)
- **Posit Science:**
www.positscience.com
--Smith et al. (2009)

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.
--Shipstead, Redick, and Randall (2012)

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 (2014)
- 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

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 et al. (October 27, 2010), (November 12, 2014)

Techniques that Help Memory

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

--Anderson, A. (January/February, 2011)

- “Self-Imagining” in a made up story of the content you want to remember (episodic memory)

--Grilli, and Glisk (August 5, 2012)

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 (2014 A)

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 (1997); Smith, and Godfrey (1995); Barkley (1998); Fawcett (October 29, 2010); Goldstein, and Goldstein (1997)

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

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

Working Memory & Anxiety

- “Acute stress can almost halve a person’s mental capacity.”
--Klingberg (2013)
- 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 (November 12, 2014)

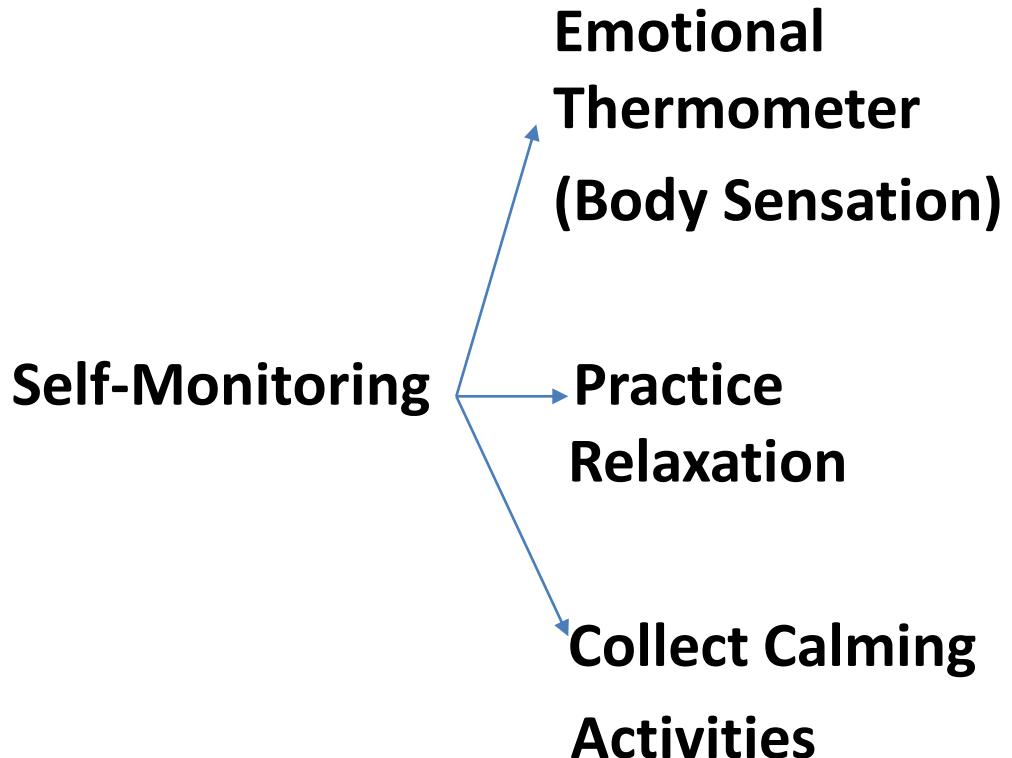
Working Memory & Anxiety

Problem Times for Anxious Students

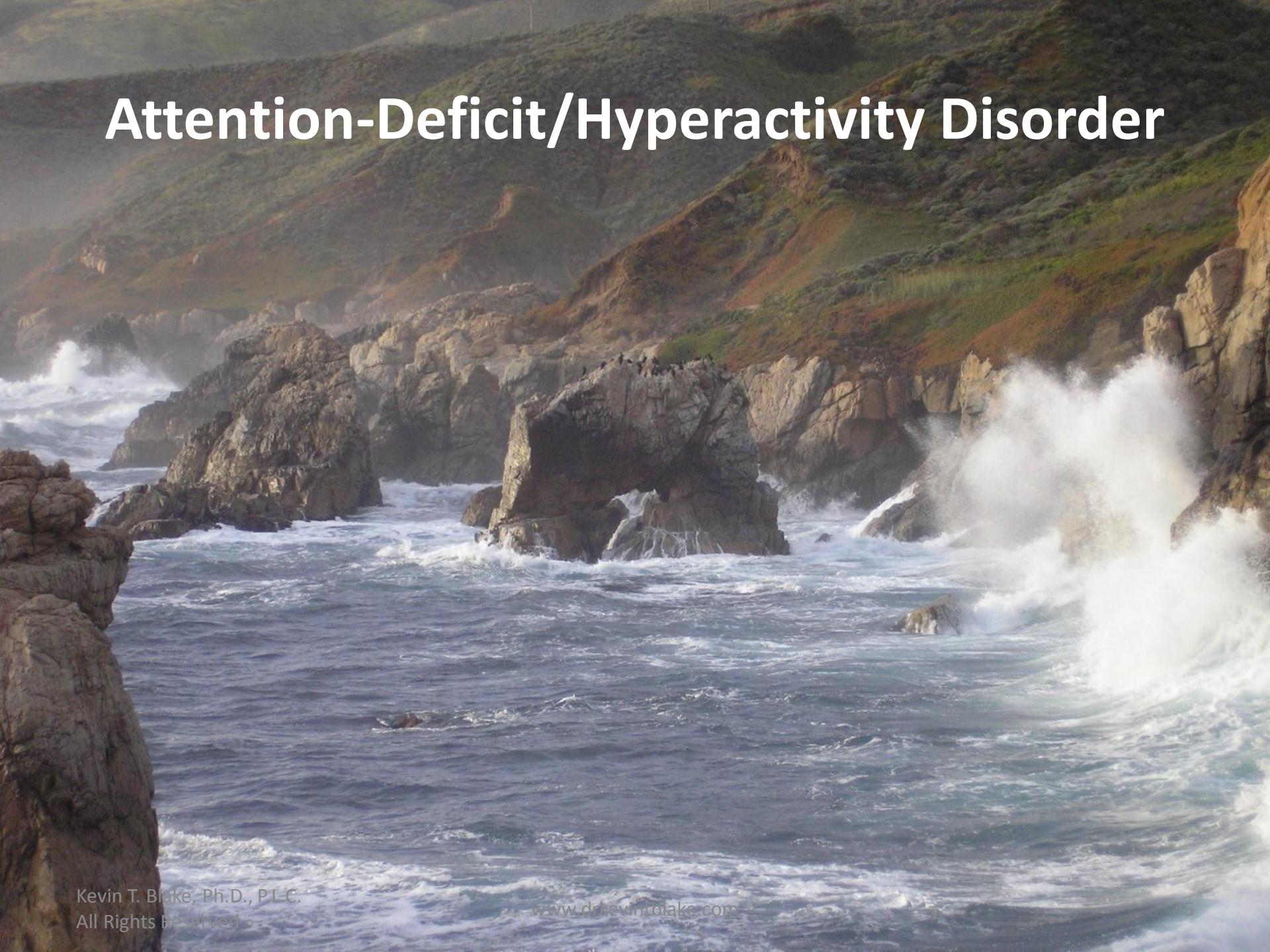
- Unstructured Time
- Writing Tasks
- Transitions
- Unexpected Changes
- Social Demands

--Minahan (November 12, 2014)

Teach



Attention-Deficit/Hyperactivity Disorder

A wide-angle photograph of a rugged coastline. The foreground is filled with dark, choppy ocean water. Large, white-capped waves break against a series of light-colored, layered rock formations. A massive, billowing white spray from a wave dominates the right side of the frame. In the background, a steep hillside covered in green vegetation rises behind the rocks. The sky is overcast with heavy, grey clouds.

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 (2012)

Executive Function and AD/HD

“There were significant EF (Executive Function, Sic.) (spatial working memory, spatial planning and verbal working memory) and low-EF (signal detectability, spatial span and visual recognition memory) impairments in persistent and subsyndromal ADHD. The impairments in EF were independent of low-EF despite significant moderate correlations between any two of these tasks. Adolescents with remitted ADHD showed no deficit in either EF or low-EF...This study suggests that adolescents with persistent and subsyndromal ADHD have EF and low-EF impairments that might contribute to ADHD independently”.

--Lin et al. (September 27, 2013)

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**

--Kasperek et al (2013)

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, et al. (2013)

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 (2012).

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.

AD/HD, Working Memory, & Reinforcement

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

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

--Dovis, et al. (2013)
--Alderson et al. (2013)

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 and Tripp (2013)

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

AD/HD & DSM-5®

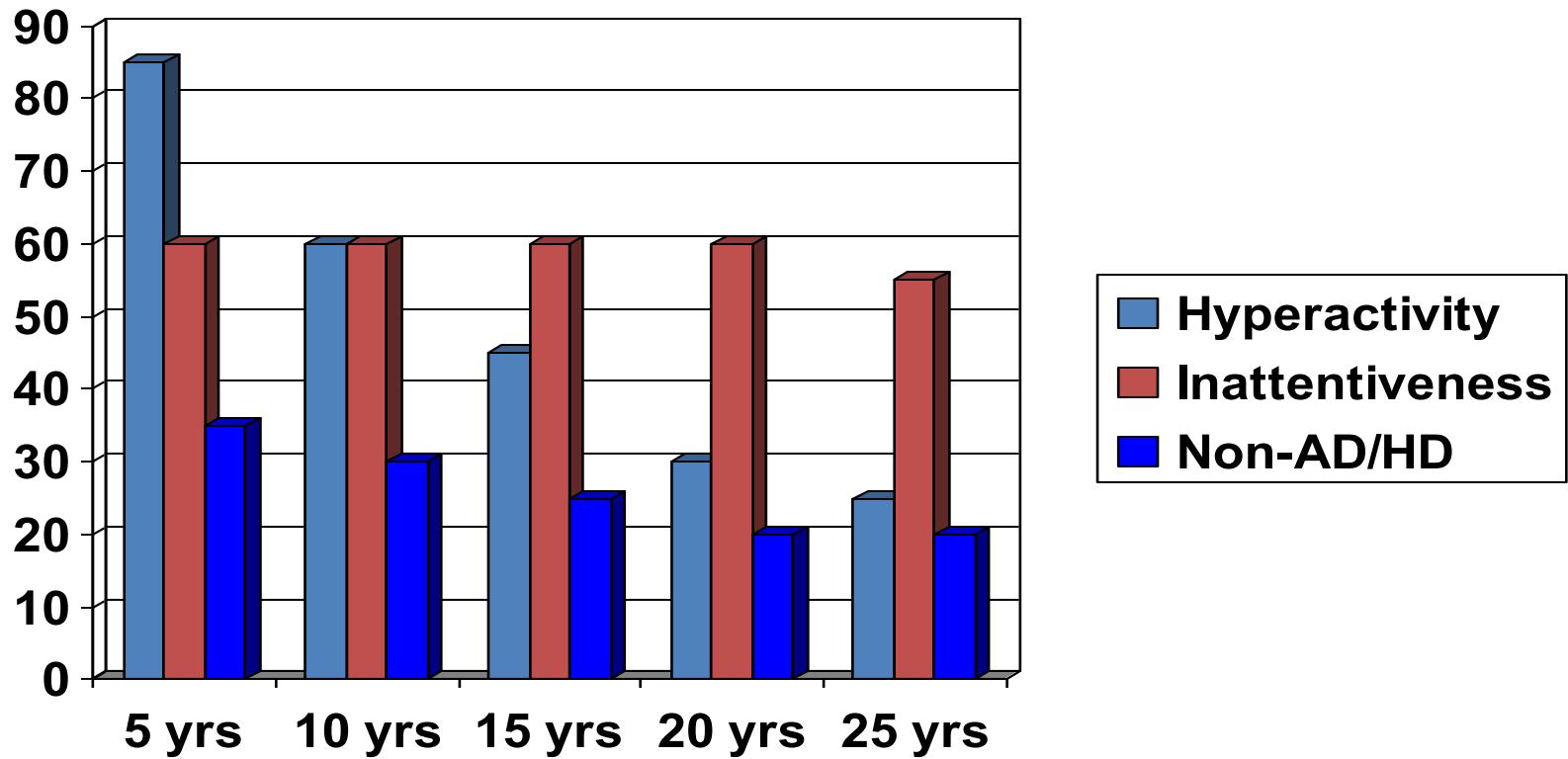
... in preschool and early grade school. As the child ages and his/her frontal lobe develops, they gain more control of their hyperactive motor movements and begin to appear as what was called (in DSM-IV® and DSM-IV, TR®) Combined Type. This process continues until their late 20's/early 30's when their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

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, Hinshaw, Hechtman, and Barkley (2012)

Longitudinal Studies of AD/HD



--Barkley, Murphy, and Fischer, M. (2008)

--Weiss, and Hechtman (1993)

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.

--Author (2010) American Psychiatric Association.

--Barkley, R. A. (November 9, 2012)

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)
- AD/HD is not caused by child rearing practices or environmental experience.

Barkley (2002)
- 65 to 75% of cases of Combined Type ADHD are caused by genetic anomalies.

Barkley (2008)
- 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 (2002)

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 (2008)

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 (2008)

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

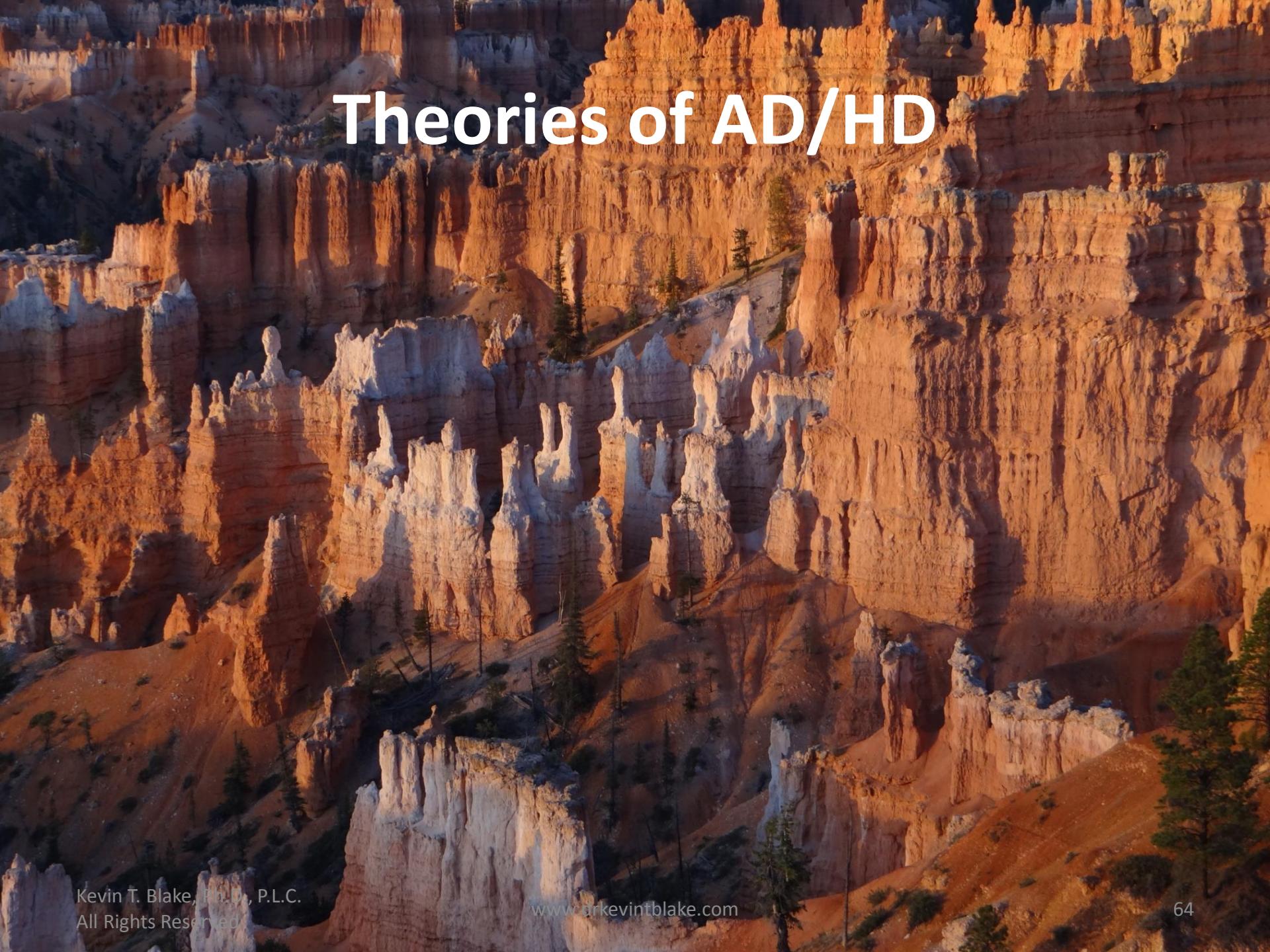
--Swanson and Castellanos (1998)

--Biederman (2006)

--Barkley (2008)

❖ 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 (2008)

The background image shows a vast landscape of Bryce Canyon, characterized by its unique hoodoo rock formations. The light of the setting sun casts long shadows and highlights the intricate textures of the red and orange sandstone rock. A narrow path or trail can be seen winding through the canyon floor between the formations.

Theories of AD/HD

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 (1997)

--Barkley (2006)

Summary of Tom Brown's Theory of AD/HD

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

--Brown (1995)
--Brown (2013)

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)

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 (1998), (2006)
- 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.

AD/HD and Anxiety

- **Children with AD/HD and Anxiety do not differ in AD/HD from Children with AD/HD w/o Anxiety.**
- **Children with AD/HD and Anxiety do not differ from children with Anxiety in terms of Anxiety.**
- **Children with AD/HD and Anxiety are more impaired in cognitive functioning and working memory.**

--Jarrett (August, 2013)

AD/HD & Sleep

- ❖ 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 (2006)

- 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 (2012)

AD/HD Treatment



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)

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

--Barkley (1998), (2006)

--Ramsay (2010)

Your Tax Dollars at Work

The Multimodal Treatment Study of Children with Attention Deficit Hyperactivity Disorder

--Jensen, et al. (2001)

(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 (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.**

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”**
- **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

- **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.**

NIMH Research Treatment for Attention Deficit Hyperactivity Disorder (ADHD) (No Date): The Multimodal Treatment

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 (2007)

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 (2002)

“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 (December, 2004)

What the Longitudinal Studies & The MTA Study 8 Year Follow-Up Say About AD/HD Treatment

By far the best results come from uninterrupted treatment with medication and behavioral techniques throughout life.

--Swanson, Hinshaw, Hechtman, and Barkley, (November 9, 2011)

Non-Medical AD/HD Treatments

A wide-angle photograph of a majestic mountain range. The peaks are rugged and partially covered in snow. In the foreground, a deep blue lake reflects the surrounding mountains. A small, dark peninsula or island with a few trees extends into the lake from the bottom right. The sky is overcast with white and grey clouds.

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 (2006); Ramsay, (2010)

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 (WM) that becomes worse with age.
- **MAY** help relieve visual spatial WM difficulties and reading comprehension in Combined Type AD/HD.
- ***More Research is needed!***

www.cogmed.com

--Klingberg (February, 2006); Barkley (February, 2006); Ingersoll, B. (October 26, 2006); Klingberg, and Anderson (October 28, 2006)

AD/HD Coaching and Professional Organizing



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 (1998)

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

--Parker, Hoffman, Sawilowsky, and Rolands (December 15, 2011)

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 (2002)

Exercise & ADHD



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, Saliba, Raine, Picchetti, and Hillman(March, 2013)
- 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.

Mindfulness Training



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, Bogels, and Peijnenburg (February, 2012)

A wide-angle photograph of a stunning mountain landscape. In the foreground, a deep turquoise lake stretches towards the center. The lake is framed by a dense forest of tall, dark green coniferous trees. In the background, a range of majestic mountains rises, their peaks covered in white snow. The sky above is a clear blue with scattered white clouds.

Dogs & AD/HD

Dogs & AD/HD

- “Results suggest that CAI (Canine Assisted Intervention, Sic.) offers a novel therapeutic strategy that may enhance cognitive-behavioral interventions for children with ADHD”.

--Schuck (September 23, 2013)

**4Paws For Ability
253 Dayton Avenue
Xenia, OH 45385**

**Training Center:
937-374-0385**

Website:
www.4pawsforability.org

Classroom Management For AD/HD Children



What Works Clearinghouse

- The U.S. Department of Education, through the Institute of Education Sciences has created the *What Works Clearinghouse* to provide the latest research to classroom teachers with what works with all kind of kids in the classroom.
- <http://ies.ed.gov/ncee/wwc/>

Giving this kid an accommodation is unfair. If I give it to this kid I must give it to all the others.

- If a child needs glasses to see the board do all children in the class need to wear glasses with the same prescription so it will be *fair*?
- Being *fair* is not always the most moral thing one can do for a child. Being fair may mean to give them what they need.
- I learned this from a guy named C. Wilson Anderson, Jr., MAT

AD/HD

Stimulants in the Classroom

“In general, classroom behavior is significantly improved as is work productivity, although there is less of an impact on academic accuracy...which is usually not as problematic for children with ADHD as is productivity.”

--Barkley (February 22, 2013)

Teacher Behavior

“The major implications of this research is that the behavior of the students with BD (Behavior Disorders, sic.) in general education settings is more dependent on setting factors and teacher practices than is the behavior of students without BD.” (p. 236)

--Bevda, Zentall, and Ferko, (2002).

Barkley's Rules for Classroom Management



Barkley's Rules for Classroom Management

- 1. “Rules and instruction provided to children with ADHD must be clear, brief and often delivered through more visible modes of presentation and external modes of presentation than required for the management of children without ADHD.” (p. 7)**
- 2. “Consequences used to manage the behavior of ADHD children must be delivered swiftly and more immediately than is needed for children without ADHD.” (p. 8)**

Barkley's Rules for Classroom Management

3. “Consequences must be delivered more frequently, not just more immediately, to children with ADHD in view of their motivational deficits.” (p. 8)

--Barkley (2008)

Side Bar:

“ADHD children are less sensitive to social praise and reprimands, so the consequences for good or bad behavior must be more powerful than those needed to manage the behavior of non-ADHD children.” (p. 223)

--Piffner (1995)

Barkley's Rules for Classroom Management

4. “The type of consequences used with children with ADHD must often be of a higher magnitude, or more powerful, than that needed to manage the behavior of other children.” (p. 8)
5. “An appropriate and often richer degree of incentives must be provided within a setting or task to reinforce appropriate behavior before punishment can be implemented.” (p. 8)

Side Bar

“Rewards and incentives must be put in place before punishment is used, or your child will come to see school as a place where he or she is more likely to be punished than rewarded. Make sure the teacher waits a week or two after setting up a reward system at school before starting to use punishment. Then make sure the teacher gives two to three rewards for each punishment.” (p. 223)

--Piffner (1995)

Barkley's Rules for Classroom Management

6. “Those reinforcers or particular rewards that are employed must be changed or rotated more frequently for ADHD children than for those without ADHD, given the penchant of the former for more rapid habituation or satiation to response consequences, apparently rewards in particular.” (p. 8)

--Barkley 2008

Side Bar

- “ADHD Children become bored with particular rewards faster than other children, and teacher who fail to recognize that fact often give up on the program too soon, believing it has stopped working.” (p. 223)

--Piffner (1995)
- The 30 to 40% rule also applies to how long rewards and punishments work with AD/HD kids.

Barkley's Rules for Classroom Management

- 7. “Anticipation is the key with ADHD children.” (p. 8)**
- 8. “Children with ADHD must be held more publicly accountable for their behavior and goal attainment than other children.” (p. 8)**
- 9. “Behavioral interventions, while successful, only work while they are being implemented and, even then, require continued monitoring and modification over time for maximal effectiveness.” (p. 8)**

--Barkely (2008)

Barkley's 80%- 20% Rule

- **Using Barkley's theory of AD/HD 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),(in press), (2011)

Attention Training Systems

➤ Gordon Attention Training System

This rewards the child every minute with a point. If the teacher notices the child is off task he/she can take a point away by remote control. Research has shown this works well with AD/HD children on medication.

http://addwarehouse.com/shopsite_sc/store/html/attention-training-system-starter-package.html

➤ Classroom Do Jo: Behavior Management Software

Smart Phone apps and Smart Board Apps –
www.classdojo.com

❖ Place a timer on the child's desk to give them an external representation of time.

Specific Learning Disorder



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)
- **“Although learning disabilities (specific learning disorder, sic.) may be exacerbated by other variables, such as ineffective teaching strategies or socioeconomic barriers, this paper supports the position that the essence of learning disabilities is neurobiological in nature.” (p. 61)**

--Fiedorowicz, C., et.al. (2001)

What Does “Neurobiological” Mean?

“Of particular relevance to this review is the compelling evidence in support of the neurobiological basis of learning disabilities. Studies employing widely divergent methodologies, e.g. research using genetic analysis, neuroanatomical neuroimaging, electrophysiological recording, pathological analysis of brain tissue at autopsy, and neuropsychological evaluation have yielded highly convergent conclusions in support of a neurobiological etiology.” (p. 70)

--Fiedorowicz, C., et.al. (2001)

Specific Learning Disorder with Impairment in Reading/"Dyslexia" is NOT new!

➤ **Sally Shaywitz (2003)**
Reported that Rudolf Berlin a physician from Stuttgart, Germany wrote of "dyslexia" in 1887.

Shaywitz, S. (2003)

- **70% of Dyslexia is genetic**
- **If you have an anomaly on the DCDC2 gene you are 19 times more likely to be dyslexic**
- **If you have an anomaly on the FOXP2 gene you are twice as likely to be dyslexic**

Wilcke (November 14, 2014)



Differences in the Dyslexic Brain

Differences in the Dyslexic Brain

Duane (1993); Riccio, and Hynd (1996); Fiedorowicz, et. al. (2001); Richardson (1994); Filipek, et.al. (1999); Livingstone (1999) Fawcett, and Nicolson (2001); Quinghua, et al. (July 31, 2013); Evans, eta al (April 13, 2013)

- An irregularity in the cellular architecture of the posterior planum temporale region of Wernike's area in the left temporal lobe
- They have ectopias and dysplasias in far greater numbers
- 2/3rds of normals have asymmetry of planum temporale ($Lt > Rt$)³
- Dyslexics' planum temporale are symmetrical
- Increased posterior symmetry⁴
- Dyslexics with severe language delay have reversed parietal-occipital asymmetry – RT planum > LT
- Dyslexics tend to have a larger right hemisphere than left in adulthood
- "...several studies on low-level visual processing have found that people with dyslexia show visual abnormalities that implicate a deficit in the transient (magnocellular) subdivision of the visual pathway" (p. 81)
- ...differences in cell size and cell-size distribution in posterior and anterior cerebellar cortex, and inferior olive with no differences in the output areas (the dentate nucleus)"(p. 98-99)
- Dyslexic female brains differ from Dyslexic male brains

SLD: Dyslexia and The Cerebellum

- *80% of dyslexics show signs of cerebellar problems!*
- Automaticity is the problem!
- When multitasking and rapid processing are needed
- Thinking is a frontal lobe function
- It is a problem of fluency
- “...fluency is in essence the ability to repeat previous actions or thoughts more and more quickly without conscious thought.” (p. 101)

--Fawcett, and Nicolson (2001); Fawcett (August 11, 2010)

SLD: Dyslexia and The Cerebellum

Nicolson Said Bottom Line:

“...That means if you have a task that takes 4 hours for the non-dyslexic kid to learn, it will take twice as long for the dyslexic kid; 8 hours. But, its not linear. You have a task which takes 100 hours it will take 10 times as long...”

Nicolson, and Fawcett (November, 2000)

“...If you have a task that takes 10,000 hours it will take 100 times as long, and so on. Therefore if you have something like reading, writing and spelling which takes 100s of hours that's the sort of thing in which dyslexic children are particularly adversely affected.”

SLD: Dyslexia and Procedural Training

❖ The *Square Root Rule*:

“The extra time needed for a dyslexic child to master a task is proportional to the square root of the time a non-dyslexic child takes.”

--Fawcett (November 5, 2004)

SLD: Dyslexia and Automaticity

- DAD: Dyslexia Automaticity Deficit
- Dyslexics get tired more quickly when learning and/or performing a new skill than the norm.
- CC: “This states that, despite their more limited automaticity of skill, dyslexic children are able to perform at apparently normal levels most of the time by ‘consciously compensating,’ that is consciously concentrating (controlled processing) on performance that would normally be automatic.” (pp. 68-69)

--Nicolson and Fawcett (2008)

- Dyslexics are slower at unlearning than non-dyslexics.

--Nicolson and Fawcett (November 14, 2014)

Automaticity, Sleep, & Dyslexia

- Approximately 50% of dyslexics have failures of overnight sleep procedural memory consolidation of a simple motor skill.

--Nicolson, Fawcett, Brookes, and Needle (August, 2010)

- Bruni and colleagues discovered dyslexics have irregular EEGs during non-REM sleep that appear to be related to their disability. The hippocampus is involved in this difference.

--Bruni et al. (2009)

Your Tax Dollars at Work

RESEARCH PROGRAM IN READING DEVELOPMENT, READING DISORDERS, AND READING INSTRUCTION

Initiated 1965

Fletcher, J.M., Lyon, G.R., Fuchs, L.S. and Barnes, M.A. (2007). Learning Disabilities: From Identification to Intervention. New York, NY: Guilford.

Your Tax Dollars At Work

- Run by the National Institute of Child Health and Development (NICHD)
- Which is part of the National Institute of Health (NIH)
- Study began in 1965 and continues today!
- As of 1999 over **\$150,000,000.00** has been spent!
- Study now budgeted for **\$15,000,00.00** per year!

Your Tax Dollars At Work

- Conducted at 42 sites in the U.S. and Europe
- Follow-up studies for over 14 years
- Much of the neurological research in this presentation comes from this study.
- China, England, Israel, Russia, Sweden and Turkey have conducted similar studies...

--Lyon, G.R. (1999)

Your Tax Dollars At Work

- 30,000 scientific works from NICHD research
- 44,000 studied, 5 years old and up; with 5 year follow-ups

--Lyon (Thursday, February 27, 2003)

Your Tax Dollars At Work

- 30,000 scientific works from NICHD research
- 44,000 studied, 5 years old and up; with 5 year follow-ups
- 8,000 children have been in the study as of 2004.
The follow-up study is now 21 years.
- 3,800 in new adult study
- “2 to 6% of the population are the ‘Hard Core’ Dyslexics that will not improve with ‘Good Instruction’. They have the full dyslexic neurology and need multi-sensory approaches.”

--Lyon, G.R. (March 19, 2004).

Your Tax Dollars At Work

- 7% of the population will meet criteria for Major Depressive Disorder in any year
- Persistent Depressive Disorder (Dysthymia) is 0.05.
- 3 to 13% Social Anxiety Disorder (Social Phobia) is 7%
- 0.9% in teens & 2.9% in adults Generalized Anxiety Disorder
- Bipolar Disorder 0.6%

--Author (2013)

Reading Disorder-Dyslexia

“The idea that learning to read is just like learning to speak is accepted by no responsible linguist, psychologist, or cognitive scientist in the research community.” (pp. 285-286)

--Stanovich (1994)

Reading a Recent Cultural Invention

“As a relatively recent cultural invention in human evolution, reading is an important gateway to personal development and socioeconomic success” (p. 12,835).

--Quinghua, et al. (July 31, 2013)

SLD-Dyslexia

The Symptoms of Dyslexia are:

- 1. Weak Phonemic Awareness***
- 2. Slow, Rapid Automatized Naming (WM deficit: Fluency)***
- 3. Poor Orthographic Processing***
- 4. Exceptionally Poor Automatization***
- 5. Poor Coordination***

--Fawcett (2001); Blake (2003); Berg
(November 12, 2014)

- ❖ Some Dyslexics had all the symptoms.
- ❖ Some only had one.
- ❖ Four had none of the aforementioned deficits.

--Reid (November 11, 2006)

Definition Of Dyslexia

“Dyslexia is a specific learning disability that is neurological in origin. It is characterized by difficulties with accurate and/or fluent word recognition as well as by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the lack of provision of effective classroom instruction. Secondary consequences may include...”

Definition Of Dyslexia

...problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.”

Adopted by the National Institutes of Health (NIH) and the International Dyslexia Association (IDA) 2002

--International Dyslexia Association (April 20, 2005)

THE PAOMNNEHAL PWEOR OF THE HMUAN MNID

Aoccrdnig to rscheearch at Cmabrigde Uinervisy,
it deosn't mttaer in waht oredr the ltteers in a
wrod are, the olny iprmoatnt tihng is taht the frist
and lsat ltteer be in the rghit pclae. The rset can
be a taotl mses and you can sitll raed it wouthit a
porbelm.

--Davis (2003); Rawlinson (1999)

The “Dyslexia bd pq Phenomenon”

“When children learn to read they must “unlearn” mirror generalization in order to process ‘b’ and ‘d’ as distinct letters. In some children, this unlearning process, which goes against the spontaneous abilities inherited from evolution, seems to present a specific source of impairment.” (p. 253)

“Mirror writing occurs in all cultures, including China and Japan. It appears for a short period of time at the age when children first begin to write, and then it promptly vanishes. Unless this phenomenon extends beyond the ages of eight to ten, there is no cause for alarm. At this age, mirror errors are indeed more frequent in dyslexic children, though they can disappear later.” (p. 265)

--Dehaene (2009)

“LEXDEXIA”

“reversals” (seeing “was” as “saw”) and “rotations” (“b” as “p”; “p” as “d”, etc.) occur in most children up through fourth grade. This is typical in the development of visual orthographic memory.

- The brain automatically learns what something looks like in mirror image (this is an instinct).
- Only about 7% of adult dyslexics have this concern.
- Dyslexics are slower at unlearning than non-dyslexics.
- ❖ **Dyslexia is not seeing the word “WAS” as “SAW”.**

--Anderson (January 23, 2006); Dehaene (2009); Badian (2005); Nicolson and Fawcett (November 14, 2014)

Dyslexia and EF

- People with dyslexia have weaknesses in the central executive and phonological loop.
- The visual-spatial sketchpad controls orthographic processing
- Spelling involves phonological loop, visual-spatial sketchpad and central executive-All weaknesses in dyslexics
- Dyslexics-STM & WM problems
- Can predict if Dyslexic by WM scores
- WM predicts reading fluency and comprehension
- WM independent of IQ, as is Dyslexia

--Berg (November 12, 2014)

Reading and Working Memory

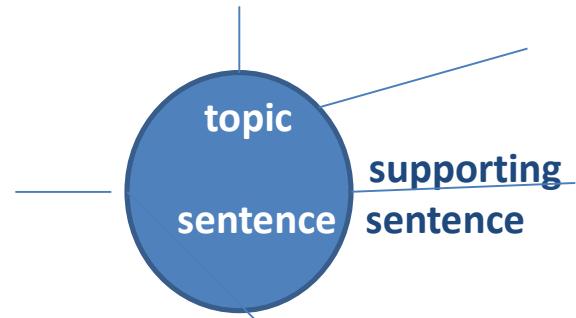
- There are limited working memory resources for reading comprehension in dyslexics. Working memory is independent from reading fluency. –Swanson and O'Connor (September 10, 2009)
- Verbal working memory is a very strong predictor of reading skills, but visual-spatial working memory is significant in predicting in reading skills and plays a significant role in reading comprehension. –Pharm and Hasson (May 31, 2014)

Dyslexia, Comprehension & Working Memory

“Reading comprehension relies heavily on working memory and thus requires sufficient working memory resources...A reader who is using working memory to decode words usually does not have enough working memory capacity remaining to devote to comprehension” (p. 52).

--Dehn (2014 A)

EF Treatments for Dyslexia



- Develop automatic decoding of letters
- Teach using guided response interactions
- Use an explicit, systematic, and strategically focused teaching model

--Berg (November 12, 2014)

- Teach how to read with graphic organizers and rules for highlighting to chunk information
- Teach logic and visualization strategies to reduce burden on WM and to compensate for rote memory weaknesses

How To Help Those With Dyslexia To Reading

National Reading Panel

Panel of government funded experts released a report to United States Congress (April 13, 2000)

- Reviewed over 100,000 reading research articles published since 1966
- 10 to 15 percent of dyslexics will drop out of high school.

How to Help Those With Dyslexia To Read

National Reading Panel

- **First teach phonemic awareness (rhyming, clapping out word sounds, etc.)**
- **Second teach phonics (sound to symbol)**
- **Third teach Whole Language**
- **In this order with dyslexics**

--National Reading Panel (4/13/2000)

Multisensory Teaching Techniques

- **Orton-Gillingham Approach**
 - **Alphabetic Phonics**
 - **Association Method**
 - **Language!**
 - **Lexia-Herman Method**
 - **Lindamood-Bell**
- International Dyslexia Association (2005)
- **Project Read**
 - **Slingerland**
 - **Sonday System**
 - **Sounds in Symbols**
 - **Spalding Method**
 - **Starting Over**
 - **Wilson Foundations & Wilson Reading**

Technology for Dyslexia

- Intel Reader:
www.intel.com/pressroom/kits/healthcare/reader/
- Kreader Mobile:
<http://www.knfbreader.com/index.php>
- Kurzweil 1000: www.kurzweiledu.com/kurzweil-1000-v13-windows.html
- Dragon NaturallySpeaking:
www.nuance.com/dragon/index.htm
- Ginger: www.gingersoftware.com
- WizcomTech Reading Pen 2TS:
<http://www.wizcomtech.com/eng/catalog/a/rp/>
- Franklin Spelling Ace: www.franklin.com
- LearningAlly: www.learningally.org

Teaching Resources

What Works Clearinghouse

<http://www.w-w-c.org>

Established by the U.S. Department of Education to provide, “...a central, independent and trusted source of scientific evidence of what works in education.”

www.ed.gov/rchstat/research/pubs/robust_evid/guide_pg9.html

The Promising Practices Network

<http://www.promisingpractices.net>

Highlights programs and practices that scientific research indicates works with children, adolescents and families.

www.ed.gov/rchstat/research/pubs/robust_evid/guide_pg9.html

Teaching Resources

Campbell Collaboration

<http://www.campbellcollaboration.org/frallbrary.html>

- “...Registry of systematic reviews of evidence on the effects of interventions in the social, behavioral, and educational arenas.”

www.ed.gov/rchstat/research/pubs/rigorousevid/guide_pg9.html

Reading Comprehension



Reading Comprehension

Good reading comprehension requires a mental model of the situation, good word reading and comprehension, an understanding of words, discourse and sentences. All of the above needs to be well coordinated.

--Cain (November 12, 2014)

Reading Comprehension & Executive Function

“Executive processing also plays a critical role in reading comprehension...From selecting effective reading strategies and monitoring comprehension to resolving comprehension roadblocks, executive processing is absolutely necessary for successful reading comprehension. A reader may have good reading fluency and possess adequate fluid reasoning abilities but lack comprehension if executive processing is not engaged while reading” (p. 53).

--Dehn (2014 A)

Specific Learning Disorder with Impairment in Reading Comprehension

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, et al. (2013)

Treatment of Specific Learning Disorder with Impairment in Reading Comprehension

- | | |
|--|---|
| <ul style="list-style-type: none">1) Stimulant Medication2) SQ4R3) Bell, N. (1991). <u>Visualizing and Verbalizing for Language Comprehension and Thinking</u>. San Luis Obispo, CA: Grander Educational Publishing.4) Cogmed
(www.cogmed.com)5) Work with a Speech Language Pathologist | <p>For Details go to:</p> <p>Blake, K. (May, 2013). <u>Two Common Reading Problems Experienced By Many AD/HD Adults, 2013 Edition</u>.
www.drkevintblake.com.</p> <p>(Click link on top of home page entitled: “Presentations On Disorders”)</p> |
|--|---|

Autism Spectrum Disorder



2014 06 30

Autism Spectrum Disorder

People who were diagnosed with Asperger's disorder, autism, pervasive developmental disorder, and pervasive developmental disorder-not otherwise specified using DSM-IV®/DSM-IV, TR® criterion have autism spectrum disorder by DSM-5® criterion. Those with social communication problems only have social (pragmatic) communication disorder.

--Author (May 18, 2013).

ASD's Central Difficulty

“Regardless of the diagnosed person’s global intelligence, savant-like talents, verbal ability, or mechanical giftedness, social difficulties are the primary source of impairment for most people with ASD and central to the diagnostic criteria of ASD” (p. 124).*

***--White, Scahill, and Ollendick (2013); Klin (2001)**

Autism and Genetics

“Autism (Spectrum Disorder, sic) is known to be a genetic disorder, at least in part.” (p. 2 of 3)

Author (No Date). Fact Sheet: Study to Explore Early Development (SEED). Center for Disease Control and Prevention. From website:
<http://www.cdc.gov/ncbddd/autism/states/new/CADDRE%20Fact%20Sheet%20July%2007.pdf>.

“It is now abundantly clear that ASD has a genetic component, with the best evidence suggesting moderate genetic heritability” (p. 41).

--Durand (2014)

What does **NEUROBIOLOGICAL** mean?

- “The latest thinking in this area is that ASD is a developmental neurobiological disorder, meaning that a variety of developmental changes occur in the brains of people with this disorder” (p. 5).

--Durand (2014); Schultz, R.T., Romanski, L.M. and Tsatsanis, K.D. (2000)

- At present few workers in the field of ASD believe that psychological or social influences play a major role in the development of this disorder” (p. 40).

--Durand (2014)

- “The field has come a long way since parents were considered to be the cause of autism spectrum disorders.” (p. 64)*

*Ozonoff, S., Dawson, G. and McPartland, J. (2002); Kaiser, M.D., et al. (November 15, 2010)



Brain Differences in ASD

Neuroanatomy of ASD

- Increased grey matter anterior temporal & dorsolateral prefrontal lobe
 - Decreased grey matter occipital and medial parietal areas
 - Significant reduction in size of cerebellum (fewer Purkinje cells)
- Ecker, et al. (February 8, 2012); Durand (2014)
- Large grey matter differences in the following:
 - cingulate, motor area, basal ganglia, amygdala, inferior parietal lobe, prefrontal lobe
 - Reductions in white matter volume
 - These differences are linked to autistic symptoms and persist throughout life.

Executive Functioning and ASD

***“Behaviors observed in individuals with ASD are suggestive of executive dysfunction; these include response perseveration, disinhibition, narrow range of interests, concrete thinking, difficulty with flexibly shifting perspectives, as well as challenges with self-monitoring and planning” (86).**

--*Tsatsanis (2014); Scarpa (2013)

“Kanner’s Vs. Asperger’s ASD”

- Kanner’s: “Condition characterized by significant impairment in social interactions and communication and restricted patterns of behavior, interest, and activity” (p. 124).
- Asperger’s: “Condition Characterized by impairments in social relationships and restricted or unusual behaviors but without the language delays” (p. 124).

--Durand, M.V. (2014)

“Kanner’s Vs. Asperger’s ASD”

“Asperger syndrome (AS) is a serious and chronic neurodevelopmental disorder characterized by significant and severe social deficits along with restricted interests, as in autism, but, in contrast to autism, relatively and selectively preserved language and cognitive abilities” (p. 1).

--Volkmar, Klin, and McPartland (2014)

Compassion

- Three things make humans behaviorally different from all other species:
 - Our capacity to delay our response to our environment (Bronowski, 1977).
 - Our capacity for compassion (Leakey, 1995).
 - Our capacity for long-term compassion (Grandin, 1995).

--Bronowski (1977); Leakey (1995); Grandin (1995)

Compassion

“In the summer of 1982 Kat was newly pregnant and Washoe doted over her belly, asking about her BABY. Unfortunately, Kat suffered a miscarriage. Knowing that Washoe had lost two of her own children, Kat decided to tell her the truth. MY BABY DIED, Kat signed to her. Washoe looked down to the ground. Then she looked into Kat’s eyes and signed CRY, touching her cheek just below the eye. When Kat had to leave that day, Washoe would not let her go. PLEASE, PERSON HUG, she signed.” (Fouts, 1997; Edwards, 2000)

--Fouts (1997); Edwards, (Spring, 2000)

Compassion

Bonobo: Pan Paniscus Vs.

Chimpanzee: Pan Troglodytes

- Shares 98% of its genetic profile with humans.
- They have been compared to australopithecines
- “In physique, a bonobo is as different from a chimpanzee as a Concorde is from a Boeing 747.”
(p. 3 of 14)

--DeWaal, F.B.M. (March 1995)

Chimpanzee, Bonobos, Humans & Vasopressin

“Similar genetic variation in the human AVPR1A may contribute to variations in human social behavior including extremes outside the normal range of behavior and those found in autism spectrum disorders.”
(p. 2187)

--Hammock and Young (December, 2006)

Chimpanzee, Bonobos, Humans & Vasopressin

“Our two closest primate cousins – chimpanzees and bonobos – also have different lengths of this gene, which match their social behaviors. Chimpanzees, who have the shorter gene, live in territorially based societies controlled by males who make frequent, fatal war raids on neighboring troops. Bonobos are run by female hierarchies and seal every interaction with a bit of sexual rubbing...”

“...they are exceptionally social and have a long version of the gene. The human version of the gene is more like the bonobo gene. It would seem that those with the longer version of the gene are more socially responsive. For example, this gene is shorter in humans with autism...” (p. 74)

--Brizendine (2006)

Teco, The Autistic Bonobo Toddler

- Bonobo social brain closer to humans than chimps.
 - 18 month old bonobo, Teco, male is autistic.
 - Has repetitive movements
 - Strict adherence to routines, or gets agitated
 - Repetitive behaviors
 - Likes objects, not bonobos
 - Likes parts of objects
 - No joint attention
 - Avoids eye contact
 - At two months nursing difficulties
- Deweert (April 15, 2011)

Alexithymia



2014 07 02

What is Alexithymia?

- 1. Tends not to have fantasies, no feelings and have sharply limited emotional vocabularies.**
- 2. They have colorless dreams.**
- 3. They cannot tell bodily sensations from emotions and are baffled by them.**
- 4. They have great difficulty making decisions because they lack “gut feelings.”**

--Goleman (1995)

Alexithymia

- Medial prefrontal areas explicit representations of the self
 - Posterior superior sulcus detection of biological motion and representation of others
 - Suggests the, "...ability to mentalize from a system for representing actions" (p. 1692).
- Frith, C.D. and Frith, U. (1999)
- The medial prefrontal cortex allows for theory of mind
 - *“...that successful social adaptation requires the ‘dual task’ ability to stay in touch with the needs of others while paying due attention to one’s own needs.” (p. 20)*
- Lane (2000)

Mirror Neurons

- Italian study of macaque monkeys in 1992
 - Known for years cells of premotor cortex fire just before movement.
 - Discovered that same cells fired in the same pattern when another primate was seen making the same movement!
 - Humans have these **MIRROR NEURONS** too.
 - They allow us to intuit others intentions and to feel their pain.

--Rizzolatti, Fogassi, and Gallese (November, 2006); Lametti (June 9, 2009)

Mirror Neurons

“Much as circuits of neurons are believed to store specific memories within the brain, sets of mirror neurons appear to encode specific sets of actions. This property may allow an individual not only to perform basic motor procedures without thinking about them but also to comprehend those acts when they are observed, without any need for explicit reasoning about them.” (p. 56)

--Rizzolatti, Fogassi, and Gallese, (November, 2006)

“With knowledge of these neurons, you have the basis for understanding a host of enigmatic aspects of the human mind: ‘mind reading’ empathy, imitation learning and even the evolution of language. Anytime you watch someone else doing something (or even starting to do something), the corresponding mirror neuron might fire in your brain, thereby allowing you to ‘read’ and understand another’s intentions and thus develop a sophisticated *theory of other minds.*” (p.2)

--Ramachandran (March 8, 2005)

Mirror Neurons

➤ **Mirror Neuron System:**

- Superior Temporal Sulcus
- Inferior Frontal Cortex
- Rostral Inferior Frontal Lobe

--Goldstein, Naglieri, & Ozonoff, (2009).

Mirror Neurons:

Help us begin to generate appropriate social responses.

--Caggiano, Fogassi, Rizzolatti, Their, & Casile (April 2009)

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)

Mirror Neurons & 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, Fogassi, and Gallese, (November, 2006)

Barkley (2008) said that those with 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 (2008)

Mirror Neurons & Autism Spectrum Disorder

- “Broken mirror neurons” MAY explain isolation and lack of empathy.
- Those with autism spectrum disorder lack activity in many areas associated with mirror neurons.

--Ramachandran, and Oberman (November, 2006)

Uta Frith: Question Can you combine emotional working memory finding with mirror neuron research to explain ASD?

Answer: How do you explain a sociopath?

--Frith (November 1, 2007)

The Three Types of Empathy

- Motor Empathy
- Cognitive Empathy
- Emotional Empathy

- Sociopaths:
 - Excellent motor empathy
 - Excellent Cognitive Empathy
 - Poor Emotional Empathy
- ASD
 - Poor Motor and Cognitive Empathy
 - Better Emotional Empathy

--Blair (December, 2005)

--Baron-Cohen (2011)

Mirror Neurons

“Our results show that this ‘mirror system’ integrates observed actions of others with an individual’s personal motor repertoire and suggests the human brain understands actions by motor stimulation” (p. 1243).*

--*Calvi-Merino, Glaser, Greeze, Passingham, and Haggard (2005). Glaser (January 2005).

Alexithymia and AD/HD, ASD

- 22% of adults with AD/HD meet criteria for alexithymia

--Edel, et al. (September 24, 2010)

“...some individuals with ASD may experience characteristics of *alexithymia*, a diminished vocabulary to describe the different levels of emotional experience, especially the more subtle emotions” (p. 35).*

--*Attwood, T, and Scarpa, A. (2013).

-- Attwood, T. (2007).

“Symptoms” of Alexithymia

- **Difficulty identifying different types of feelings**
- **Difficulty distinguishing between emotional feelings and bodily feelings**
- **Limited understanding of what caused the feelings**
- **Difficulty verbalizing feelings**
- **Limited emotional content in the imagination**
- **Functional style of thinking**
- **Lack of enjoyment and pleasure-seeking**
- **Stiff, wooden posture**

--Author (January 23, 2003)

What About PTSD?

- 1. Chronic Stress**
- 2. Cascade of Cortisol**
- 3. Synaptic sever,
dendrites atrophy,
cells die, hippocampus
shrinks, "...like a
raisin"**

--Ratey (2008) (p. 74)

- Medication and talk therapy can make the hippocampus grow back to it's original size!
 - Durman, R.S. (2002); Sapolski, (2004); Prince (October 28, 2006)
- Exercise can work, too!
 - Ratey (2008)

Diagnostic Tools for Alexithymia

➤ Toronto Alexithymia Scale (TAS-20)

--Taylor (1992)

➤ Observer Alexithymia Scale (OAS)

--Haviland, Warren, and Riggs (October, 2000)

➤ Bermond–Vorst Alexithymia Questionnaire (BVAQ)

--Vorst, and Bermond (February, 2001).

Mirror Neuron Treatment



Treatment for Emotional Working Memory Difficulties

➤ Stimulant Medication?

- Lessens Hyperactivity and Impulsivity in AD/HD, Combined Type Individuals
- Hundreds of Double Blind Studies to Support

--Barkley (2006)

➤ Possible Alternative Method: **COGMED**

--Klingberg (February, 2006); Barkley(February, 2006); Ingersoll (October 26, 2006); Klingberg, and Anderson (October 28, 2006).

Oxytocin & Vasopressin In Autism

“Oxytocin and vasopressin contribute to a wide variety of social behaviors, including social recognition, communication, parental care, territorial aggression and social bonding.” (p. 2187)

--Hammock and Young (December, 2006)

Emotional Salience Landscape Difficulties-Mirror Neurons

“In a typical child, sensory information is relayed to the amygdala, the gateway to the emotion-regulation limbic system. Using input from stored knowledge, the amygdala determines how the child should respond emotionally to each stimulus, creating a salience landscape of the child’s environment. In children with autism, the connections between the sensory areas and the amygdala may be altered, resulting in extreme emotional responses to trivial events and objects.” (p. 68)

--Ramachandran, and Oberman (November, 2006)

Some Treatments For Mirror Neuron Difficulties

- Risperidone and MDMA (ecstasy):
To raise oxytocin levels
- Biofeedback:
To help control anxiety
- Oxytocin Nasal Spray

--Author (1997); Ramachandran, and Oberman (November, 2006); Guastella, , Einfeld, Gray, Rinehart, Tonge, Lambert, and Hickie (April 1, 2010); Bate (2013)

MDMA & Oxytocin Nasal Spray ARE EXPERIMENTAL TREATMENTS!!!!

Emotional Salience Landscape

Difficulties-Mirror Neurons

- Temple Grandin's “squeeze machine”
- Hirstein's “squeeze vest”
Elmhurst College
- Risperidone or MDMA (ecstasy)
- Biofeedback
- Under Armor-- Compression underwear:
www.underarmour.com

--Grandin (1992); Ramachandran, and Oberman (November, 2006); Author (1997)

***THE ABOVE ARE EXPERIMENTAL
TREATMENTS!!!!***

Theory of Mind & Mirror Neuron “Software”

“Able individuals with autism spectrum disorders can with time and practice achieve awareness of mental states by compensatory learning.” (p. 977)

--Frith (2001)

❑ Possible Treatment Techniques

- Carol Gray – Social Stories
- Laurel Falvo- Social Response Pyramid:
- www.thegraycenter.org

ASD CBT Alexithymia Treatment

“Affective education within CBT aims to improve the vocabulary of the child or adolescent with ASD to describe emotions, thereby diminishing the effects of alexithymia. One approach is to quantify the degree of expression, such that if the precise word is elusive, the child or adolescent can calibrate and express his or her degree of emotion using a thermometer or numerical rating, thus indicating intensity of emotional experience” (p. 35).

--Attwood, and Scarpa (2013)

Professionals Who Can Help With Alexithymia

- Psychologists-American Psychological Association:
www.apa.org
- Psychiatrists-American Psychiatric Association:
www.apa@psych.org
- Social Workers-National Association of Social Workers:
www.naswdc.org
- American Association of Marriage and Family Therapists:
www.aamft.org
- Counselors-National Board of Certified Counselors:
www.nbcc@nbcc.org
- Behavioral Neurology/Neuropsychiatry-American Neuropsychiatric Association:
www.anpaonline.org
- Speech Language Pathologist – American Speech-Language Hearing Association:
www.professional.asha.org

ASD And AD/HD

DSM-5® says that Autism Spectrum Disorders can be comorbid with AD/HD however most will have the *restrictive Inattentive/Sluggish Cognitive Tempo* type.

--Author (May 18, 2013); Author (May 3, 2012); Goldstein, and Naglieri (August, 2011)

AD/HD Vs. ASD

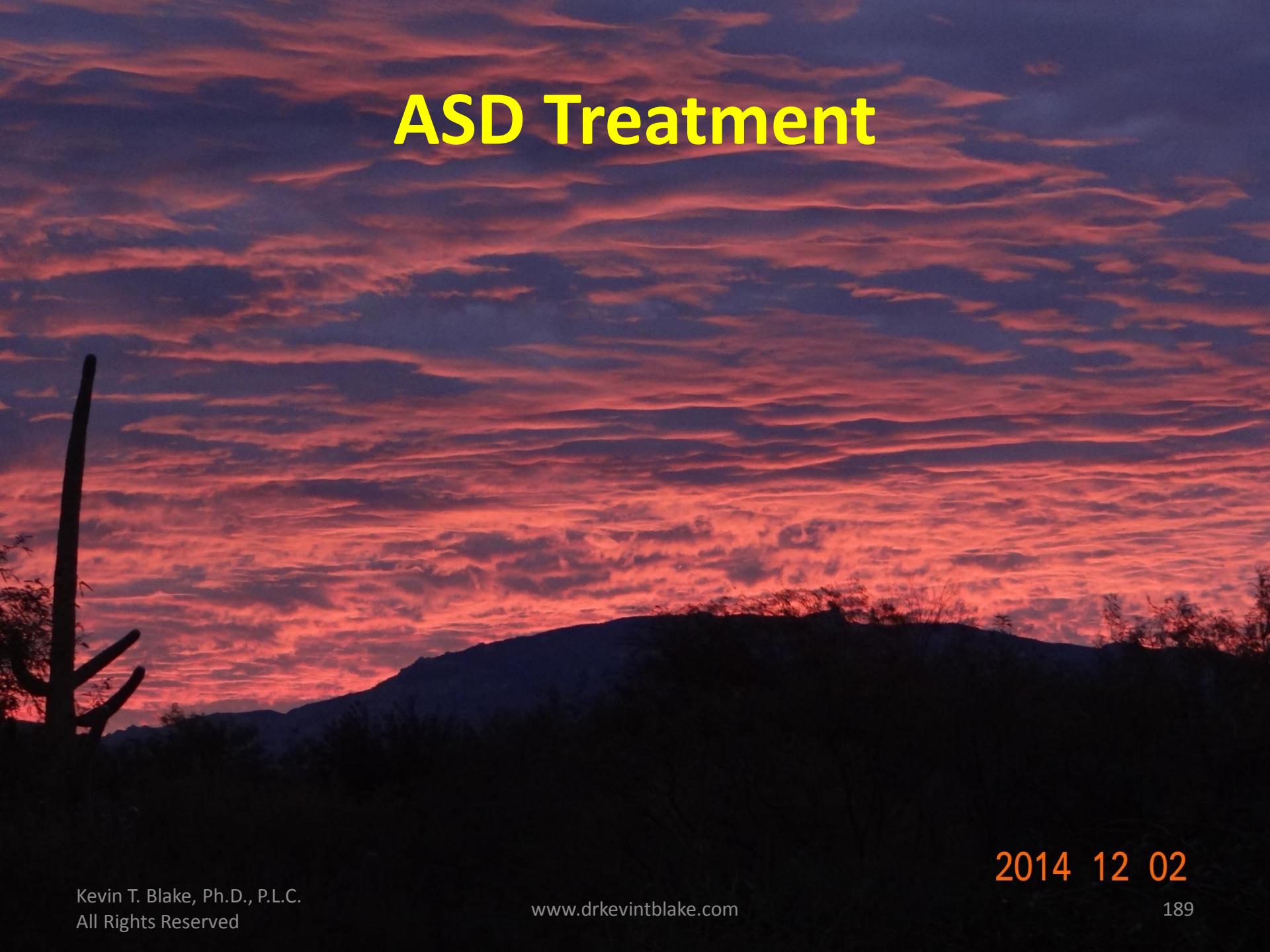
A study comparing adults with AD/HD and adults with ASD found ASD adults had a slow but accurate response style, but AD/HD adults had an inaccurate and rapid response style.

--Johnston, Madden, Bramham, and Russell, (2011).

“Children with ASD and children with an ASD and comorbid anxiety disorder improved in their parent reported social skills. Children with ASD and comorbid attention deficit/hyperactivity disorder failed to improve” (p. 439).

--Antshel, Polacek, McMahon, Dygert, Spencely, Dygert, Miller, and Faisal (July-August, 2011)

ASD Treatment



2014 12 02

ASD Treatment

“The foundation of most interventions for ASD is educational. Behavioral and other rehabilitative strategies are used to teach necessary skills and to help reduce the frequency and intensity of problem behaviors. Most current medical interventions are palliative (i.e., are meant to reduce symptoms such as anxiety or irritability) or are designed to manage problems such as sleep disorders or seizures. To date, there are no medical interventions that have been demonstrated to correct the central problems of social communication deficits and restrictive repetitive behaviors” (p. 85-85).

--Durand (2014)

ASD, Lindamood-Bell, & Comprehension

Research in press conducted at the University of Alabama Birmingham's Department of Psychology, Brain, Cognition, and Autism Lab has shown that the Lindamood-Bell Visualizing and Verbalizing for Language Comprehension and Thinking program significantly increases verbal and reading comprehension in Children with ASD. Pre and Post fMRI studies also show significantly increased connectivity across long distances in the brain.

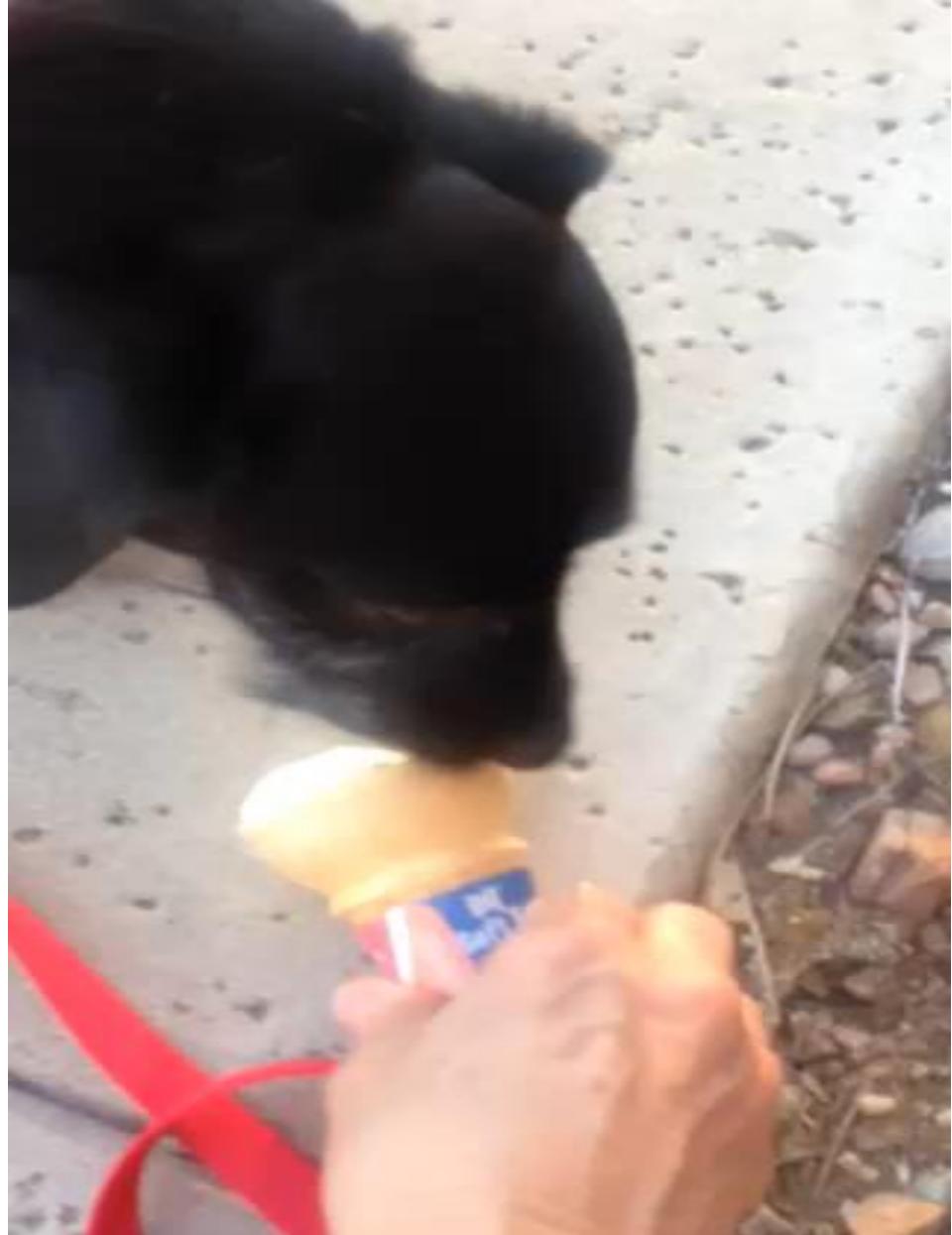
--Benson (November 13, 2014)

Sleep & ASD

- 50% to 80% of Children with ASD have sleep problems
- Main problems:
 - Prolonged Sleep Latency, Disruption at Bedtime, Decreased Sleep Efficiency and Duration
 - Those with ASD may have a problem with the inhibitory neurotransmitter GABA and melatonin which may cause problems with circadian sleep-wake cycles

--Durand (2014)

Therapy Dogs



ASD & Dogs

“When the therapy dog was present, the children (with ASD, sic.) were significantly more focused, more playful, and more aware of interactions than either of the other conditions (stuffed dog, or ball present)” (p. 185).

--Johnson, R.A. (2011)

“Our results indicate that concentrations of beta-endorphin, oxytocin, prolactin, beta-phenylethylamine, and dopamine increased in both species after positive interspecies interaction, while that of cortisol decreased in the humans only.” (p. 296)

--Odendaal, and Meintjes (2003)

ASD & Dogs

Children with autism and pervasive developmental disorders are significantly more present, playful and aware of social interactions when a dog is present.

--Martin, and Farnum (2002)

- 4Paws For Ability
- 253 Dayton Avenue
- Xenia, OH 45385
- Training Center:
– 937-374-0385

Website:

www.4pawsforability.org

CBT & ASD with Comorbid AD/HD in Children

If AD/HD is comorbid with ASD one must alter their cognitive behavioral therapy program for the child, especially in a group. The group may have a token economy, members may be encouraged to use medication for AD/HD as well as significantly more structure to control hyperactivity and impulsivity may be used.

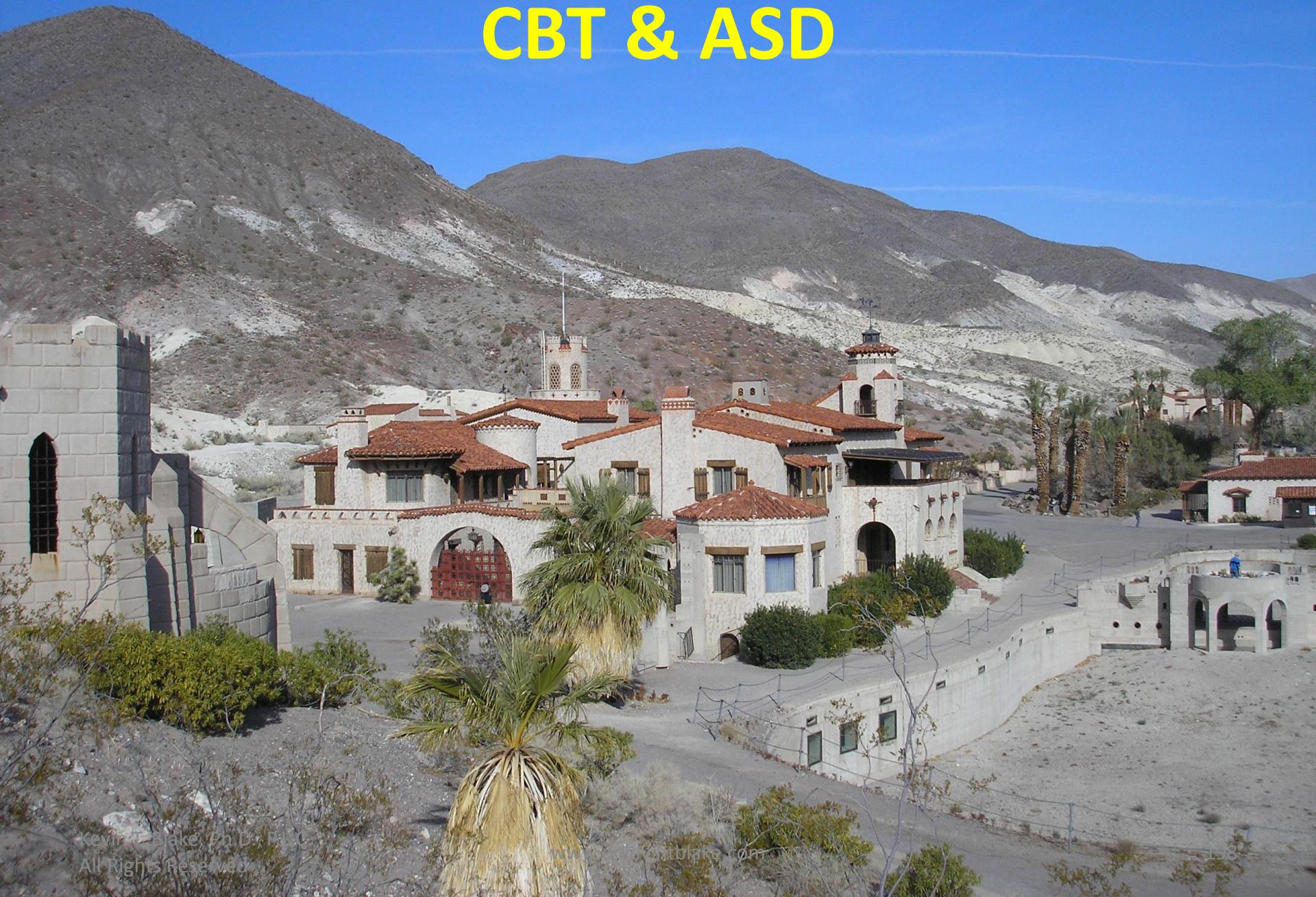
--Attwood, and Scarpa (2013).

CBT & ASD

- Psychoeducation & include visual aids**
- Rewards System**
- Developing a hierarchy/exposure modules**
- Parent coaching**
- Playdates**
- Social coaching**
- Mentoring**
- School involvement**
- Adaptive skills & Stereotyped interest modules**

--Green, S.A., and Wood, J.J. (2013)

CBT & ASD



CBT, Anxiety, & ASD

“Thus, CBT, when adapted for the special needs of youth with ASD, is potentially effective at decreasing anxiety in this population, but more replication is necessary to establish the efficacy of these programs” (p. 91).

--Green and Wood (2013)

CBT & ASD

“Overall encouraging results have emerged from prior research on treatments targeting the social-cognitive and social interactive capabilities of children with HFASD (high functioning ASD, sic.), but children’s spontaneous transfer of the learned social-interactive skills to their natural environments such as school remains uncertain” (p. 250).

--Bauminger-Zviely (2013)

CBT & ASD

❑KICK Plan

❑K = Knowing I'm nervous

❑I = Icky thoughts

❑C = Calm thoughts

❑K = Keep practicing

--Green and Wood (2013)

Relaxation Tools & ASD

- Take a break
 - Sit by self
 - Talk to someone
 - Stretch
 - Deep breaths
 - Exercise
 - Sports
 - “Creative Destruction”
Taking out the trash
 - Music
 - Drawing
 - Solitude
 - Massage
 - Reading
 - Repetitive Action
 - Sleep
- Scapra, Reyes, and Attwood (2013)

CBT for Young ASD Children

□STAMP

□S = Stress

□A = (and) Anger

□M = Management

□Program

➤ First Stage: Affective Education

➤ Second Stage: Cognitive Restructuring

--Scapra, Reyes, and Attwood (2013)

Other Things to Consider When Working with ASD Children and Adolescents

- ❖ One-Track Mind: Set shifting**
- ❖ Fear of Making a Mistake**
- ❖ Consistency and Certainty**
- ❖ Special Interests & Talents**
- ❖ Converting Thoughts to Speech: Texting
instead of face to face**
- ❖ Problems with Pragmatics, Syntax and
Prosody**

Other Things to Consider When Working with ASD Children and Adolescents

- ❖ **Teaching Theory of Mind (ToM)**
- ❖ **Dealing with Sensory Sensitivity**
- ❖ **Between-Session Projects**
 - ❖ **Workbooks**
- ❖ **Selection of Group Participants**
- ❖ **Time with Parents After Every Session**

--Attwood, and Scarpa (2013)

ASD Accommodations in School



Social Helper/Mentor

- Have your kid assigned a “social helper student/mentor”:
 - The child with excellent social skills in your class, who is a “good citizen” and good student.
 - Train the helper student in how to be a helper student.

--Thompson, S. (1996); Shulamite, Green, and Wood (2013)

Teacher Social Teaching

“...the therapist meets with the child’s teacher to establish a behavioral reward program at school, to review the child’s social coaching plan, and model coaching for the teacher, and to explore mentoring opportunities at the school” (p. 85).

--Shulamite, Green, and Wood (2013)

How to Help the ASD Child in the Classroom

- For the student who gets lost on the way to the classroom and is tardy:
 - Provide a verbal and visual map of the school
 - Assign a student to be their helper
 - Train the helper to look out for the schoolmate
 - Eliminate detention for tardiness for student for a period of time
 - Practice going from class to class and provide verbal landmarks.

--Thompson, S. (1996)

How to Help the ASD Child in the Classroom

➤ Problems with transitions and routine changes:

- Provide a predictable, safe, consistent classroom routine**
- Minimize transitions and give several verbal warnings before transition**
- Furnish the student a written schedule of their day so they can prepare for it the night before**
- Provide landmarks.**

--Thompson, S. (1996)

How to Help the ASD Child in the Classroom

- Has difficulty generalizing previously learned knowledge:
 - Never expect the student has automatically generalized concepts
 - Use language as a bridge to tie new situations to old learning
 - Review past learning and tie it to new learning; point out connections, comparisons and contrasts
 - Methodically discuss cause-and-effect relationships with student

--Thompson, S. (1996)

How to Help the ASD Child in the Classroom

- **Difficulty remembering multi-step directions:**
 - Write out/audio record directions
 - Number and present directions in sequence
 - Break down big tasks into several smaller ones
 - Make sure the student comprehends directions; beyond parroting them back.
 - Have someone remind the student
 - Teach the student memory tricks
 - Monitor the student periodically to insure they are not lost.

--Thompson, S. (1996)

How to Help the ASD Child in the Classroom

- **Thinks literally:**
 - Explain aloud in words the things you mean that may be misinterpreted
 - Simplify and breakdown abstract concepts
 - Start with concrete concepts and slowly move to abstract
 - Metaphors, emotional nuances, multiple meanings need to be explained concretely
 - Teach the student to say, “I am not sure what you mean”, when they are confused.

--Thompson, S. (1996)

How to Help the ASD Child in the Classroom

- Asks to many questions:
 - Answer the student's questions when possible and practical
 - Start the other students on the assignment and individually answer the ASD student's questions.
 - Designate a specific period of time everyday the student can ask questions.
 - Specifically teach the student how to know when it is appropriate to ask for help.
 - Specifically teach the student to politely ask a question

--Thompson, S. (1996)

How to Help the ASD Child in the Classroom

- **The student is easily overwhelmed:**
 - Diffuse frustrating situations early on
 - Minimize environmental stimuli
 - When the student is overwhelmed provide them with a place to calm down, i.e. teacher's lounge, a corner in an office; not punishment.
 - Allow the student to opt out of activities in which they become overstimulated.
 - Modify schedule to lessen load

--Thompson, S. (1996)

How to Help the ASD Child in the Classroom

- The student may have heightened sensory experience:
 - Eliminate known sensory stressors (i.e., loud clock, fan, etc.)
 - Reduce distractions
 - Talk to student in a low whisper if he/she has hyperacusis (See hyperacusis section on my website)
 - Place student in class where there is the least distraction from auditory and visual stimuli

--Thompson, S. (1996)

How to Help the ASD Child in the Classroom

- Such students often have stress and anxiety difficulties:
 - Prepare the student for all transitions and novel situations far in advance
 - Make their day predictable, consistent and routine
 - Avoid surprises
 - Allow the student to leave stressful situations-give them a safe room where they can regroup and calm down-give them permission to go there when they need to

--Thompson, S. (1996)

How to Help the ASD Child in the Classroom

- **Avoid the “Illusion of Competency:”**
 - Although such students often appear to have knowledge beyond their years they are still not adults and these students have extreme difficulties in some areas and gifts in others. Don’t hold their strengths against them.
 - Apply age and grade expectations flexibly
 - Emphasize their strong academic skills
 - Even though the student can parrot back what you say, it doesn’t mean they comprehend it.
 - Offer explanations when the student appears lost or confused

--Thompson, S. (1996)

Face Perception

- The Fusiform Face Area (FFA) responds much more to faces than to other objects.
- Nine different labs have found that those with Autism Spectrum Disorders have a hypoactivation of the FFA when viewing faces.
- Developmental Prosopagnosia and Developmental Agnosia are separate disorders.

--Schultz, R.T. (2005); Duchaine, and Nakayama, (2005)

Prosopagnosia



ASD & Face Processing

“A range of face-processing deficits can present in ASD. Sometimes, individuals have problems recognizing facial identity, gaze direction, gender, expression and lip reading...Most importantly, nearly all individuals with ASD have problems interpreting emotional expression. For some individuals with ASD, the impairment in recognizing emotional expressions seems only to affect certain expressions, most notably fear” (p. 144).

--Bate, S. (2013).

Treatment of Prosopagnosia: “Are you my Mother?”

- Encourage the person to look at peoples faces when socializing.
- Introduce new people slowly and emphasize their characteristics: “Say hi to Billy with the red hair and freckles.”
- Have adolescents meet teachers long before school starts and have the child meet with them often.
- Have teachers keep their appearance “stable.”
- Play introduction games.
- Post photos of teachers, friends, parents on wall.

--Grueter (August/September, 2007)

Computer Programs to Treat Prosopagnosia

- “Let’s Face It!” – Face Recognition Program and workbook for children and adolescents with Autism Spectrum Disorders (University of Victoria Brain and Cognition Lab & the Yale Child Study Center)
- Teaches facial recognition and emotion recognition in 20 hours!
- It is **FREE!**

From: <http://web.unic.ca/~letsface/letsfaceit/index.php>

Mnemonic Techniques to Remember Faces

- Lucas, J. (2000). Names and Faces Made Easy: The Fun Way To Remember People. Lucas.
- www.jerrylucas.com

Computer Programs to Treat Prosopagnosia

- Baron-Cohen, S. (2003). Mind Reading: An Interactive Guide To Emotions. Philadelphia, PA: Jessica Kingsley.
“Harry Potter” teaches facial expressions.
- Baron-Cohen, S., Drori, J., Harcup, C. (2009). The Transporters (USA Version). London, England: Changing Media Development:
www.thetransporter.com
“Thomas the Tank-Engine” teaches faces.

Computer Programs to Treat Prosopagnosia

- “Gaining Face”: www.StoneMountainSoftware.com
- Paul Ekman, Ph.D. (“Lie to Me”/SPOT – Surveying Passengers by Observational Techniques) CD ROMS:
 - Micro Expression Training Tool (METT)
 - Subtle Expression Training Tool (SETT)
 - Repeated presentations of METT & SETT to those with Autism Spectrum Disorders

Available from: www.paulekman.com

Treating Problems Making & Reading Facial Expressions

- Cognitive Affective Training-Faces and Feeling Words: www.CAT-kit.com
- Student Handout: Emotions and Facial Expressions – From: McAfee, J. (2002). Navigating the Social World. Arlington, TX: Future Horizons, pp 83-84.
- Ekman, P., & Friesen, W.M. (2003). Unmasking The Face: A Guide To Recognizing Emotions From Facial Cues. Cambridge, MA: Malor Books.
- Ekman, P. (2003). Emotions Revealed: Recognizing Faces and Feelings to Improve Communication and Emotional Life. New York, NY: Time Books.

Other Methods of Learning Facial Expressions

- Watch children's shows like Barney and Sesame Street and observe the difference between the facial expression reactions of children and adults.
- Watch TV with the sound turned off and look at the face.
- You can see extreme emotions on soap operas, animated movies (i.e., Toy Story) claymation (Wallace and Grommit).

--Garcia Winner, and Crooke (2011)

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