

NONVERBAL LEARNING DISORDER AND ASPERGER'S DISORDER

La Frontera Center, Inc.

Thursday, August 20, 2009

1:30 PM to 4:00PM

By

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Tucson, Arizona

1990: My First Exposure to the Term "Asperger's Syndrome"

“These were children of normal intelligence who did not have autism, psychosis, or Asperger’s syndrome” (Barkley, 1990, p. 199).

Barkley, R.A. (1990). Differential Diagnosis. In R.A. Barkley (Ed.), Attention Deficit Hyperactivity Disorder. New York, NY: Guilford, pp. 169-205.



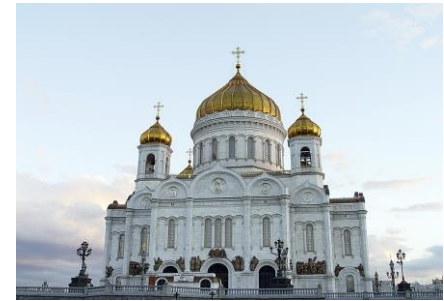
*1990: My First Exposure to the Term
"Asperger's Syndrome"*



ASPERGER'S SYNDROME

“These people tend to speak like they are giving a formal speech. They have great difficulty with small talk. Their body language is still and awkward. They are clumsy, yet they have excellent rote memories. They are often obnoxious and self-centered. They tend to be tenacious, demanding, and insensitive to the needs of others” (Dale Jordan, Ph.D., 1990, Personal Communication).

“Ssucharew’s Syndrome”



- In 1926 Ewa Ssucharew, a Russian neurology nurse, first described what we would now call Asperger’s Disorder.
- This was viewed as the first scientific description of Schizoid Personality Disorder (SPD and AD).
- Suka Wolf reviewed SPD and AD and suggested they were the same thing.

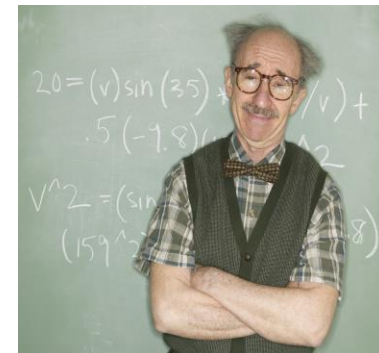
Attwood, T. (2007). The Complete Guide to Asperger’s Syndrome. Philadelphia, PA: Jessica Kingsley.

Millon and Asperger's Disorder

- Theodore Millon believed that many with Asperger's Disorder are incorrectly identified as having Avoidant Personality Disorder.

Millon, T. (1996). Disorders of Personality: DSM-IV and Beyond. New York, NY: John Wiley.

Millon, T. (October 27-29). Personal Communication. DSM-V, Axis II and Beyond: Understanding and Treating Personality Disorders, Santa Fe Symposia, Santa Fe, NM.



Asperger's Vs Autism



- Leo Kanner, M.D., from the United States, wrote of “***Early Infantile Autism***” in 1943.
- Hans Asperger, M.D., from Austria, wrote of “***Autistische Psychopathen in Kindersalter***” (Autistic Psychopathology in Children) in 1944.

Klin, A., Volkmar, F, and Sparrow, S.S. (2000). Introduction. In A Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp.1-21.

Attwood, T. (2007). The Complete Guide to Asperger's Syndrome. Philadelphia, PA: Jessica Kingsley.

Asperger in English



- Lorna Wing (1981) translated Asperger's work into English.
- Uta Frith translated Asperger's original work into English in 1991 (Attwood, 2007).

Wing, L. (1981). Asperger's Syndrome: A Clinical Account, Psychological Medicine, 11, p. 115-130.

Attwood, T. (2007). The Complete Guide to Asperger's Syndrome. Philadelphia, PA: Jessica Kingsley.

Asperger's Disorder Symptoms (1990's)



- “Paucity of empathy
- Naïve, inappropriate, one-sided social conversation, isolation, little ability to form relationships
- Pedantic monotonic speech
- Poor nonverbal communication
- Intense absorption in circumscribed topics, such as the weather, facts about TV stations...
- Clumsy, ill-coordinated movements and odd posture.” (p. 8)

Volkmar, F. and Klin, A. (July-August, 1994). Autism and Asperger's Syndrome. LDA Newsbriefs, p. 8.

1990: My First Exposure to the Term "Nonverbal LD"



“RIGHT-HEMI SYNDROME

These are people who tend to suffer from, ‘prolonged depression’...They frequently are shy without the emotional ‘toughness’ to assert themselves well. They often have poor eye contact that makes it difficult for them to deal openly with others. Sometimes these persons are awkward in their gestures, being unable to communicate well through body language. Occasionally, there is a sing/song pattern (prosody) that attracts criticism or causes...

1990: My First Exposure to the Term "Nonverbal LD"

“...them to be labeled ‘weird’. The most unfortunate part...is poor socialization. These individuals have great difficulty maintaining relationships with others...They repeatedly smother objects of their affection...(and) do not interpret feedback from others” (Dale, Jordan, Ph.D., Personal Communication, 1990).



Nonverbal Learning Disorder

- Myklebust first wrote of in 1975.
- It has also been called in the literature: minimal brain dysfunction, nonverbal learning disability, developmental learning disability of the right hemisphere, social and emotional learning disability, and developmental right-hemisphere syndrome.

Myklebust, H.R. (1975). Nonverbal Learning Disabilities: Assessment and Intervention. In H.R. Myklebust (Ed.), Progress in Learning Disabilities, (Vol. 3, pp. 85-121). New York, NY: Grune & Stratton.

Rourke, B.P. and Tsatsanis, K.D. (2000). Nonverbal Learning Disabilities and Asperger Syndrome. In A. Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 231-253.

What's In A Name?

- Clinical Psychologist & Psychiatrist – Asperger's Disorder and/or High Functioning Autism
- Neuropsychologist & Behavioral Neurologist – Nonverbal Learning Disorder and/or Right Hemisphere Disorder (“Right Hemi Disorder”)
- Speech Language Pathologist: Semantic Pragmatic Disorder of Speech
- Occupational Therapist: Sensory Integration Disorder

Berg, M. and Stegeman, T. (November, 1995). Workshops Presented at the International Conference of the Orton Dyslexia Society, Houston, TX.

Nonverbal Learning Disorder

- Byron Rourke wrote his seminal work on Nonverbal Learning Disabilities and the White Matter Model in 1989.

Rourke, B.P. (1989). Nonverbal Learning Disabilities: The Syndrome and The Model. New York, NY: Guilford.



Rourke's NVLD Syndrome

- Good single word decoding when compared to mechanical arithmetic skills
- Better verbal than non-verbal social interaction
- Before age 4 may appear relatively normal
- As young child may be seen as “hyperactive”
- As older child may be seen as either “hypo” or “hyper” active, withdrawn, anxious and depressed
- Atypical behaviors and social skills deficits.

Rourke, B.P. (2006). Question # 1: You refer to NLD as a subtype of Learning Disabilities (LD). How do you define LD? From Website: www.nld-bprouke.ca/BPRA1.html .

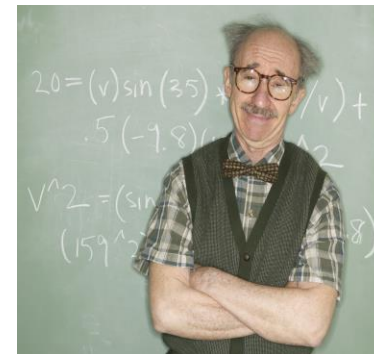
Disorders Rourke Thought of as Included Under NVLD

- Callosal Agenesis
 - Asperger's Disorder
 - Velocardiofacial Syndrome
 - Williams Syndrome
 - De Lange Syndrome
 - Early Hydrocephalus
 - Sotos Syndrome
 - Congenital Hypothyroidism
 - Neuropsychological Consequences of Prophylactic Treatment
 - Metachromatic Leukodystrophy
- (Continued)

Disorders Rourke Thought of as Included Under NVLD

- Turner Syndrome
- Fetal Alcohol Syndrome
- Multiple Sclerosis
- Traumatic Brain Injury
- Toxicant-Induced Encephalopathy

Rourke, B.P. (1995). Syndrome of Nonverbal Learning Disabilities: Neurodevelopmental Manifestations. New York, NY: Guilford.



NVLD Categories of Dysfunction

- **Motoric:** Slow motor reaction time, problems crossing the midline, left side weakness
- **Visual-Spatial-Organizational:** It is hard enough to cope when they know what to expect; novelty makes it worse.
- **Social:** They have no idea of personal space, when to stop, facial expressions and nonverbal signs of pleasure/displeasure.

Thompson, S. (1997). The Source for Nonverbal Learning Disorders. East Moline, IL: LinguiSystems.

NVLD Dysfunctions

- “This child learns little from experience or repetition and is unable to generalize information, so he doesn’t apply past learning to new situations.” (p. 13)
- If they cannot learn vicariously, by watching someone model a behavior, and you must directly teach them everything verbally that is a **RED FLAG** something is wrong!

Thompson, S. (1997). The Source for Nonverbal Learning Disorders. East Moline, IL: LinguiSystems, p. 13.

NVLD Dysfunctions

“Tossing in a new variable to an already fairly consistent situation (such as a substitute teacher over control of a classroom where the child has previously gained a certain degree of stability with his regular teacher), can totally disrupt this child’s coping strategies and generate an increased level of anxiety for him.” (p. 33)

Thompson, S. (1997). The Source for Nonverbal Learning Disorders. East Moline, IL: LinguiSystems.

Nonverbal Learning Disorders

- Those are poor at analysis and synthesis of information better at serial information processing and rote memory.
- Some see NVLD and Asperger's Disorder as a Right Hemisphere disorder.

Rourke, B. P. (Ed.). (1995). Syndrome of Nonverbal Learning Disabilities: Neurodevelopmental Manifestations. New York: Guilford Press.

Symptoms of NVLD

- Verbal IQ typically higher than Performance IQ
- Remarkable early language development
- Excellent rote memory
- Hyper-attention to detail
- Often excellent reading skills
- Remarkable verbal expression
- Poor Coordination

Rourke, B. P. (Ed.) (1995). Syndrome of Nonverbal Learning Disabilities: Neurodevelopmental Manifestations. New York: Guilford.

Symptoms of NVLD

- Profound balance difficulties
- Fine motor difficulties
- Poor visual imagery
- Poor spatial processing
- Poor nonverbal social communication interpretation
- Poor transition and new situation tolerance
- Poor social judgment and interactions

Thomson, S. (1997). The Source for Nonverbal Learning Disorders. East Moline, IL: LinguiSystems, p. 15

What's In A Name?

“Asperger’s is mild autism with language.”
(Ratey, 1997)

Ratey, J. (May, 1997). Shadow Syndromes. Paper presented at the 3rd Annual National ADDA Adult ADD Conference, May 17, 1997, St. Louis, MO.

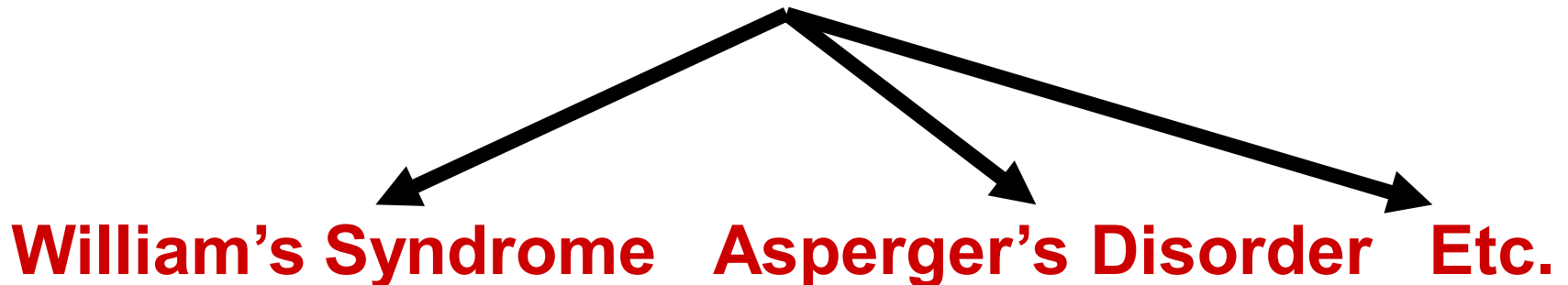
Berg and Stegeman (1995) see Asperger’s Disorder and Nonverbal Learning Disorder as two separate types of disorders. They see Asperger’s individuals as having more autistic-like difficulties, and visual-spatial processing problems, whereas, those with nonverbal LD have visual-spatial problems alone.

Berg, M. and Stegeman, T. (November, 1995). Workshops Presented at the International Conference of the Orton Dyslexia Society, Houston, TX.

What's In A Name?

Volkmar, et al (1996) and Rourke (1995) believe Asperger's Disorder is a subcategory of Nonverbal Learning Disability.

Nonverbal Learning Disorder



Volkmar, F, Klin, A., Schultz, R., Bronen, R., Marans, W.D., Sparrow, S. and Cohen, D. (1996). Grand Rounds in Child Psychiatry: Asperger Syndrome. Journal of the American Academy of Child and Adolescent Psychiatry, 35 (1), pp. 118-123.

Smith Myles and Simpson on Asperger's Disorder

“Unlike other children with autism, however, they generally had normal intellectual and communication development, leading Asperger to infer that individuals with this disorder represented a distinct and independent diagnostic classification.” (p.1)

Smith Myles, B. and Simpson, R.L. (1998). Asperger Syndrome: A Guide for Educators and Parents. Austin, TX: ProED.

NVLD VS Asperger's Disorder

“There is strong evidence to suggest that individuals with AS present with virtually all the characteristics of NLD. Most important, this neuropsychological phenotype may offer a basis from which to draw a distinction between AS and HFA.” (p. 248-249)

Rourke, B.P. and Tsatsanis, K.D. (2000). Nonverbal Learning Disabilities and Asperger Syndrome. In A. Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 231-253.

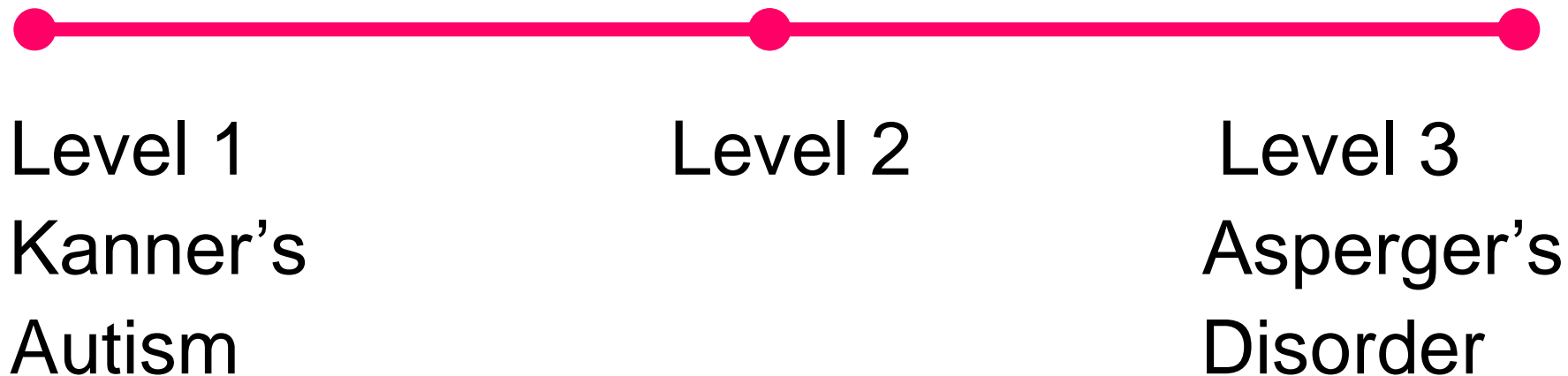
Asperger's Disorder and DSM-IV, TR



- Asperger's Disorder is a Pervasive Developmental Disorder in the DSM-IV, TR along with: Autistic Disorder, Rett's Disorder, Childhood Disintegrative Disorder and Pervasive Developmental Disorder, Not Otherwise Specified (Including Atypical Autism).

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

Attwood's Continuum of the Autism Spectrum (Continued)



Attwood, T. (1999). Asperger's Syndrome: A Guide for Parents and Professionals. Videotaped Presentation. Arlington, TX: Future Horizons.

Attwood on Asperger's Disorder, HFA and Nonverbal Learning Disability

“They are exactly the same. They are just spelled differently.” (Tony Attwood, Ph.D.)

**High Functioning Autism = Asperger's
Disorder**

**Asperger's Disorder = Nonverbal
Learning
Disorder**

Attwood, T. (1999). Asperger's Syndrome: A Guide for Parents and Professionals. Videotaped Presentation. Arlington, TX: Future Horizons.

Attwood's Continuum of the Autism Spectrum

1. Aloof- Child has little or no speech, self-stimulates a lot. Looks like classic autism, child may stay at this level for entire life or move on to next level of continuum. Upset by being close to others.
2. Passive- They interact with others to get what they want. They engage in solitary play and/or have some limited speech. May have internal speech, echolalia. Need external prompt to speak. Interest in symmetry, and collect odd things (e.g., dust bunnies, etc.). Rule following. May stay at this stage or move to level 3.

Attwood's Continuum of the Autism Spectrum (Continued)

3. Active, but odd- These children seek attention, they like it. They do strange repetitive behaviors to get attention, but once they have your attention they don't know what to do. Speech typically includes repetitive questions they know the answer to. Do not interact with peers. Focus on one interest-often transportation.

Attwood, T. (1999). Asperger's Syndrome: A Guide for Parents and Professionals. Videotaped Presentation. Arlington, TX: Future Horizons.

Ozonoff, Dawson & McPartland on Asperger's Disorder

Autism: the most common of the PDDs, ranging in severity from those who are very handicapped (nonverbal, totally aloof, and highly repetitive) to those who are only mildly socially awkward, and slightly unusual in their conversational style, and have special interests.” (p. 9)

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford, p. 9.

High Functioning Autism

- “This is the term used for children who meet autistic disorder criteria but have relatively normal thinking and learning skills (that is, they are not mentally retarded) and language skills (they can speak close to the level expected for their age).” (p. 29)
- HFA- often have visual-spatial strengths

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford, p. 29.

Ozonoff, Dawson & McPartland on High Functioning Autism

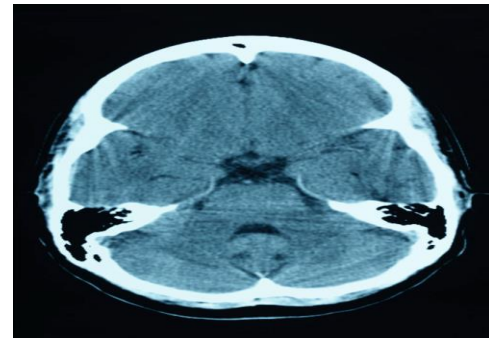
“The high-functioning autism spectrum disorders include:

high-functioning autism: The child fits the definition of autism but has normal cognitive and learning abilities. The child may have had difficulty acquiring language, but eventually was able to speak at a level close to what is expected for his or her age.” (p. 9)

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford, p. 9.

High Functioning Autism

- Often have repetitive movements (i.e., rocking, flapping, etc.)
- Often have PIQ > VIQ

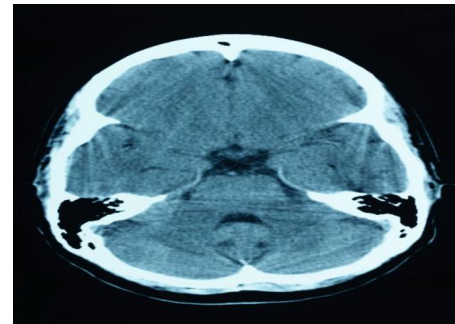


Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford.

Ozonoff, Dawson & McPartland on Asperger's Disorder

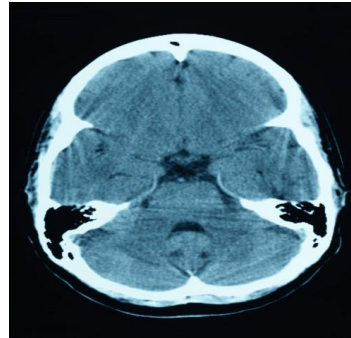
“Asperger syndrome: The child is similar to those with high-functioning autism, but has fewer symptoms and had little or no difficulty developing language at the normal age.” (p. 9)

- Often have VIQ > PIQ



Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford, p. 9.)

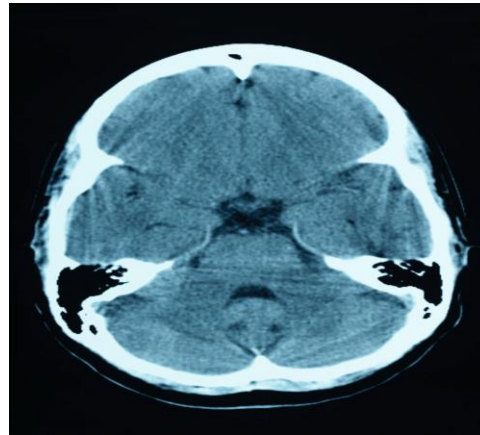
HFA VS AD



- 20 years of research has demonstrated there are few differences between High Functioning Autism and Asperger's Disorder.

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford.

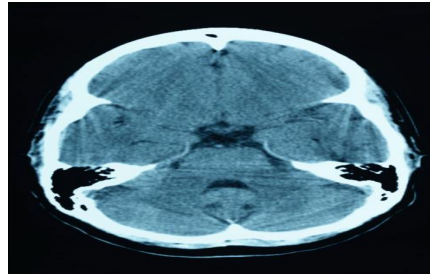
HFA VS AD



- The practical significance between the two diagnoses may be minor because the treatment is often the same.

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford.

HFA VS AD



“We now know that autism is not a narrowly defined condition, but rather a spectrum that varies in severity from the classic picture described by Leo Kanner to the milder varieties associated with good language and cognitive (thinking) skills. For this reason, we now use the term ***autism spectrum disorders.***”

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford, p. 5.

What Causes Autism Spectrum Disorders?



What Does Neurobiological Mean?

- “At present, however, the existing data argue strongly for a role of the amygdala and its collaborating cortical systems in the pathobiology of autism spectrum conditions.” (p. 197)

Schultz, R.T., Romanski, L.M. and Tsatsanis, K.D. (2000). Neurofunctional Models of Autistic Disorder and Asperger Syndrome: Clues from Neuroimaging. In A. Klin, F.R. Volkmar and S.S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 178-209.

- “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). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY, Guilford.

What Causes Autism Spectrum Disorders?

“Scientists do not yet have complete answers to these questions, but very strong evidence suggests that autism spectrum disorders are biological in origin and are not caused by parenting or other psychosocial environmental causes. Differences in the size and organization of the brain, as well as how it works, in individuals with autism spectrum disorders versus normal individuals have been found.”

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford, p. 56-57.



“MMR doctor defends his research”

“Dr. Andrew Wakefield said he adhered to official guidelines in his research, which led to the publication of the 1998 Lancet paper. He said he had wanted to treat and prevent autism after being approached by worried parents. The 51-year-old, who is now working in the US, is accused of violating ethical guidelines, and of acting against the clinical interests of the children who took part in his trial. He is also accused of acting dishonestly in failing to disclose to the Lancet that he was advising solicitors acting for the parents who had alleged their children had been damaged by MMR...” (p. 1 of 3).

Author (April 2, 2008). MMR Doctor Defends His Research. BBC News. From: <http://newsvote.bbc.co.uk/mpapers/pagetools/print/news.bbc.co.uk/2/hi/health/7314144.stm>.

MMR and The National Vaccine Injury Compensation Program

- The “special master” court found that the MMR vaccine did not cause autism or gastrointestinal dysfunction.
- The U.S. Department of Health and Human Services agrees and states that parents should not be concerned that vaccines cause autism.

Robbennolt, J.K., and Taskin, M. (2009). Resolving Disputes Over Childhood Vaccines. Monitor On Psychology, 40 (6), p. 22.

Your Tax Dollars at Work

National Institutes of Health

National Institute of Child Health and Development (NICHD)

www.nichd.nih.gov/autism/

Alice Kau, Ph.D.

[www.kaua@mail.nih.gov](mailto:kaua@mail.nih.gov)

Autism Research Network

www.autismresearchnetwork.org/AN/default.aspx

- The Collaborative Program of Excellence in Autism
- Studies to Advance Autism Research and Treatment

Centers for Disease Control and Prevention

- “Autism 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%202007.pdf>.

- **Centers for Autism and Developmental Disabilities Research and Epidemiology (CADDRE) Network:**
“The CADDRE Network is currently working on the Study to Explore Early Development ([SEED](#)) – a five-year, multi-site collaborative study to help identify factors that may put children at risk for autism spectrum disorders (ASDs).”

Centers for Disease Control and Prevention, Autism Information Center, Centers for Autism and Developmental Disabilities Research and Epidemiology. From website:

<http://www.cdc.gov/ncbddd/autism/caddre.htm>.

Autism is NOT New!

“People have probably lived with what we know today as autism spectrum disorders throughout history. Some of the earliest published descriptions of behavior that sounds like autism date back to the 18th century. But the disorder did not have a name until the middle of the 20th century.”

Centers for Disease Control and Prevention. Autism Information Center.
<http://www.cdc.gov/ncbddd/autism/overview.htm#is>

Autism's Prevalence

“CDC’s Autism and Developmental Disabilities Monitoring (ADDM) Network released data in 2007 that found about 1 in 150 8-year-old children in multiple areas of the United States had an ASD.”

Centers for Disease Control and Prevention. Autism Information Center.
http://www.cdc.gov/ncbddd/autism/faq_prevalence.htm#whatisprevalence

Epidemiology of Asperger's Disorder

- 71 out of 10,000 live births will have AD.
- “Autism spectrum disorders affect up to 0.6% of the population, and two-thirds to three quarters of those children appear to be high-functioning.” (p. 9)
- AD will occur 2 to 3 times more often in males than females.

Gillberg, C. (1993). Autism and Related Disorders. Journal of Intellectual Disability Research, 37, pp. 343-372.

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford, p. 9.

Smith Myles, B. and Simpson, R.L. (1998). Asperger Syndrome: A Guide for Educators and Parents. Austin, TX: ProED.

Genetics and Autism Spectrum Disorders

- Human Genome Project Suspect Chromosomes: 7 & 15
- Genes on Chromosome 16 have been linked to Autism and AD/HD – 60 to 70% of Autism is Genetic
- Replication study indicates Chromosome 17q21 linked to Autism
- Autism and possibly Asperger's Disorder susceptibility genes on Chromosomes 2, 7, 16, 17

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford.

Page, D. (October 22, 2002). UCLA Geneticists Find Location of Major Gene in ADHD; Targeted Region Also Linked to Autism. UCLA News, www.newsroom.ucla.edu/page.asp?id=3612 .

Cantor, R.M., Kono, N., Duval, J.A., Alvarez-Retuerto, A., Stone, J.L., Alarcon, M., Nelson, S.F. and Geschwind, D.H. (2005). Replication of Autism Linkage: Fine-Mapping Peak at 17q21. American Journal of Human Genetics, **76** (6), pp. 1050-1056:

www.journals.uchicago.edu/AJHG/journal/issues/v76n6/42136.html .

Author (2001). Autism Susceptibility Genes on Chromosomes 2, 7, 16, 17. UniSci Daily University Science News: www.unisci.com/stories/200113/0807015.htm .

What Causes Autism Spectrum Disorders?

- Too many cells in the limbic system: Social-emotional behavior
- Small cerebellar vermis: motor coordination and cognitive activities
- Large ventricles
- Amygdala smaller, cells more densely packed: Emotions and facial recognition
- 1/4 have brains and heads significantly larger than “normals”: Less pruning



Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford.

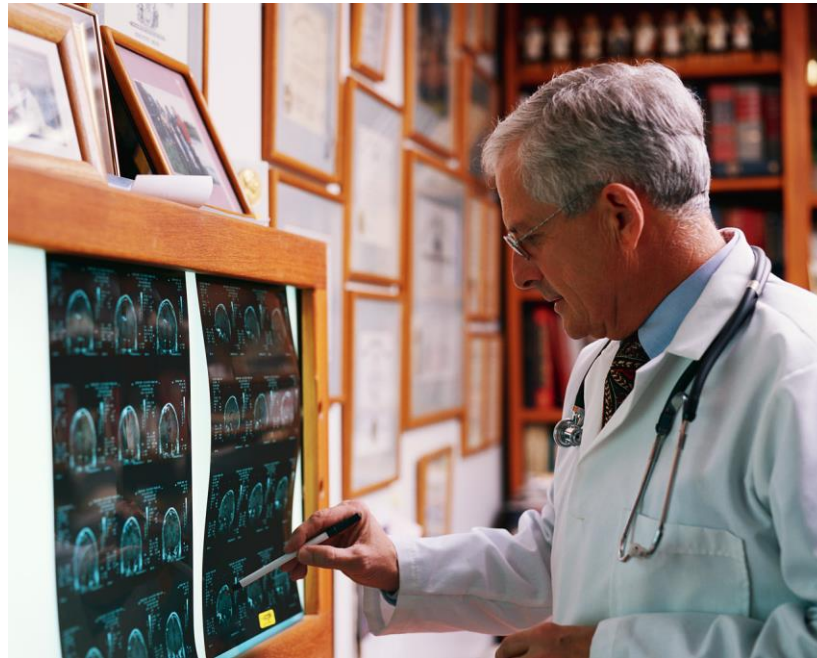
What Causes Autism Spectrum Disorders

- Less blood flow and activity in frontal lobes
- Medial Temporal Lobes-
 - Smaller or too densely packed neurons

Ozonoff, S., Dawson, G., McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford.



Neuro-Imaging of Asperger's Disorder



Neuro-Imagery of Asperger's Disorder

Father and son with Asperger's Disorder were given an MRI, "Impressively, both relatives had nearly identical areas of dysmorphology of the dorsolateral prefrontal cortex in both hemispheres...There was a region measuring 1 to 2 cm 3 of missing tissue in each hemisphere at the point at which the middle frontal gyrus intersects with the precentral sulcus" (p. 179).

Schultz, R.T., Romanski, L.M., and Tsatanis, K.D. (2000). Neurofunctional Models of Autistic Disorder and Asperger Syndrome, Clues From Neuroimaging. In A. Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 172-209.

Neuro-Imagery of Asperger's Disorder

Continuing, The son who was said to be more seriously impaired by AD also, “...had an area of dysmorphology in the left-anterior-mesial temporal lobe, abutting the amygdala” (p. 178). The authors continued dysfunction of the amygdala is thought to occur in both Autism and AD.

Schultz, R.T., Romanski, L.M., and Tsatanis, K.D. (2000). Neurofunctional Models of Autistic Disorder and Asperger Syndrome, Clues From Neuroimaging. In A. Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 172-209.

Neuro-Imagery of Asperger's Disorder

- Several studies of AS and AD indicate abnormalities in cortical development probably due to prenatal development.
- AD found to have significant thinning of the corpus callosum
- No significant difference found in brainstems and cerebellums of those with AS and PDD-NOS.

Schultz, R.T., Romanski, L.M., and Tsatanis, K.D. (2000). Neurofunctional Models of Autistic Disorder and Asperger Syndrome, Clues From Neuroimaging. In A. Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 172-209.

Neuro-Imagery of Asperger's Disorder

- fMRI studies discovered ventral temporal lobe dysfunction during facial expression discrimination in Autism Spectrum
- Those with AS and AD process faces in their inferior temporal gyrus area; the same area the non-disabled process objects they see.
- Amygdalar lesions create abnormal prosody and social affective difficulty.

Schultz, R.T., Romanski, L.M., and Tsatanis, K.D. (2000). Neurofunctional Models of Autistic Disorder and Asperger Syndrome, Clues From Neuroimaging. In A. Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 172-209.

Neuro-Imagery of Asperger's Disorder

Those with Autism Spectrum Disorders tend to have overly dense amygdalas which may cause a high density of benzodiazepine/GABA-A receptors which may in turn cause problems with high anxiety and arousal problems. The above can come together to cause problems with emotional learning.

Schultz, R.T., Romanski, L.M., and Tsatanis, K.D. (2000). Neurofunctional Models of Autistic Disorder and Asperger Syndrome, Clues From Neuroimaging. In A. Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 172-209.

Neuro-Imagery of Asperger's Disorder

“Without normally functioning limbic structures, persons with autism spectrum disorders would fail to take special notice of faces and emotions expressed on faces and across early development they would be deprived of critical social learning opportunities. These earliest experiences may be necessary precursors for achieving later developmental milestones, including the emergence of theory mind, empathy, and the emotional reaction of ...”

Neuro-Imagery of Asperger's Disorder

“... which fuel the use of theory of mind...In addition, failure of the amygdala to transmit social-emotional information to cognitive and motor output centers of the frontal lobe would result in abnormal responses to social stimuli, such as faces, and difficulties conveying social emotional information (e.g., prosody)” (p. 190).

The authors continued that the above snowballs and eventually causes profound disability.

Schultz, R.T., Romanski, L.M., and Tsatanis, K.D. (2000). Neurofunctional Models of Autistic Disorder and Asperger Syndrome, Clues From Neuroimaging. In A. Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 172-209.

Neuro-Imagery of Asperger's Disorder

- Those with Autism Spectrum Disorders have problems with the amygdala-medial Prefrontal Cortex circuit. This in turn causes a higher state of arousal and higher rates of anxiety. As a result they cannot mount a correct emotional response.

Schultz, R.T., Romanski, L.M., and Tsatanis, K.D. (2000). Neurofunctional Models of Autistic Disorder and Asperger Syndrome, Clues From Neuroimaging. In A. Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 172-209.

Reading Disorder - Hyperlexia



Reading Disorder-Hyperlexia



- Spontaneous reading before age 5
- Impaired reading and listening comprehension
- Word recognition far beyond expected for age and IQ
- Often intellectually challenged
- Speech, language, social, motor deficits
- Compulsive reading

(Sparks, R.L. (November 13-16, 2002). Orthographic Awareness Phonemic Awareness, and Working Memory Skill in Hyperlexic Children. 53rd Annual International Dyslexia Association International Conference, Atlanta, GE.)

Reading Disorder-Hyperlexia



- “A precocious ability to read words, far above what would be expected at their chronological age or an intense fascination with letters or numbers.
- Significant difficulty in understanding verbal language
- Abnormal social skills, difficulty in socializing and interacting appropriately with people” (p. 1).

From American Hyperlexia Association website; <http://www.hyperlexia.org/>, p. 1

Reading Disorder-Hyperlexia



Often found in people with:

- Nonverbal Learning Disorders
- Asperger's Disorder
- Autism Spectrum Disorders
- Pervasive Developmental Disorders
- Tend to be weak in concept formation, analysis-synthesis of information, strategy generation, prosody and functional language

(Lorry, B.P. (1998). Language Based Learning Disabilities. In M. Gordon and S. Kieser (Eds.), Accommodations in Higher Education Under the Americans with Disabilities Act (ADA): A No Nonsense Guide for Educators, Administrators and Lawyers. New York, NY: Guilford, pp. 130-153.)

Reading Disorder-Hyperlexia



- Some with Hyperlexia may have fascination with numbers and math.
- Volkmar spoke of a man who solved all WAIS Block Design items using matrix algebra as verbal mediation.
- This man with Asperger's Disorder also tried to make algebraic equations to predict other's feelings.

(Volkmar, F. (April 23, 2003). Asperger Syndrome: Clinical Features, Assessment, and Intervention Guidelines. Seminar Presented by the New England Educational Institute, in Phoenix, AZ.)

Reading Disorder-Hyperlexia



“I used to believe that I was stupid. Attention span was inconsistent, comprehension was weak, I can recall such things as phone numbers without looking in the book, but if you took a book after I read a certain portion and asked me what I read, I could only tell you bits and pieces.” – 38 year old Hyperlexic man.

(Miller, S.M. (1996). The Voice of Experience: Reflections and Advice from older Hyperlexics. Newsletter of the American Hyperlexia Association. (From website: www.hyperlexia.org/aha_fall96.html)

Reading Disorder-Hyperlexia



Richman spoke of 2 possible types of Hyperlexia

1. “Hyperlexia Language Disorder”

- Autistic-like language problems-comprehension problems-may not be caught in elementary school
- Impulsive and distractible due to language deficit
- Processing speed problems
- Treatment-intensive language therapy is recommended

Reading Disorder-Hyperlexia



2. “Hyperlexia Visual-Spatial Disorder

- More Asperger’s-like, may have letter/word reversals, but may have good reading comprehension overall.
- May not have Social Reading Comprehension.
- Treatment: Social skills training, and behavior modification; avoid visual teaching.

(Richman, L. (1997). Peaceful Coexistence: Autism, Asperger’s, Hyperlexia. In S.M. Miller (Ed.), Hyperlexia Handbook: A Guide to Intervention Strategies and Resources. Elmhurst, IL: American Hyperlexia Association.)

Reading Disorder-Hyperlexia



Klin, et.al. (2000) suggested interdisciplinary assessment and transdisciplinary treatment of those with such disorders is the best approach. This would include neuropsychological, neurological, psychiatric, psychological, speech and language and occupational therapy assessment and treatment.

(Klin, A., et. al. (2000). Assessment Issues in Children and Adolescents with Asperger's Syndrome. In A. Klin, F.R. Volkmar and S.S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 210-228.)

Reading Disorder-Hyperlexia

American Hyperlexia Association

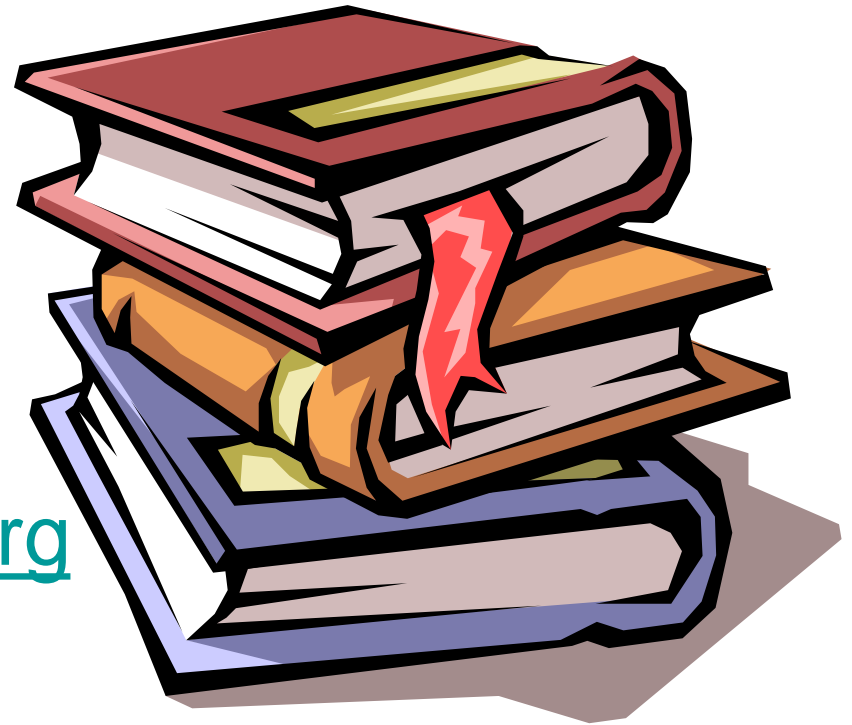
479 Spring Road

Elmhurst, IL 60126

Voice: 630-415-2212

Fax: 630-530-5909

Web: www.hyperlexia.org



NVLD and AD/HD

- Rourke believes:
 - NVLD people may have AD/HD that arises from different etiologies, but he feels most with NVLD **DO NOT** have AD/HD.
 - NVLD “inattention” he feels is a secondary result of problems with tactile and visual perception. As small children this shows up in school as “AD/HD” because curriculum for that age child is geared toward visual-tactile learning.
 - He believes stimulants **DOT NOT** help the truly NVLD child they just grow out of their hyperactivity and developmentally become hypoactive.

Rourke, B. (2006). Question 7: “What is the Comorbidity of NLD and Attention Deficit/Hyperactivity Disorder?” From Website: www.nld-bprouke.ca/Q_A.html

Asperger's Disorder and AD/HD

- “Asperger’s Syndrome and Attention Deficit Disorder are two distinct conditions, but it is possible for a child to have both” (Attwood, 1998, p. 146)
- Autism Spectrum may be comorbid with AD/HD (Barkley, 2006, p. 195):
 - PDD NOS or Autism = 26% AD/HD, CT
 - PDD NOS or Autism = 33% AD/HD, PIT
 - Total = 59%

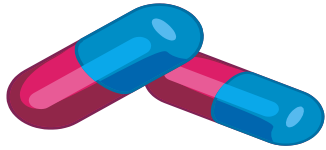
(Attwood, T. (1998). Asperger’s Syndrome: A Guide for Parents and Professionals. Philadelphia, PA: Jessica Kingsley, p. 146.)

(Barkley, R.A. (2006). Attention Deficit/Hyperactivity Disorder, Third Edition. New York, NY: Guilford, p. 195)

Risperidone, Autism Spectrum Disorders and Social Interaction



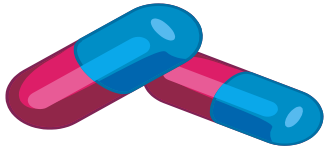
Risperidone, Autism Spectrum Disorders and Social Interaction



“...the results of multiple preliminary studies suggest that risperidone and other ‘atypical’ neuroleptics may be useful for reducing repetitive behaviors, aggression, and impulsivity and social relatedness in children, adolescents and adults with PDDs.”

Author (1997). Use of “Atypical” Neuroleptics in the Treatment of PDDs. MedScape Psychiatry & Mental Health e Journal, 2 (4): www.medscape.com/viewarticle/430897_5 .

Risperidone, Autism Spectrum Disorders and Social Interaction



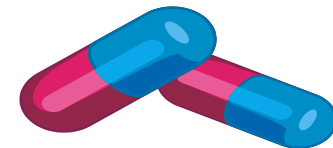
- Highly Effective and Risk of Side Effects are Rare.
- Side Effects: syncope, cardiac problems, weight gain, extrapyramidal problems, diabetes, increased prolactin and rarely galactorrhea and gynecomastia (Regularly screen for these prior to and while on this medication)

McCracken, J.T. (2005). Safety Issues With Drug Therapies For Autism Spectrum Disorders. Journal of Clinical Psychiatry (NIMH RUPP Autism Network), 66 (Sup 10), pp. 32-37.

Risperidone, Autism Spectrum Disorders and Social Interaction

“Risperidone led to significant improvements in restricted, repetitive, and stereotyped patterns of behavior interests, and activities in autistic children, but did not significantly change their deficit in social interaction and communication. Further research is necessary to develop effective treatments for the core social and communicative impairments of autism” (p. 1).

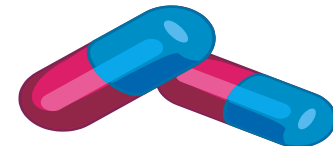
McDougle, C.J., Scahill, L., Amen, M.G., McCracken, J.T., Martin, A., Davies, M., Arnold, E., Posey, D.J., Swiezy, N.B., Gonzalez, N.M., Halloway, J., Koenig, K., McGough, J.J., Ritz, L., and Vitiello, B. (June, 2005). Risperidone For The Core Symptom Domains of Autism: Results From The Study By The Autism Network Of The Research Units On Pediatric Psychiatry. American Journal of Psychiatry, 162, 1142-1148; From Website:
www.ajp.psychiatryonline.org/cgi/content/abstract/162/1142?/ijkey=68ea62ff134a7fb35516415814ca0ef&keytype2=tf_ipsecsha .



Risperidone, Autism Spectrum Disorders and Social Interaction

“In conclusion, we believe that, based on this study, it would be misleading to state the effectiveness of risperidone on **any** domain of autism and would like to emphasize to clinicians that research continues on pharmacological intervention, the behavioral approach still has the broadest empirical validation for effectiveness and has been shown to play a significant role in enhancing functioning” (p. 551).

Adetunji, B., Mathews, M., Osimowo, T., and Williams, A. (March, 2006). Letter to the Editor: Risperidone for the Core Symptom Domains of Autism. American Journal of Psychiatry, 163, p. 551; From Website: www.ajp.psychiatryonline.org/cgi/content/full/163/3/551 .



Why do those with NVLD and Asperger's say disrespectful things?

– “For a fat lady you don’t sweat much.”

-Child who worked with C. Wilson Anderson, Jr.

“It is important to understand that this ‘rude’ behaviour is motivated neither by a wish to offend or hurt others, nor to be disrespectful to adults or authorities.” (Rourke, p. 1 of 1)

Rourke, B. (2008). Questions and Answers: Question 22. From: www.nld-bprouke.ca/BPRA22.html.

Why do those with NVLD and Asperger's say disrespectful things?

- “They do not, for example, automatically empathize with others or understand that other people may think and feel other things. They often cannot understand what others might feel when they deliver blunt, negative comments. For persons with NVLD, their statements reflect ‘reality’ or the truth.” (Rourke, p. 1 of 1)
- They do not understand “white lies”.

Rourke, B. (2008). Questions and Answers: Question 22. From: www.nld-bprouke.ca/BPRA22.html.

Why do those with NVLD and Asperger's say disrespectful things?

“ ...NVLD can also undermine knowledge of social conventions. Well-functioning people learn how to act appropriately in certain situations, such as a classroom, playground, a religious service, or a library. They also learn how to act towards those in certain key rolls, such as a teacher, a boss, parent, or friends. Individuals with NVLD often do not understand these conventions, and so do not tailor their behavior to the situation.” (Rourke, p. 1 of 1)

Rourke, B. (2008). Questions and Answers: Question 22. From: www.nld-bprouke.ca/BPRA22.html.

Why do those with NVLD and Asperger's say disrespectful things?

- Those with NVLD are easily duped by others into saying disrespectful things.
- Make sure they were not tricked into saying something disrespectful to you.

Attwood, T. (2007). The Complete Guide to Asperger's Syndrome. Philadelphia, PA: Jessica Kingsley.

Why do those with NVLD and Asperger's say disrespectful things?

***“Bottom line: It is important to understand the social deficits underlying specific behaviours and to teach the skills that will allow the individual with NVLD to avoid alienating people in this manner.”
(Rourke, p. 1 of 1)***

Rourke, B. (2008). Questions and Answers: Question 22. From: www.nld-bprouke.ca/BPRA22.html.



Visual-Spatial Problems

- “Spatial relations include qualities like size, distance, volume, order and time.” (p.1)
- There are two types of spatial skills. Visual-spatial performance refers to using sight to discriminate differences. Motor-spatial performance refers to making the body move accurately and smoothly. Of course, many activities demand some combination of the visual-spatial and motor-spatial skill.” (p. 5)

Stockdale, C. & Possin, C. (2001). Spatial Relations and Learning. Website: www.Newhorizons.org/spneeds_arkspatial.html , pp.1-24.



Visual-Spatial Problems

- Difficulties with temporal and spatial relationships are related to problems in the right hemisphere. People with such difficulties have problems with processing information that is nonverbal in nature.

Berg, M. & Stockdale, C. (2001). The Language of Space and Time. Paper presented at the 52nd International Dyslexia Association International Conference, Albuquerque, NM, October 24-27, 2001. Convention Recordings, Inc. – www.conventionrecordings.com; St. Petersburg, FL, Session S-168.

Issues of Diagnosis

- Voeller (1995) wrote, “Trying to make a diagnosis of right-hemisphere deficit syndrome without neuropsychological data would be akin to making a diagnosis of epilepsy in the absence of electro-encephalographic (EEG) information.” (p. S17)
- Voeller (1995) continued that many with Asperger’s Disorder are labeled AD/HD and they may have problems with Obsessive Compulsive Disorder and/or depressive symptoms.

Voeller, K.K.S. (1995). Clinical Neurological Aspects of the Right-Hemisphere Deficit Syndrome. Journal of Child Neurology, 10 (Supplement Number 10), pp. S16-S22.

AD and AD/HD



- Some said AD/HD and Asperger's Disorder Could not be comorbid.
- AD/HD and AD/HD-like symptoms are highly comorbid in those with LD, NVLD, and Asperger's Disorder.

Schultz, R.T., Romanski, L.M., and Tsatanis, K.D. (2000). Neurofunctional Models of Autistic Disorder and Asperger Syndrome, Clues From Neuroimaging. In A. Klin, F. Volkmar, and S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 172-209.

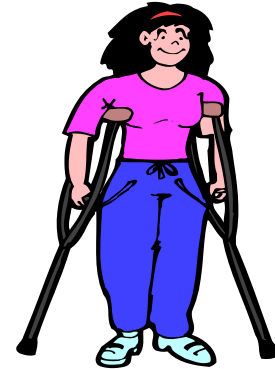
Brown, T.E. (2000). Attention-Deficit Disorders and Comorbidities in Children, Adolescents and Adults. Washington, D C: American Psychiatric Press.

Comorbidity and Autism Spectrum Disorders

- Half of the adults with Autism spectrum disorders have a comorbidity.
- Common comorbidities: Anxiety, Depression, AD/HD, Tourette's Disorder
- 25% of those with Autism Spectrum Disorders have seizures
- Fragile X and other genetic disorders need to be ruled out.

Ozonoff, S., Dawson, G., McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford.

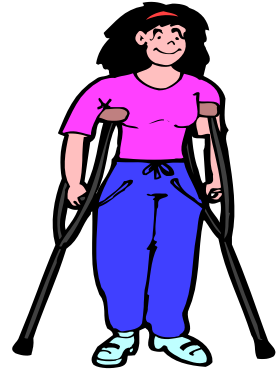
What is a “Disability?”



- With adults the term disability has become a legal term of art since the passage of the American's with Disability Act (ADA).
- One must be impaired compared to the Average American.
- Highly Controversial

Gordon, M. and Keiser, S. (Eds.) (1998). Accommodations in Higher Education Under the Americans with Disabilities Act: A No-Nonsense Guide for Clinicians, Educators, Administrators, and Lawyers. New York, NY: Guilford.

The “New” ADA



- The American’s with Disabilities Act, Amendment Act of 2008:
 - The changes to the regulations have not been finalized as of yet for these changes. Just be aware major changes in the ADA are coming soon!
 - Stay tuned: <http://www.ada.gov/>

Diagnosing Nonverbal LD and Aspergers

- Rourke and Tsatsanis (2000) recommend using Bryon Rourke's white matter model neuropsychological testing technique to diagnose NVLD.
- Then if the person meets the white mater model criteria then assess whether the Asperger's Disorder criteria from DSM-IV, TR apply to the client in addition to the above.

Rourke, B.P., and Tsatsanis, K.D. (2000). Nonverbal Learning Disabilities and Asperger's Syndrome, In A. Klin, F. Volkmar and S.S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford.

Other Highly Useful Assessments

- Speech and Language Evaluation
- Occupational Therapy Assessment
- Physical Therapy Assessment
- Behavioral Neurology/Neuropsychiatry Assessment
- Genetic Assessment

Screening for NVLD and ASD

- Krug Asperger's Disorder Index:
 - Western Psychological Services:
www.wpspublish.com
 - “Best on market” (Filipek, November 12, 2008).

Kotkin, R., and Filipek, P. (November 12, 2008). Social Skills: Autism, Asperger's and AD/HD. Paper presented at the 20th Annual Children and Adults with Attention Deficit Disorders (CHADD) Conference, Anaheim, CA.

Skills of Social Emotional Competence

- Awareness of own emotional state
- Awareness of other's emotional state
- Emotional use of words
- Ability to cope with emotional distress
- Ability to attend to the reaction of others

Semrud-Clikeman, M. (Spring, 2003). Executive Function and Social Communication Disorders. Perspectives, 29 (2), p. 20-22.

Social Disorders



- Regarding Nonverbal LD Ozonoff, et.al. (2002) wrote, “Many children with NLD have trouble reading the emotions of others and have other social difficulties...” (p. 162)

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY: Guilford.

Learning Disorders

- Rourke broke down Learning Disorders into two groups:
 1. Basic Phonological Processing Disorders
 2. Nonverbal Learning Disorders

Rourke, B.P. (2006). Question #1: You refer to NLD as a subtype of Learning Disabilities (LD). How do you define LD? From Website: www.nld-bprourke.ca/BPRA1.html

Nonverbal Learning Disorders (NVLD)

- Five to ten percent of the LD population has NVLD.
- Sixty percent of those with NVLD have comorbid AD/HD
- “Social Competence Disorder”

Semrud-Clikeman, M. (October 26, 2006). AD/HD and Co-morbidity: Aspergers, Autism Spectrum and Nonverbal Learning Disabilities. Paper presented at the Pre-Conference Institutes of the 18th Annual CHADD International Conference, Chicago, IL.

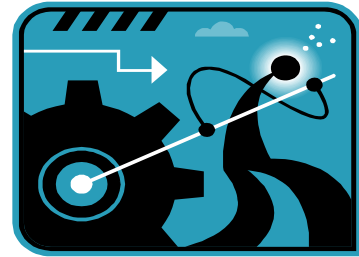
Autism Spectrum Disorders



- “The Core Problem with autism is their social disability.”
(Klin, 2001)

**Klin, A. (2001). Autism, Asperger's and the PDD Spectrum.
Seminar presented at the 33rd Annual Arizona Association of School Psychologists Conference, “Across the Spectrum”, October 11 and 12, 2001, Mesa, AZ.**

Autism Spectrum Disorders



- Klin and Volkmar said of adults with Asperger's Disorder, "Unless issues of social presentation and competence are adequately addressed, including what to do in specific situations such as lunch or free-time periods, the chances of vocational satisfaction are lessened." (p. 351)

Klin, A. and Volkmar, F.R. (2000). Treatment and Intervention Guidelines for Individuals with Asperger Syndrome. In A. Klin, F. Volkmar and S.S. Sparrow (Eds.), Asperger Syndrome. New York, NY: Guilford, pp. 340-366.

Social Interaction



“...traditional psychologists and neurologists have been slow to acknowledge that social behavior is at least in part a brain function just like memory or language” (p. 296).

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

Neurosocial Disorder

- Rosen and Bartak broke down social interaction into three parts (which are intertwined):
 - ◆ **Social Perception**: The ability to perceive social interactions.
 - ◆ **Social Interpretation**: How we understand social interaction after it is perceived.
 - ◆ **Social Skills**: Emotional, cognitive, verbal and nonverbal ways we socially behave.



Rosen, W. and Bartak, J. (2002). Distinguishing Features of Social Deficits in Children with Neurobiological Disorders. Learning Disabilities Association International Conference, January 15, Denver, CO.

Neurosocial Disorder



- So many of us are so well wired to pick up proper social behavior intuitively, we have overlooked those who don't and need explicit training in social interactions and have viewed them as just misbehaving.
- **“Neurosocial Disorders”** = “Social Learning Disabilities”

Rosen, W. and Bartak, J. (2002). Distinguishing Features of Social Deficits in Children with Neurobiological Disorders. Learning Disabilities Association International Conference, January 15, Denver, CO.

Neurosocial Disorder



- With Neurosocial Disorders you must match etiology to treatment.

Rosen, W. and Bartak, J. (2002). Distinguishing Features of Social Deficits in Children with Neurobiological Disorders. Learning Disabilities Association International Conference, January 15, Denver, CO.

Neurosocial Disorder

- When treating such disorders you want to start treatment where the breakdown occurs.
 - Encoding
 - Representation
 - Generating Responses
 - Decision Making



Semrud-Clikeman, M. (October 26, 2006). AD/HD and Co-morbidity: Aspergers, Autism Spectrum and Nonverbal Learning Disabilities. Paper presented at the Pre-Conference Institutes of the 18th Annual CHADD International Conference, Chicago, IL.

Brain Areas Related to Social Interaction

Schultz and Klin (in press) indicated the following brain areas control the following social behaviors:

Frontal lobe: Theory of mind and social perception

Hypothalamus: Maternal behavior

Amygdala: Arousal, emotional learning, social orienting, recognition of emotional significance

Fusiform gyrus: Face perception

Temporal lobe: Interpretation of biological movement, recognition of facial expressions



Schultz, R.T. & Klin, A. (in press). **Social Systems of the Brain: Evidence From Autism and Related Disorders.** Philosophical Transitions of the Royal Society, Series B. (taken from: Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High-Functioning Autism. New York, NY: Guilford, p. 58.

Brain Areas Related to Social Interaction



- Voeller believed all the above mentioned systems are located in their own specific brain areas.
- Impairment in one area does not necessarily mean impairment in other areas.

Voeller, K.K.S. (1995). Clinical Neurological Aspects of the Right-Hemisphere Deficit Syndrome. Journal of Child Neurology, 10 (Supplement Number 1), pp. S16-S22.

Emotional Intelligence



- Lane wrote, “Emotional Intelligence may be broadly defined as the ability to use emotional information in a constructive and adaptive manner.” (p. 2)

Lane, R.L. (2000). Neural Correlates of Conscious Emotional Experience. In R. Lane, L. Nadel, G. Ahern, J. Allen, A. Kazniak, S. Rapcsak and G. Schwartz (Eds.), Cognitive Neuroscience of Emotion. New York, NY: Oxford University Press, pp. 345-370.

Emotional Intelligence

- Daniel Goleman stated that emotional intelligence is intricately imbedded in the human neuroanatomy.

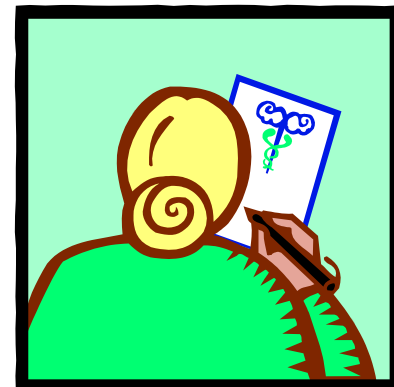
Goleman, D. (1997). Emotional Intelligence: Why It Can Matter More Than IQ. New York, NY: Bantam.



Emotional Intelligence

- A prerequisite for empathy is an awareness of one's own emotions.

Lane, R.L. (2000). Neural Correlates of Conscious Emotional Experience. In R. L. Lane, L. Nadel, G. Ahern, J. Allen, A. Kazniak, S. Rapcsak and G. Schwartz (Eds.), Cognitive Neuroscience of Emotion. New York, NY: Oxford University Press, pp. 345-370.



Simon Baron-Cohen and Emotional Intelligence



- Autism may be an extreme form of the biological male personality.
- Males are into ***Systematizing (S)***, or understanding things.
- Females are into ***Empathizing (E)***, or understanding people.
- Those with Autism (mostly males) have no ***Empathizing***, but are strong in ***Systematizing***.
- The ***E-S Spectrum***

Cowley, G. (September 8, 2003). Girls, Boys and Autism. Newsweek, pp. 42-50.

Baron-Cohen, S. (2003). The Essential Difference. New York, NY: Pereus.

Asperger's and Gender

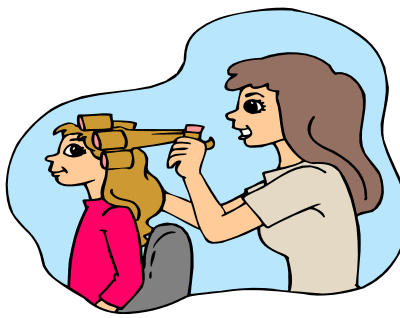


- Girls and women with Asperger's Disorder suffer more socially than boys and men with Asperger's Disorder.

Attwood, T. (2007). The Complete Guide for Asperger's Disorder. Philadelphia, PA: Jessica Kingsley.

Hully, C. and Larmar, S.A. (2006). Asperger Syndrome in Adolescent Females. International Journal of Learning. 13 (3), p. 1-6. From Website: <http://www98.griffith.edu.au/dspace/bitstream/10072/14167/1/40458.pdf>.

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, J. (1977). Human and Animal Languages: In a Sense of Future. Cambridge, MA: MIT Press. pp. 104-131.

Leakey, R. (1995). Speech given to the National Press Club, Washington, DC, Played on National Public Radio.

Grandin, T. (1995). Thinking In Pictures: And Other Reports From My Life With Autism. New York, NY: Vintage.

Compassion

- Does a toothless Homo Erectus skull found at Dmanisi that was over 1,800,000 years old show evidence of human compassion?

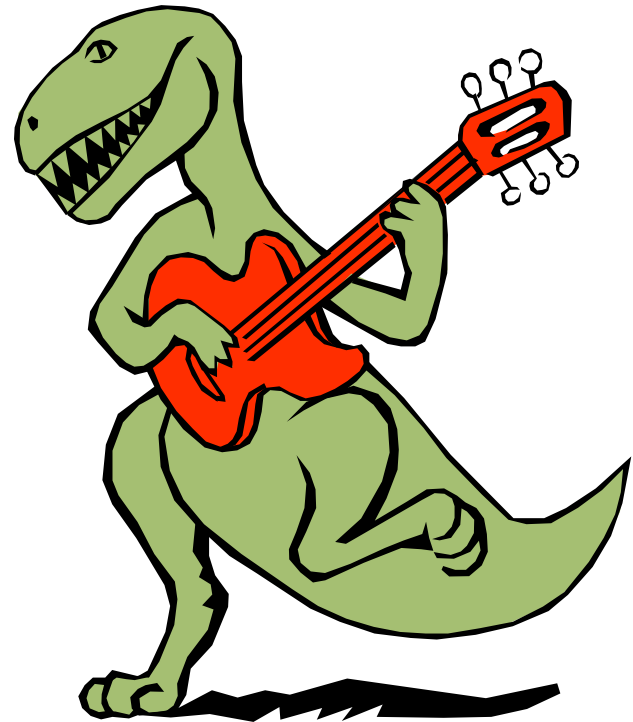


Fischman, J. (April, 2005). Family Ties: Dmanshi Find. National Geographic, 202 (4), 18-27.

Kinder, Gentler, T-Rex

- There is now evidence that some dinosaurs nested and raised offspring similar to modern birds. Hence, they had some capacity for compassion.

Smith, D. (No date). Dinosauria: Life History and Ecology. From Website:
<http://www.ucmp.berkeley.edu/diapsids/dinolh.html>.



Compassion

- “Scientists figured out decades ago that chimps are our nearest evolutionary cousins, roughly 98% to 99% identical to humans at the genetic level. When it comes to DNA, a human is closer to a chimp than a mouse to a rat” (pp. 25-26).

Lemonick, M.D., and Dorfman, A. (October 9, 2006). What makes Us Different? Time, 168(15), pp. 44-53.



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, R. (1997). Next of Kin: My Conversations with Chimpanzees.
New York, NY: William Morrow.

Edwards, M. (Spring, 2000). Book Review. The Harvard Brain. From website:
hcs.harvard.edu/~husn/BRAIN/vol7-spring2000/fouts.htm.

Compassion



- Bonobo: *Pan paniscus*
 - 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)

De.Waal, F.B.M. (March 1995). Bonobo Sex and Society. Scientific American. pp. 82-88. From Website: <http://primates.combonobos/bonobosexsoc.html>.

Compassion



- The dominate male bonobo at the Great Ape Trust in Iowa, Kanzi, can communicate by using 348 symbols and knows the meaning of up to 3000 words!

Raffaele, P. (November, 2006). The Smart and Swinging Bonobo. Scientific American. 37 (6), pp. 66-75.

Compassion



- “Apparently as intelligent as chimpanzees, bonobos have, however, a far more sensitive temperament. During World War II bombing of Hellabrun, Germany, the bonobos all died of fright from the noise; the chimpanzees were unaffected.” (p. 4 of 14)

De.Waal, F.B.M. (March 1995). Bonobo Sex and Society. Scientific American. pp. 82-88. From Website: <http://primates.combonobos/bonobosexsoc.html>.

Vasopressin



“Vasopressin – secretive, in the background, subtle aggressive male energies; brother to testosterone, brother to oxytocin (makes you want to contact in an active way, male way, as does oxytocin)” (p. XVI)

Brizendine, L. (2006). The Female Brain. New York, NY: Morgan Road.

Bonobos & Vasopressin



“Interestingly, this same polymorphic microsatellite in the human *AVPR1A* that has been associated in autism is absent in the common chimpanzee, but present in the bonobo. Bonobos are known for high levels of psychosexual reciprocity and they appear to use sexuality to promote social reconciliation as well as social bonding within the group. Therefore, it is intriguing to consider that as in voles, variations in unstable microsatellite sequences in the promoters of the primate vasopressin receptor may contribute to species difference in expression and social behaviour, as well as to individual differences in social behaviour.” (p. 2195)

Hammock, E.A.D. and Young, L.J. (December, 2006). Oxytocin, Vasopressin and Pair Bonding: Implications for Autism. Philosophical Transactions of the Royal Society of Biological Sciences, 361 (1476), pp. 2187-2198. From Website: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1764849>.

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, E.A.D. and Young, L.J. (December, 2006). Oxytocin, Vasopressin and Pair Bonding: Implications for Autism. Philosophical Transactions of the Royal Society of Biological Sciences, 361 (1476), pp. 2187-2198. From Website:
<http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1764849>

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 troupes. Bonobos are run by female hierarchies and seal every interaction with a bit of sexual rubbing...”

Chimpanzee, Bonobos, Humans & Vasopressin



“...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, L. (2006). The Female Brain. New York, NY: Morgan Road.

Alexithymia



What is Alexithymia?



1. Tend 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, D. (1995). Emotional Intelligence: Why It Can Matter More Than I.Q. New York, NY: Bantam.

Alexithymia

- “Functional imaging studies implicate medial and prefrontal cortex and posterior superior sulcus (STS)...(sic. The) STS is concerned with representing the actions of others through the detection of biological motion; medial prefrontal regions are concerned with explicit representation of the states of the self. These observations suggest that the ability to mentalize has evolved from a system for representing actions.”

Frith, C.D. and Frith, U. (1999). Intersecting Minds-A Biological Basis. Science, 286, 1692-1695.

Alexithymia

Lane wrote, “Several neuroimaging studies reveal that an area of the medial prefrontal cortex very close to that identified in our attention to emotional experience study has been implicated during the performance of theory of mind tasks...these findings suggest that the neural substrates of the mental representation of one’s own and other’s mental states are closely related” (p. 18) Lane continued that several studies of brain injured individuals when coupled with the above appeared to indicate, “*...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, R. (2000). Neural Correlates of Conscious Emotional Experience. In L.R. Lane, et. al. (Eds.), Cognitive Neuroscience of Emotion. New York, NY: Oxford University Press, pp. 345-370.

Macaque Monkey



- Macaques from:
 - Luciano Fadiga discovered
 - “mirror neurons” at the University of Parma in Italy in 1992.
 - Rizzolatti, G., Fogassi, L. and Gallese, V. (November, 2006). Mirrors in The Mind. Scientific American, 296 (5), pp. 54-61.

Mirror Neurons



- Italian study of macaque monkeys in 1992
 - Known for years cells of premotor cortex fire just before movement.
 - Discovered the 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.

Begley, S. (Friday March 4, 2005). How Mirror Neurons Help Us to Empathize, Really Feel Others' Pain. The Wall Street Journal, p. B1.

Mirror Neurons



“Single cell recordings and brain imaging have demonstrated that the primate brain contains pre-motor neurons which fire not only when an individual makes a goal-oriented action, but also when an individual simply observes somebody else making the same action. These neurons fire even in the dark, when for example an individual hears the sounds associated with particular actions. These neuronal properties have been called mirror properties which are considered now to have a bearing on the development of emotions.” (p. 1 of 2)

Author (Februray 19, 2005). American Association for the Advancement of Science Symposium to Take Place On Mirror Neurons. From website:
http://eurekalert.org/pub_releases/2005-02/apa-ast021405.php.

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

Mirror Neurons



- “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, V.S. (3/8/05). Mirror Neurons and Imitation Learning as the Driving Force Behind “The Great Leap Forward” in Human Evolution.
www.edge.org/3rd_culture/ramachandran/ramachandran_p2.html, p. 2.

Mirror Neurons

- There are visual and audiovisual mirror neurons in the brain in several places.
- Areas involved in the brain:
 - Inferior Frontal Gyrus: guidance of movement/assessment of intentions
 - Anterior Cingulate Cortex: regulation of empathy
 - Angular Gyrus: semantic comprehension combining sensory input
 - Insula/Amygdala : pain & disgust



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

Ramachandran, V.S. and Oberman, L.M. (November, 2006). Broken Mirrors. Scientific American, 296(5), pp. 62-69.

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 and Autism

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

Ramachandran, V.S. and Oberman, L.M. (November, 2006).
Broken Mirrors. Scientific American, 296(5), pp. 62-69.



Mirror Neurons



- “I suggest, also, that a loss of these mirror neurons may explain autism...Without these neurons the child can no longer understand or empathize with other people emotionally and therefore completely withdraws from the world socially.” (p. 2)

Ramachandran, V.S. (3/8/05). Mirror Neurons and Imitation Learning as the Driving Force Behind “The Great Leap Forward” in Human Evolution.
www.edge.org/3rd_culture/ramachandran/ramachandran_p2.html, p. 2.

Mirror Neurons



I spoke to Uta Frith about using the combination of her group's research on emotional working memory and the mirror neuron research as an explanation of autistic behavior. She said the combination of theories could not differentiate autistic behavior and antisocial behavior.

Frith, U. (November 1, 2007). Personal Communication. International Dyslexia Association 58th Annual Conference, Dallas, TX.

Mirror Neurons



However, Blair wrote after reviewing the literature, “It is suggested from this literature that empathy is not a unitary system but rather a loose collection of partially dissociable systems. In particular, three divisions can be made: cognitive empathy (or Theory of Mind), motor empathy, and emotional empathy. The two main psychiatric disorders associated...

Mirror Neurons



- Mirror Neurons and Environmental Experience?
- Daniel Glaser's dancers.

Glaser, D. (January 2005). Mirror Neurons: Research Update. NOVAscienceNOW. Public Broadcasting System (PBS).
www.pbs.org/wgbh/nova/sciencenow/3204/01-resup.html, p. 1

Alexithymia MAY BE A NEUROBIOLOGICAL DISORDER!

People with Asperger's Disorder have difficulty with, "...conceptualizing and appreciating the thoughts and feelings of another person" (p. 112). This is "Theory of Mind."



Attwood, T. (1998) Asperger's Syndrome: A Guide for Parents and Professionals. Philadelphia, PA: Jessica Kingsley.

“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 (July 28, 2003). The Alexithymia FAQ. From web site:
www.alexithymia.info/faq.htm/.

What About PTSD?



“If mild stress becomes chronic, the unrelenting cascade of cortisol triggers genetic actions that begin to sever synaptic connections and cause dendrites to atrophy and cells to die; eventually, the hippocampus can end up physically shriveled, like a raisin.” (p. 74)

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

What About PTSD?



- Hippocampus loosens neuronal connections
- Medication and talk therapy grow new neurons

Prince, J. (October 28, 2006). Closing Keynote Address - Bridging the Gap: Putting a Face on AD/HD. Paper presented at the 18th Annual CHADD International Conference, Chicago, IL.

Durman, R.S. (2002). European Journal of Psychiatry, 17 (Supplement 3), 306-310.

What About PTSD?



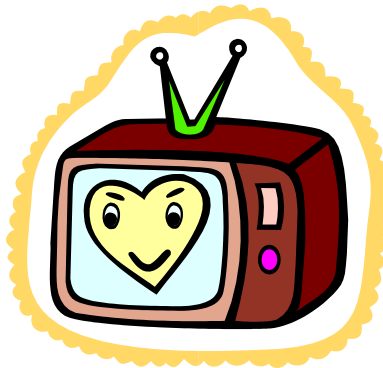
“At every level, from the microcellular to the psychological, exercise not only wards off the ill effects of chronic stress; it can also reverse them. Studies have shown that if researchers exercise rats that have been chronically stressed, that activity makes the hippocampus grow back to its preshriveled state.” (p. 79)

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

Diagnostic Tools for Alexithymia

- Beth Israel Questionnaire (BIQ)
- Toronto Alexithymia Scale (TAS-20)

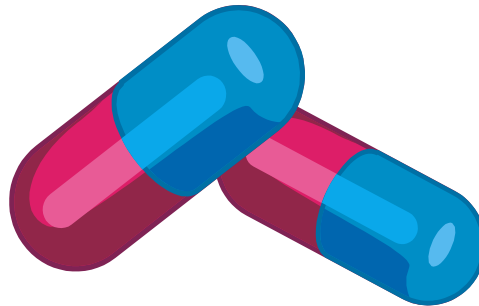
Author (July 28, 2003). The Alexithymia FAQ. From web site:
www.alexithymia.info/faq.htm/ .



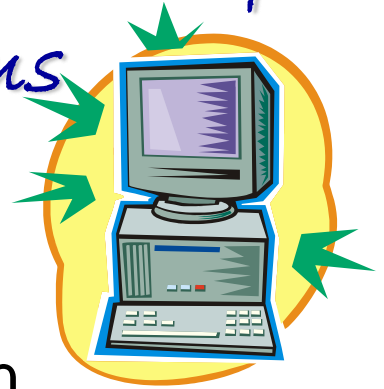
Possible Treatment for Emotional Working Memory Problems

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

Barkley, R.A. (2006). Attention Deficit Hyperactivity Disorder, 3rd Edition. New York, NY: Guilford.



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 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.

Oxytocin in Autism



“There is modest, yet intriguing evidence linking oxytocin to autism. Oxytocin in blood levels of boys with autism was found to be lower than in a group of age–matched controls.” (p. 2194)

Hammock, E.A.D. and Young, L.J. (December, 2006). Oxytocin, Vasopressin and Pair Bonding: Implications for Autism. Philosophical Transactions of the Royal Society of Biological Sciences, 361 (1476), pp. 2187-2198. From Website: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1764849>

Oxytocin & Vasopressin In Autism

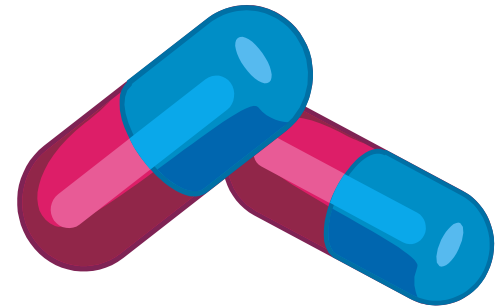


“Oxytocin and vasopressin contribute to a wide variety of social behaviors, including social recognition, communication, parental care, territorial aggression and social bonding.” (p. 2187)

Hammock, E.A.D. and Young, L.J. (December, 2006). Oxytocin, Vasopressin and Pair Bonding: Implications for Autism. Philosophical Transactions of the Royal Society of Biological Sciences, 361 (1476), pp. 2187-2198. From Website:
<http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1764849>

Some Treatments For Mirror Neuron Difficulties

- Risperidone, MDMA (ecstasy):
To raise oxytocin levels
- Biofeedback:
To help control anxiety



Author (1997). Use of “Atypical” Neuroleptics in the Treatment of PDDs. MedScape Psychiatry & Mental Health e Journal, 2 (4):
www.medscape.com/viewarticle/430897_5

Ramachandran, V.S. and Oberman, L.M. (November, 2006). Broken Mirrors.
Scientific American, 296(5), pp. 62-69

MDMA IS AN EXPERIMENTAL TREATMENT!!!!

Theory of Mind & Emotional Working Memory Disorder

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

Frith, U. (2001). Mind Blindness and the Brain in Autism. Neuron, 32, 969-979.

- Possible Treatment Technique -

Carol Gray – Social Stories:

<http://www.thegraycenter.org/>



Web Site and Professionals Who Can Help With Alexithymia

- Alexithymia Information Resource:
www.alexithymia.info
- 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

Professionals Who Can Help With Alexithymia (Continued)

- Behavioral Neurology/Neuropsychiatry-American Neuropsychiatric Association:
www.anpaonline.org
- Speech Language Pathologist-American Speech-Language Hearing Association:
www.professional.asha.org

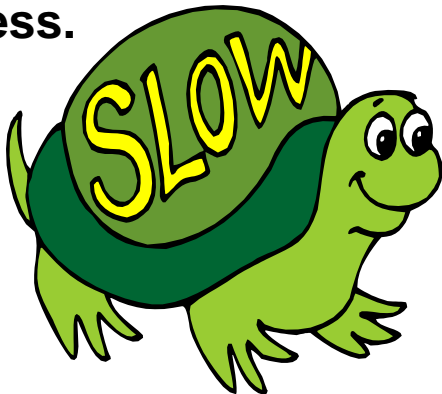
Dyssemia



Dyssemia

- “Dyssemia is a term that we...refer(s) to any significant difficulty in understanding or sending nonverbal information.” (Nowicki and Duke, 2002, p. 2)

Nowicki, S. and Duke, M. (2002). Will I Ever Fit In? New York, NY: Free Press.



Dyssemia

- Nowicki and Duke believed about 10 percent of those with Dyssemia have a neurobiological form of the disorder.

Nowicki, S. and Duke, M. (2002). Will I Ever Fit In? New York, NY: Free Press.



Dyssemia



- The ability to learn through vicarious learning is very important to learning non-verbal social skills and about the non-verbal environment.

Nowicki, S. and Duke, M. (2002). Will I Ever Fit In? New York, NY: Free Press.

Types of Dyssemia

- Expressive Dyssemia
- Receptive Dyssemia
- Proxemics: The use of space
- Facial expressions
- Paralanguage: Inflection
- Gestures: Give emphasis to speech
- Postures: Long distance social interaction
- Fashion/Objects: Memes
- Chromemics: Time and Rhythm



Nowicki, S. and Duke, M. (2002). Will I Ever Fit In? New York, NY: Free Press.

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.
- People with Autism Spectrum Disorders can mimic, but they have difficulty inferring intention.
- You must inhibit imitation to coordinate interactions with others.

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



Dyssemia

- Those with Asperger's Disorder and High Functioning Autism have problems with Theory of Mind which can cause problems with receptive interpretation of non-verbal cues from others. It can also cause them problems in putting importance on their own non-verbal cues.

Klin, A., Volkmar, F.R. and Sparrow, S.S. (2000). Asperger Syndrome. New York, NY: Guilford.

THE CEREBELLUM



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.

Cerebellum and Asperger's Disorder



- There is good neuroimaging data that indicates many with Asperger's Disorder and High Functioning Autism have smaller cerebellums than and are more clumsy than the norm.

Attwood, T. (1998). Asperger Syndrome: A Guide for Parents and Professionals. Philadelphia, PA: Jessica Kingsley.

Exhaustion and Anxiety



Exhaustion and Learning Disorders



Roffman wrote, “One final ongoing issue that is worthy of mention for many with LD/ADHD is the problem of fatigue. The extra effort required to cope with the continued social and academic demands of schooling can be chronically exhausting.” (p. 217)

Roffman, A.J. (2000). Meeting The Challenge of Learning Disabilities In Adulthood. Baltimore, MD: Brookes.

LD Life Insight



“The process of continually compensating can be deeply tiring. Betty notes that she often is exhausted as a direct result of the enormous effort that she expends on building on her strengths and working around her weaknesses. She notes, ‘You’re always compensating and you’re tired a lot.’” (p. 261)

Roffman, A. (2000). Meeting the Challenge of Learning Disabilities in Adulthood. Baltimore, MD: Brookes.

Mr. Waterman's Lost 6th Sense



- What is our 6th sense?
- Proprioception
- “No one understood what was wrong or why my life was such a struggle...Sometimes I wonder. It’s been a huge mental drain on me and still takes an awful lot of cognitive energy to maintain my movements.” (p. 18)

Azar, B. (June, 1998). Why Can’t This Man Feel Whether, or Not He’s Standing Up? Monitor of the American Psychological Association, 29 (6), pp. 48-49.

Mr. Waterman's Lost 6th Sense

Cole, J. (1995). Pride and a Daily Marathon.
Boston, MA: MIT Press.

<http://www.gla.ac.uk/departments/philosophy/Personnel/susan/RossDan/LossofProprioception.htm>



Observation of an Autistic Genius:

- Temple Grandin said for those with autism spectrum disorders social adaptation must occur on a conscious level.
- I believe the same is true for many with Dyslexia, AD/HD, NVLD, etc.

Grandin, T. (1995). Thinking in Pictures and Other Reports from My Life with Autism. New York, NY: Vintage.



Anxiety and Learning Disorders/AD/HD



Roffman wrote, “Adults with LD/ADHD often experience pressure as they work to cope with their symptoms. Anxiety develops out of such day-to-day occurrences as the loss of yet another set of keys...” (p. 49)

Roffman, A.J. (2000). Meeting The Challenge of Learning Disabilities In Adulthood. Baltimore, MD: Brookes.

Summary Statement



Kevin T. Blake, Ph.D., P.L.C.'s Observation

- “If you have a neurosocial deficit (i.e., in the brain hardware for social interaction) you are forced to create software to compensate for it. That’s hard and takes time and energy. It also takes an action which is for most people unconscious and makes it conscious, hence it will never be as “automatic and efficient” as an ability...”

Kevin T. Blake, Ph.D., P.L.C.'s Observation (Continued)

- “...Such compensation skills divide attention and make tasks which are by their nature not conscious more onerous and less efficient creating frustration. When additional stimuli is added on an unpredictable basis this requires a cognitive shift and these learned skills tend to break down which may lead to a feeling of vulnerability and anxiety...”

Kevin T. Blake, Ph.D., P.L.C.'s Observation (Continued)

- "...People with such disabilities tend to fatigue faster in social situations and perform cognitively less efficiently when engaged in their social 'skills' compensations.
- Those with neurosocial deficits are at risk of not being aware of and/or sensitive to cultural norms and symbols as well as their importance in social interaction. This unawareness may cause significant social rejection, anxiety and frustration for these individuals..."

Kevin T. Blake, Ph.D., P.L.C.'s Observation (Continued)

- “...Such compensation skills divide attention and make tasks which are by their nature not conscious more onerous and less efficient creating frustration. When additional stimuli is added on an unpredictable basis this requires a cognitive shift and these learned skills tend to break down which may lead to a feeling of vulnerability and anxiety...”

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- “...People with such disabilities tend to fatigue faster in social situations and perform cognitively less efficiently when engaged in their social ‘skills’ compensations.
- Those with neurosocial deficits are at risk of not being aware of and/or sensitive to cultural norms and symbols as well as their importance in social interaction. This unawareness may cause significant social rejection, anxiety and frustration for these individuals...”

Kevin T. Blake, Ph.D. P.L.C.'s Observation (Continued)

- An additional source of frustration and anxiety for individuals with these deficits is most peoples' social interactions are automatic and thus they frequently do not understand the struggles of those who must socialize on a cognitive level.

Social Anxiety and Shyness



Social Anxiety/ Shyness



- Fight or Flight Response

Benson, H. (1983). The Relaxation Response. New York, NY: Outlet Books.

Benson, H. (1994). Beyond The Relaxation Response. New York, NY: Berkley Books.

Fight or Flight Response Vs. **Tend and Befriend Response**



- ***Shelley Taylor, Ph.D.***

**Taylor, S.E. (2002).
The Tending Response. New
York, NY: Holt.**

Tend and Befriend



“Tend-and-befriend is a behavioural pattern exhibited by human beings and some animal species when under threat. It refers to protection of offspring (tending) and seeking out of the social group for joint protection (befriending)...Tend and befriend has been heavily studied in female animals and women. One reason for this is that estrogen enhances the effects of oxytocin which as noted, is believed to be an important biological underpinning of tend and befriend.” (p. 1 of 3)

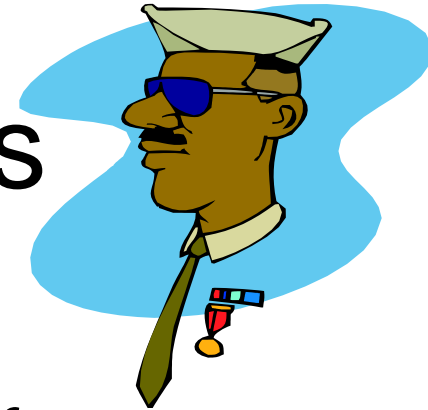
Wikipedia: http://en.wikipedia.org/wiki/Tend_and_befriend

Tend and Befriend



Taylor, S.E., Klien, L.C., Lewis, B.P., Gruenwald, T.A., Gurung, R.A.R. and Updegraff, J.A. (2002). Biobehavioral Responses to Stress in Females: Tend-and-Befriend, Not Fight-or-Flight. Psychological Review, 107 (3), pp. 411-429.

Social Anxiety and Shyness



- Attwood (2002) gave an example of an Australian soldier who fought behind enemy lines as a lone sniper in Vietnam who said his social anxiety is much more pronounced than his PTSD from the war ever was.

Atwood, T. (July, 2002). Social Skills for Children with Asperger's and High Functioning Autism. Workshop presented on July 19, 2002 in Scottsdale, AZ: Future Horizons, Inc. 721 West Abram Street, Arlington, TX 76013.

Social Anxiety & Shyness



- 10 to 15% of newborns have an inherited enhanced startle response.
- A 20 year follow-up study of such children with fMRI imaging indicated they are still shy neurologically, especially to strangers.

Zimbardo, P.G. (2000). The Personal and Social Dynamics of Shyness: Adults and Children. Paper presented at the 50th Annual Arizona Psychological Association Conference, October 21, 2000, Tucson, AZ.

Jozefowicz, C. (2003). Once Shy, Always Shy?, Psychology Today, 36 (5), p. 27.

Social Anxiety and Shyness

- The amygdala is activated in the genetically shy when they are shown pictures of unfamiliar people. This would tend to indicate they feel fear and are overly vigilant when they see strangers. This does not occur in the non-shy.

Jozefowicz, C. (2003). Once Shy, Always Shy?, Psychology Today, 36 (5), p. 27.



Shyness Defined

- “Shyness may be defined experimentally as discomfort or inhibition in interpersonal situations that interferes with pursuing one’s interpersonal or professional goals.” (p. 497)

Henderson, L. and Zimbardo, P. (1998). Shyness. Encyclopedia of Mental Health, 3, p. 497.



Social Phobia



- Two Subtypes:
 1. Specific Type- public speaking, eating in public, etc.
 2. Generalized Type-very broad
 - These people shy away from treatment: 36% of those who meet DSM criteria actually get treatment

Dittmann, M. (July/August, 2005). Stemming Social Phobia. Monitor On Psychology, 36 (7), pp. 92-94.

Shyness in a Nutshell

- “S”ELF-BLAME AND SHAME
- “A”VOIDANCE
- “D”ISTRESS
- “F”EAR OF NEGATIVE EVALUATION
- “I” MUST BUT I CAN’T
- “X”-POSURE: FEAR OF BOTH FAILURE AND SUCCESS
- “S”ELF SABOTAGE



Zimbardo, P.G. (2000). The Personal and Social Dynamics of Shyness: Adults and Children. Paper presented at the 50th Annual Arizona Psychological Association Conference, October 21, 2000, Tucson, AZ.

Shyness Treatment

- I asked Zimbardo what he thought those who had neurobiological disorders who were genetically shy needed most and he said, “Training in the skills to make legitimate excuses.”

Zimbardo, P.G. (2000). The Personal and Social Dynamics of Shyness: Adults and Children. Paper presented at the 50th Annual Arizona Psychological Association Conference, October 21, 2000, Tucson, AZ.



Shyness Treatment

- Cognitive Behavioral Therapy and Antidepressant Medication works 80% of the time with 5 year follow-up. Thought to be best method of treatment (Richard Heimberg, Ph.D.).

Dittmann, M. (July/August, 2005). Stemming Social Phobia. Monitor On Psychology, 36 (7), pp. 92-94.



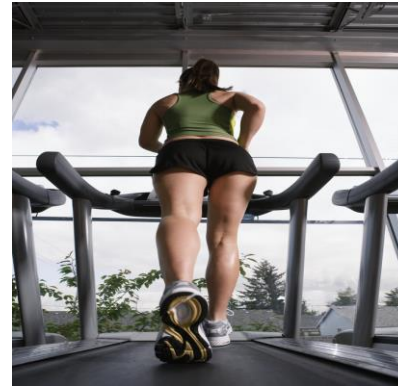
Treatment of Social Anxiety/Shyness



- Zimbardo (2000) described a 26 week treatment program at his shyness clinic that includes the following: Cognitive Behavior Modification/Cognitive Restructuring, Self-Esteem Restructuring, Support Groups, Practice, Medications, Video Social Skills Training, Encouragement, etc.
- www.shyness.com and www.shynessinstitute.com

Zimbardo, P.G. (2000). The Personal and Social Dynamics of Shyness: Adults and Children. Paper presented at the 50th Annual Arizona Psychological Association Conference, October 21, 2000, Tucson, AZ.

Treatment of Social Anxiety/Shyness



- Aerobic Exercise:
 - “As for the trait, the majority of studies show that aerobic exercise significantly alleviates symptoms of any anxiety disorder.” (p. 92)

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

Treatment of Social Anxiety/Shyness



Aerobic Exercise “Dosage”:

“Just multiply your body weight by eight to figure out how much you should be burning for the high dose, and then head to the gym to find out how many calories you burn during a given workout (most aerobic machines do this for you). If you weigh 150 pounds and burn 200 calories in thirty minutes on the elliptical trainer, you’d want to do six sessions a week to meet the high dose.” (p. 138)

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

Good Resources on Exercise and Counseling



- Novotney, A. (July/August 2008). Get Your Clients Moving: Ten Tips to Incorporate Exercise Into Your Treatment Arsenal. Monitor On Psychology, 39 (7), pp. 68-69.
- Ratey, J.J. (2008). Spark: The Revolutionary New Science of Exercise and The Brain. New York, NY: Little, Brown.
- ***Always consult a physician before starting an exercise program!***

People and Organizations Who Can Help With Social Anxiety/Shyness

- American Psychiatric Association:
www.apa@psych.org
- American Psychological Association: www.apa.org
- American Association of Marriage and Family Therapists: www.aamft.org
- National Board of Certified Counselors:
www.nbcc@nbcc.org
- National Association of Social Workers: www.naswdc.org
- Anxiety Disorder Association of America: www.adaa.org



Emotional Salience Landscape

Difficulties- Mirror Neurons

- Problems in the amygdala and lack of emotional salience landscape may account for sensory sensitivity.
- These problems are found in those with Autism Spectrum Disorders.
- Insula/Amygdala : pain & disgust

Ramachandran, V.S. and Oberman, L.M. (November, 2006). Broken Mirrors.
Scientific American, 296(5), pp. 62-69.



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, though 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, V.S. and Oberman, L.M. (November, 2006). Broken Mirrors. Scientific American, 296(5), pp. 62-69.

Emotional Salience Landscape

Difficulties- Mirror Neurons

When the child with Autism Spectrum Disorder looks into another's eyes:

1. The "...altered connection between the cortex and amygdala distorts (the) child's response.
2. (The) Amygdala triggers autonomous nervous system, raising heart rate.
3. (As a result the) Child looks away to reduce stress." (p. 68)

Ramachandran, V.S. and Oberman, L.M. (November, 2006). Broken Mirrors.
Scientific American, 296(5), pp. 62-69.

Emotional Salience Landscape

Difficulties- Mirror Neurons

“People with autism show reduced mirror neuron activity in the inferior frontal gyrus, a part of the brain’s premotor cortex, perhaps explaining their inability to assess the intentions of others. Dysfunctions of mirror neurons in the insula and anterior cingulate cortex may cause related symptoms, such as the absence of empathy, and deficits in the angular gyrus may result in language difficulties. People with autism also have structural changes in the cerebellum and brain stem.” (p. 65)

Ramachandran, V.S. and Oberman, L.M. (November, 2006). Broken Mirrors. Scientific American, 296(5), pp. 62-69.

Oxytocin & Autism



Those with Autism Spectrum Disorders (ASD) have been found to have a genetic anomaly in a gene that makes oxytocin. As a result they have too little of the hormone and have difficulty relating to others.

Jacob, S., Brune, C.W., Carter, C.S., Leventhal, B.L., Lord, C. and Cook, E.H., Jr. (April 24, 2007). Association of the Oxytocin Receptor Gene (OXTR) in Caucasian Children and Adolescents with Autism. Neuroscience Letters, 417 (1), pp. 6-9. From Website:

http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T0G-4MYVGBW-5&

Yrigollen, C.M., Han, S.S., Kochetkova, A., Babitz, T., Chang, J.T., Volkmar, F., Leckman, J.F. and Grigerko, E.L. (January 21, 2008). Genes Controlling Affiliative Behavior as Candidate Genes for Autism. Biological Psychiatry. From Website:

[http://www.journals.elsevierhealth.com/periodicals/bps/article/S0006-3223\(07\)01143-2ab](http://www.journals.elsevierhealth.com/periodicals/bps/article/S0006-3223(07)01143-2ab).

Creating More Oxytocin



- Interactive touch between humans can produce more oxytocin in the brain.

Author (2008). Oxytocin: World's Expert Talks About This Calming Hormone: An Interview with Kerstin Uvas-Moberg, M.D., Ph.D. Life Science Foundation. From Website: <http://www.lifesciencefoundation.org/coxytocin.html>.

Oxytocin and Squeezing



Many Native American cultures used cradleboards to carry their infants.



Emotional Salience Landscape Difficulties-Mirror Neurons

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



Grandin, T (1992). Calming Effects of Deep Touch Pressure in Patients with Autism, College Students, and Animals. Journal of Child and Adolescent Psychopharmacology, 1 (2). From website: www.grandin.com/inc/squeeze.html

Ramachandran, V.S. and Oberman, L.M. (November, 2006). Broken Mirrors. Scientific American, 296(5), pp. 62-69.

Author (1997). Use of "Atypical" Neuroleptics in the Treatment of PDDs. MedScape Psychiatry & Mental Health e Journal, 2 (4): www.medscape.com/viewarticle/430897_5

THE ABOVE ARE EXPERIMENTAL TREATMENTS!!!!

Case study of a Dyslexic

- “I don’t recognize my own face!”
- **Developmental Prosopagnosia**



Problems Remembering Faces



- **Prosopagnosia**: Inability to recognize faces, even one's own face.” (p. 1168)

Taber's (1981). Taber's Cyclopedic Medical Dictionary. Philadelphia, PA:F.A. Davis

- **Joaachim Bodamer, M.D. 1947**: German soldiers with brain injuries who could no longer see faces. Coined term.

“Prosopon” meaning face + “agnosia” meaning nonrecognition from Greek.

Grueter, T. (August/September, 2007). Forgetting Faces. Scientific American: Mind, 18 (4), 68-73.

Subtypes of Prosopagnosia



- **Acquired Prosopagnosia:** Caused by insult to the brain; what Bodamer wrote about in 1947.
- **Developmental Prosopagnosia:** "...characterized by severely impaired face recognition. Individuals with this disorder, which runs in families, have no history of brain damage and intact early visual systems." (p. 166)

Grueter, T. (August/September, 2007). Forgetting Faces. Scientific American: Mind, 18 (4), 68-73.

Duchaine, B.C. and Nakayama, K. (2006). Developmental Prosopagnosia: A Window to Content –Specific Face Processing. Current Opinion in Neurobiology, 16, 166-173.

Subtypes of Prosopagnosia



- Possible Associated Conditions:
 - Problems with recognition of facial expression of emotion
 - Problems with gender of face discrimination
 - Problems with age of face discrimination
 - Problems with **TOPOGRAPHAGNOSIA**: difficulty with personal navigation; getting lost easily
 - Asperger's Disorder

Galaburda, A.M. and Duchaine, B.C. (2003). Developmental Disorders of Vision. Neurologic Clinics, 21 (3), 687-707.

Subtypes of Prosopagnosia



- Possible Associated Conditions:
 - Central Auditory Processing Disorder (CAPD):
“The inability to understand spoken language in a meaningful way in the absence of what is commonly considered a hearing loss.” (Sineps and Hunter, 1997)

Duchaine, B.C. (2000). Developmental Prosopagnosia with Normal Configural Processing. Cognitive Neuroscience and Neuropsychology. 11 (1), 79-82.

Choisser, B. (August, 14, 2007). Face Blind! From website: www.choisser.com/faceblind/about.html, p. 7 of 10.

Sineps, D. and Hunter, L. (1997). I Can Hear But...When Auditory Perception and Listening Break Down: Implications For Language and Reading. Paper presented at the International Dyslexia Association Annual Conference, Minneapolis, MN, November 13, 1997, Session T-45.

Prosopagnosia



- Remembering Faces:
 - This is an important ability for survival.
 - It lets you know “friends and foes.”
 - It helps you maintain relationships.
 - It helps you remember the social status of others.

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

Developmental Prosopagnosia



- Affects 2 to 3 percent of the population
- That equates to 6,000,000 Americans!
- Those affected often know something is wrong, but they don't know exactly what.

Goldberg, C. (June 14, 2006). When Faces Have No Name. The Boston Globe. From website:

www.boston.com/yourlife/health/diseases/articles/2006/06/14/when_faces_have_no_name/

Grueter, T. (August/September, 2007). Forgetting Faces. Scientific American: Mind, 18 (4), 68-73.

Symptoms of Prosopagnosia



- Extreme difficulty recognizing faces. Even with a person who is well known by the sufferer (i.e., a parent, spouse, best friend, etc.).
- Appears aloof/arrogant, does not respond to people they “know” when they see them.
- Often complain they cannot follow movies or TV shows because they cannot remember the identity of characters.
- They tend to recognize people by hair, gait, clothing, voice, context or other information.

Author (August 14, 2007). www.faceblind.org/research, p. 1 of 3.

Face Perception

- The right Fusiform Gyrus typically does not respond to objects.
- This area reorganizes faces into wholes.
- Inverted faces are more difficult to process than upright faces.
- The fusiform gyrus helps to differentiate between visually similar stimuli.
- Greebles-novices treat them as objects and experts treat them in a holistic manner.

Gauthier, I. (November 3, 2004). Face Processing: Is It Hard-wired or Learned? Evidence from Brain Imaging Studies. Paper presented at the 55th Annual International Conference seminar, *The Neural Basis of Reading and Other Forms of Skill Acquisition*, Philadelphia, PA, Session: W-1.

Face Perception

- Adults with Autism lack specialization for faces in the right fusiform gyrus, they use it for other things: toilet plungers, etc.
- Left fusiform gyrus (“Word Form Area”) responds somewhat to strings of letters of the same font and to real words not non-words.
- Letters are not processed like shapes or strings.

Gauthier, I. (November 3, 2004). Face Processing: Is It Hard-wired or Learned? Evidence from Brain Imaging Studies. Paper presented at the 55th Annual International Conference seminar, *The Neural Basis of Reading and Other Forms of Skill Acquisition*, Philadelphia, PA, Session: W-1.

Face Perception

- Bonobos, Chimpanzees and Humans all can recognize faces and facial expressions.
- “Chimpanzees can use facial features to recognize both kin and unfamiliar conspecifics, and to categorize facial expression of other chimpanzees.” (Schmidt & Cohn, 2001, p. 20)
- Bonobos are capable of self-recognition.

Gaspar, A. (June, 2006). Universals and Individuality in Facial Behavior – Past and Future of an Evolutionary Perspective. Acta Ethologica, 9 (1), 1-14 (From abstract).

Schmidt, K.L. and Cohn, J.F. (2001). Human Facial Expressions as Adaptations: Evolutionary Questions in Facial Expression Research. Yearbook of Physical Anthropology, 44 (3), 3-24.

Westergaard, G.C. (March, 1994). The Responses of Bonobos (*Pan Paniscus*) to Their Mirror Images: Evidence of Self-recognition. Human Evolution, 9 (4), 273-279 (From abstract).

Face Perception

- “Our results show that a man with severe prosopagnosia performed normally throughout the standard greeble training procedure. These findings indicate face recognition and greeble recognition rely on separate mechanisms.” (Duchaine, et.al., August, 2004)

Duchaine, B.C., Dingle, K., Butterworth, E. and Nakayama, K. (August, 2004).
Normal Greeble Learning in a Severe Case of Developmental Prosopagnosia.
Neuron, 43 (4), pp. 469-473 (From abstract).

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). Developmental Deficits in Social Perception in Autism: The Role of the Amygdala and Fusiform Face Area. International Journal of Developmental Neuroscience, 23, 125-141.

Duchaine, B. and Nakayama, K. (2005). Dissociations of Face and Object Recognition in Developmental Prosopagnosia. Journal of Cognitive Neuroscience, 17, 249-261 (From Abstract).

Developmental Prosopagnosia



- “The hereditary type of prosopagnosia has an autosomal dominant type of inheritance. This means that men and women are affected in equal numbers. In our experience women are more willing to talk about their face recognition problems, though.” (Thomas Grueter, M.D.)
- If one parent has Prosopagnosia their child has a 50% chance of having it.

Grueter, T. (August 14, 2007). Personal Communication.

Grueter, T. (August/September, 2007). Forgetting Faces. Scientific American: Mind, 18 (4), 68-73.

Kennerknerht, I., Grueter, T., Wellinh, B, Wentzek, S, Horst, J., Edwards, S. and Gueter, M. (June, 2006). First Report of Prevalence of Non-Syndromic Hereditary Prosopagnosia. American Journal of Medical Genetics, Part A, 140A (15), Pages 1617-1622 (From abstract).

Prosopagnosia and NVLD *(Nonverbal Learning Disorders)*



“Hence, it appears that children with NLD have a specific deficit on immediate memory for faces. This facial memory deficit may be linked to a deficit in right hemisphere functioning which has already been implicated in facial processing and may also be linked with other disorders (e.g., autism spectrum disorder) in which similar facial processing deficits have been documented.” (p. 1-2)

Liddell, G.A. and Rasmussen, C. (August, 2005). Memory Profile of Children with Nonverbal Learning Disability. Learning Disabilities Research and Practice, 20 (3), 137-141 (From abstract).

Prosopagnosia and Autism Spectrum Disorders



“Although not part of current diagnostic criteria, much evidence suggests that persons with ASD have marked deficits in face perception.” (p. 127)

Schultz, R.T. (2005). Developmental Deficits in Social Perception in Autism: The Role of the Amygdala and Fusiform Face Area. International Journal of Developmental Neuroscience, 23, 125-141.



Bradley Duchaine on Prosopagnosia

- 5.7% of those with Autism Spectrum Disorders
- 8.6% with AD/HD
- 6% with Dyslexia
- Out of 312 subjects
- “I have certainly heard from many prosopagnosics with dyslexia, but I’ve never seen reason to believe that there is a higher than normal prevalence of dyslexia among prosopagnosics.”



Duchaine, B. (August 24, 2006). Personal Communication.

Duchaine, B. (August 29, 2006). Personal Communication.

How to Assess Developmental Prosopagnosia



- Cambridge Face Memory Test
- Test My Face Recognition- Internet test

Duchaine, B. and Nakayama, K. (2006). The Cambridge Face Memory Test: Results for Neurologically Intact and an Investigation of It's Validity Using Inverted Face Stimuli and Prosopagnosic Participants. Neuropsychologia, 44, pp. 576-585. From web site:

www.faceblind.org/people/duchaine06neuropsychologia.pdf#search=%22Cambridge%20Face%20Memory%20Test%22 .

Test My Face Recognition (From web site): www.faceblind.org/index.php



Treatment of Prosopagnosia



- “Prosopagnosics cannot be cured, but they can and do learn ways to recognize people.” (p. 70)

Grueter, T. (August/September, 2007). Forgetting Faces. Scientific American: Mind, 18 (4), 68-73.

Mnemonic Techniques to Remember Faces

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



Experimental Treatment for Prosopagnosia

- “Let’s Face It” program developed by Jim Tanaka (University of Victoria) and researched by The Yale Child Study Program: Studies to Advance Autism Research and Treatment, Robert Schultz, et.al.
- “Find Wendy”
- http://info.med.yale.edu/chldstdy/neuroimg/face_perception.htm

Prosopagnosia of Facial Expressions



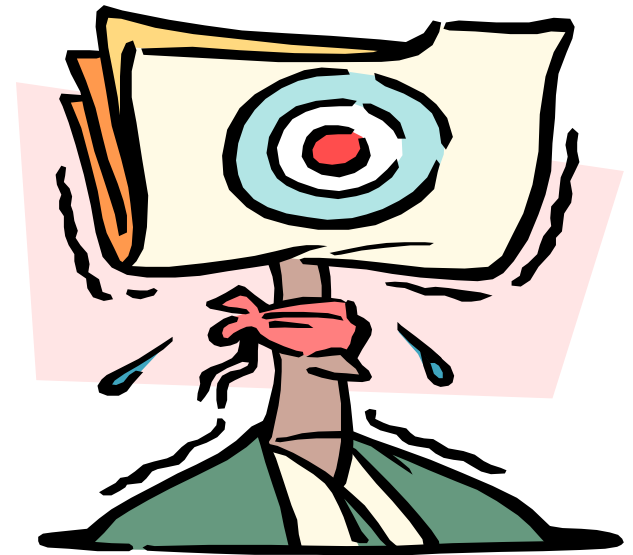
Prosopagnosia of Facial Expressions



“Face perception can be subdivided into two general types – recognition of person identity via the structures of the face, and recognition of internal affective state of the shape of individual features and changes in their relative distance from one another during the expression.” (p. 128)

Schultz, R.T. (2005). Developmental Deficits in Social Perception in Autism: The Role of the Amygdala and Fusiform Face Area. International Journal of Developmental Neuroscience, 23, 125-141.

Recognizing Emotional Facial Expressions



- Emotional Facial Expression Recognition:
 - “Does this mean we come into the world expecting to see human faces and ready to respond with our own prewired facial expressions? Yes!” (Ratey, 2001, p. 300)

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

Facial Expressions



- Remembering Expressions:
 - The non-disabled are “pre-wired” to find the human face and voice the most important stimuli in the world.
 - Those with Autism cannot generalize what they learn (imitation/mimic). They copy behavior.
 - Those with Asperger’s Disorder (AD) don’t look at the eyes they look at the mouth. Differentiated those with AD from non-disabled 100% of the time.

Klin, A. (October 11-12, 2001). Autism, Asperger’s and the PDD Spectrum. Seminar presented at the 33rd Annual Arizona Association of School Psychologists Conference, Mesa, AZ.

Volkmar, F.(April 23, 2003). Asperger Syndrome: Clinical Features, Assessment, and Intervention Guidelines. Seminar presented by New England Educational Institute, Phoenix, AZ

Prosopagnosia and Autism Spectrum Disorders

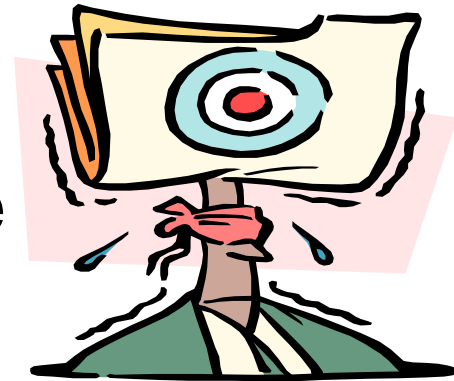


“Thus, these data argue for the role of the FFA-amygdala system in social cognition more generally, and retrieval of specific social knowledge about what constitutes a friendly social interaction, or not. Collectively these data suggest the amygdala-FFA system and its failure to strongly activate during face perception tasks points to a causal mechanism involved in autism...” (p. 137)

Schultz, R.T. (2005). Developmental Deficits in Social Perception in Autism: The Role of the Amygdala and Fusiform Face Area. International Journal of Developmental Neuroscience, 23, 125-141.

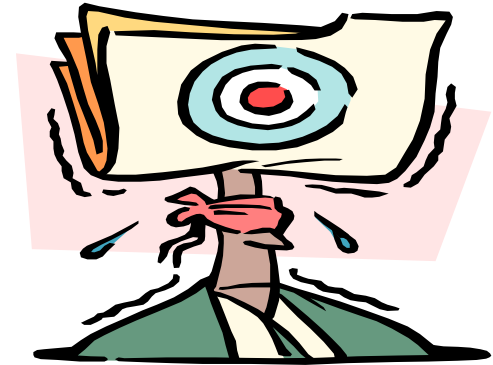
Decoding Skill and Facial Expression

- Positive emotions are the easiest to decode.
- Negative emotions are the most difficult.
- Poor interpreters of facial expression have less social acceptance and poorer adjustment.



Semrud-Clikeman, M. (Spring, 2003). Executive Function and Social Communication Disorders. Perspectives, 29 (2), p. 20-22.

Decoding Skill and Facial Expression



- Most and Greenbank (2000) stated LD children are less accurate in identifying emotional expressions than non-LD children.
- Brown (2001) indicated AD/HD children are less accurate in facial expression identification than their non-AD/HD peers.
- Attwood (2007) stated those with Asperger's Disorder have great difficulty decoding faces.

Most, T. and Greenbank, A. (2000). Auditory, Visual, and Auditory—Visual Perception of Emotions by Adolescents With and Without Learning Disabilities, and their Relationship to Social Skills. Journal of Learning Disabilities, 15 (4), pp. 171-178.

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.

Attwood, T. (2007). The Complete Guide to Asperger's Syndrome. Philadelphia, PA: Jessica Kingsley, p. 130.

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).
- Attwood’s (2007) story of the boy with Asperger’s Disorder who saw his mother crying and asked, “**What face do I make?**” (p. 134)

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.

Attwood, T. (2007). The Complete Guide to Asperger’s Syndrome. Philadelphia, PA: Jessica Kingsley, p. 135.

Assessment for Face Perception

- **Reading The Mind In The Eyes Test**: Screening test for problems interpreting facial expressions.

Baron-Cohen, S. (2003). The Essential Difference. New York, NY: Basic Books, pp. 197-199.

- Research versions of the “Eyes Test”
 - **Adult Eyes Test (Instructions, Part 1 and Part 2)**
 - **Child Eyes Test (Instructions, Part 1 and Part 2)**
 - **Faces Test**

Downloadable from: www.human-emotions.com/mindreading/default.asp

FACE READING ASSESSMENT

- **Comprehensive Affect Testing System (CATS)**

“This ensemble of tests enables clinical psychologists, neuropsychologists, neurologists, educators, speech therapists and other related disciplines to assess dysfunctional processing of affect expressed by the human face and voice.”
(p. 1 of 4)

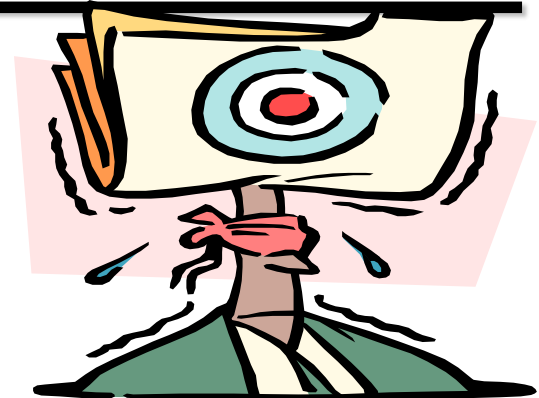
Froming, K., Levy, M. and Ekman, P. (2003).

www.psychologysoftware.com/testing_instruments.htm

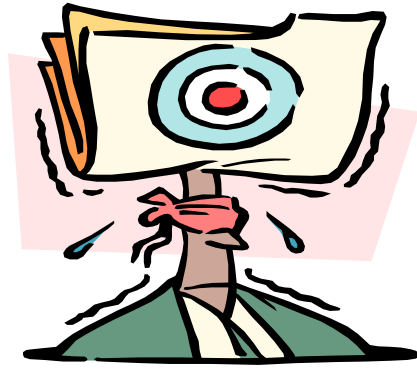
Treating Problems Reading Facial Expressions

- Volkmar, F. (April 23, 2003). Asperger Syndrome: Clinical Features, Assessment, and Intervention Guidelines. Seminar presented by the New England Educational Institute, Phoenix, AZ.
- Gauthier, I. and Tarr, M.J. (1997). Becoming a “Greeble” Expert: Exploring Mechanisms for Face Recognition. Vision Research, 37 (12), 1673-1682.

• **FACIAL EXPRESSIONS CAN BE TAUGHT!**



Treating Problems Making & Reading Facial Expressions



- “Gaining Face” computer program (www.ccoder.com/GainingFace/)
- Ekman CD-ROMs (www.paulekman.com)
- Baron-Cohen: “Mind Reading – An Interactive Guide to Human Emotions (CD-ROM)”; www.human-emotions.com/mindreading/default.asp
- 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.

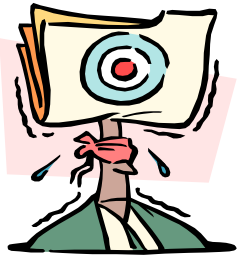
Experimental Program to Treat Difficulties in Recognizing Facial Expressions

- “Let’s Face It” program developed by Jim Tanaka (University of Victoria) and researched by The Yale Child Study Program: Studies to Advance Autism Research and Treatment, Robert Schultz, et.al.
- Picture of face with facial expression...Find the word that describes the facial expression.
- http://info.med.yale.edu/chldstdy/neuroimg/face_perception.htm

*Treating Problems Reading and Making Facial
Expressions:
"Lie to Me"*

Micro Expression Training Tool (METT) CD

– Available from: www.emotionsrevealed.com



- “In under an hour you will learn how to recognize very brief expressions (1/5 of a second).” The METT trains one to recognize the 7 universal emotions: enjoyment, fear, surprise, sadness, contempt, anger and disgust.

Subtle Expression Training Tool (SETT)

– Available from: www.emotionsrevealed.com

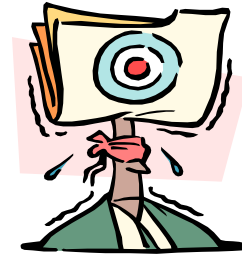
Treating Problems Reading and Making Facial Expressions

- Ekman, P. & Friesen, W.V. (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.

Appendix: Face Reading-The Test

- Available from: www.paulekman.com

Facial Expression Training & Autism



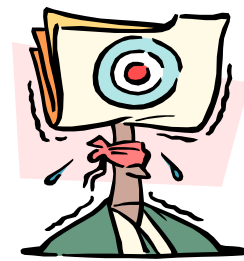
- “Even when people with autism spectrum disorders can figure out what someone’s eyes or face conveys, they do so in a different way than everyone else, which may be less efficient or take more time.” (p. 62)
- The non-disabled use the temporal lobe and fusiform gyrus to decode facial expressions.

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent’s Guide to Asperger Syndrome & High – Functioning Autism. New York, NY: Guilford.

Facial Expression Training & Autism

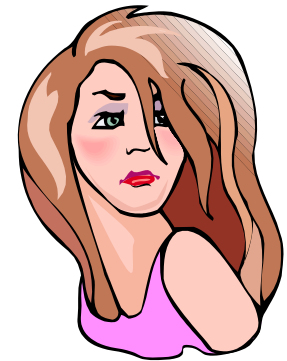
- Looking at pictures of eyes and deciphering the emotion they conveyed activated the non-disabled amygdalas and frontal lobes.
- Those with Asperger's used the frontal lobes far less and did not activate the amygdala. They used other areas of the brain not designed for such tasks.
- Those with Asperger's may use voice, touch, etc. to recognize others, not their face.

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High – Functioning Autism. New York, NY: Guilford.



ASD and Facial Expression Recognition

- Social Skills training by Mental Health Professionals and Speech-Language Pathologists
- 9/11 & Future Prosthetic Devices (Azar, 2000)
- Try an “Emotional Seeing Eye Dog” (Grandin, 1995)



Azar, B. (2000). Two Computer Programs Face Off. Monitor on Psychology, 31 (1), pp. 48-49.

Grandin, T. (1995). Thinking in Pictures: And Other Reports From My Life with Autism. New York, NY: Vintage.

Grandin, T. (2006). Animals in Translation. New York, NY: Simon and Schuster.

ASD Wearable Prosthetic

“We describe a novel wearable device that perceives and reports on social-emotional information in real-time human interaction. Using a wearable camera, combined with machine perception algorithms, the system records and analyzes the facial expressions and head movements of the person with whom the wearer is interacting. We propose the application of the social-emotional prosthetic to assist the growing number of individuals diagnosed with Autism...”

ASD Wearable Prosthetic

“...Spectrum Disorder (ASD) in perceiving communication in a natural rather than a structured environment, bootstrapping their ability to learn and develop in social settings...”
(p. 1)

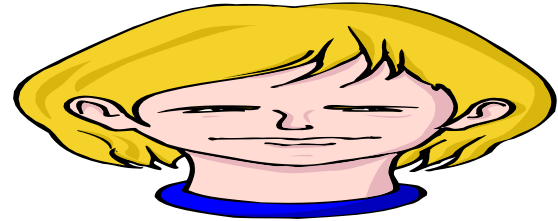
el Kaliouby, R., Teeters, A. and Picard, R.W. (MIT Media Lab) (No Date). An Exploratory Social-Emotional Prosthetic for Autism Spectrum Disorders. From website: www.affect.media.mit.edu/pdfs/06.kaliouby-teeters-picard-bsn.pdf . More information from: kaliouby,alea,picard@media.mit.edu

Emotional Seeing Eye Dogs

- Dogs separated from wolves about 135,000 years ago.
- Dogs lived with humans 100,000; even before we were “modern humans” (Homo Habilis).
- Dog and humans co-evolved.
- Humans learned to think and act like dogs.
- Dogs allowed humans to hunt big game while they acted as guards and lookouts. Humans did more planning and organization activities.
- 14,000 years ago humans domesticated dogs.
- Homo Sapien Neantathalensis did not have dogs; they are extinct.
- In the past 100,000 years dogs brains shrunk by 10 to 30%; mostly in their forebrains. Humans’ brains shrank by 10%; mostly in the midbrain, sensory and smell areas.
- Dogs have a symbiotic relationship with humans and have a genetic predisposition to understand human emotions.

Grandin, T. (2005). Animals in Translation. New York, NY: Simon & Schuster.

The “Resting Face”



- 75% of the population has an emotionally neutral face.
- 25% of the population have a resting face that is interpreted negatively.
- The older you are the more at risk you are for this.
- This can cause a very negative first impression.
- Some people resort to surgery to “correct” this (Bell’s Palsy, etc.).

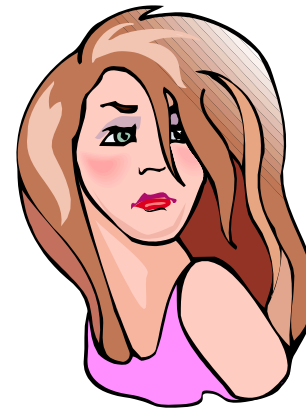
Nowicki, S. and Duke, M. (2002). Will I Ever Fit In? New York, NY: Free Press.

Facial Symmetry and “Beauty”

“The findings therefore support the claim that sexual dimorphism and symmetry in faces are signals advertising quality by providing evidence that there must be a biological mechanism linking the two traits during development. For example, individuals resistant to disease may be able to grow both symmetric and sexually dimorphic. Such work also suggests that faces may advertise quality across different human populations and even across different primate species.”

Public Library of Science (2008, May 8). Why Face Symmetry Is Sexy Across Cultures And Species. *ScienceDaily*. Retrieved July 17, 2008. From Website: <http://www.sciencedaily.com/releases/2008/05/080507083952.htm>.

Flirting and Social Abilities



- "...a flirting plan is wired into us, and that it has been embedded in our genes and in our brain's operating system the same way and for the same reasons that every other sexual trait has been - by trial and error, with conservation of what works best." (Rodgers, 1999, p. 38)

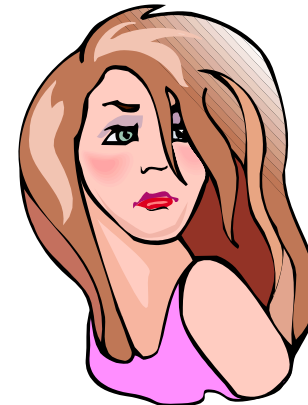
Rodgers, J.E. (February, 1999). Fascinating Flirting. Psychology Today, 32 (1), 36-41, 64-65, 67, 69-70

Flirting and Social Abilities



- “Enter creativity, humor and intelligence. Deployed in flirting they disclose more about an individual person than all the antlers do about leaching animals...They act as an honest signal that we’ve got a reasonably well put together nervous system.” (p. 70)

Rodgers, J.E. (February, 1999). Fascinating Flirting. Psychology Today, 32 (1), 36-41, 64-65, 67, 69-70.

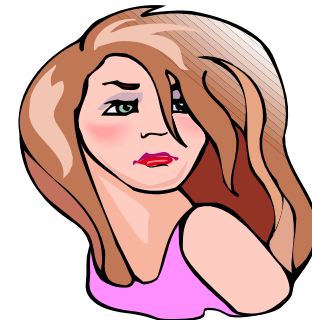


Flirting and Social Abilities

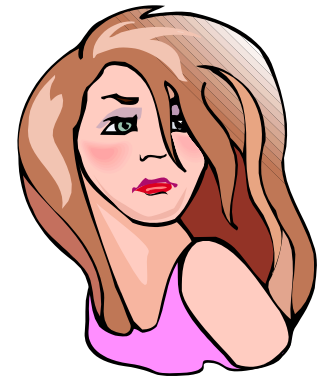


- “The moment of attraction, in fact, mimics a kind of brain damage...In attraction, we don’t stop and think, we react, operating on a ‘gut’ feeling, with butterflies, giddiness, sweaty palms and and flushed faces brought on by the reactivity of the emotional brain. We suspend intellect at least as long enough to propel us to the next step in the mating game-flirtation.” (p.5)

Ellison-Rogers, J. (January/February, 1999). Flirtation Fascination. Psychology Today, (Document ID: 575), From website: www.psychologytoday.com/articles/index.php?term+pto19990101-000033&print=1 .



Flirting and Social Abilities



- It takes about seven seconds to form a first opinion about another person. Most of this is done non-verbally.

Nowicki, S. and Duke, M. (2002). Will I Ever Fit In? New York, NY: Free Press.

- Flo: the “ultimate flirt”

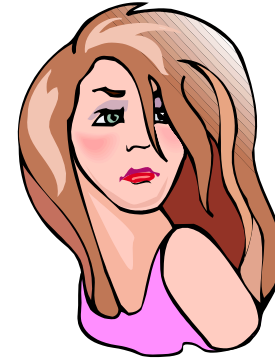
Van Lawick-Goodall, J. (1971). In the Shadow of Man. New York, NY: Delta.

- Mating and relationships would be almost impossible without facial expressions.



Gladwell, M. (August 5, 2002). The Naked Face (Interview of Paul Ekman). The New Yorker, pp. 36-49.

Flirting and Social Abilities



- Attwood's (1998) story of the man with Asperger's Disorder in a singles bar.
- Cordoni stated you need the same behaviors to get a job as you need to get a date.

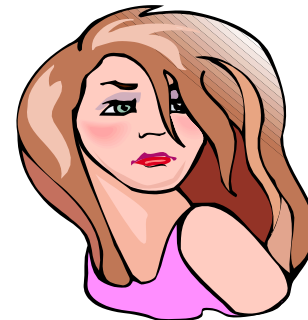
Attwood, T. (1998). Asperger's Syndrome: A Guide for Parents and Professionals. Philadelphia, PA: Jessica Kingsley.

Cordoni, B. (1987). Living With A Learning Disability. Carbondale, IL: Southern Illinois University Press.

Flirting and Social Abilities



“Over the course of our evolution as a species, our brains have learned how to spot the healthiest mates, those who are likely to give us children, and those whose resources and commitment can help our offspring survive.” (p. 60)



Brizendine, L. (2006). The Female Brain. New York, NY: Morgan Road.

Chips and Polio



“Finally, there are the rarely observed instances of shunning a group member whose behavior seems abnormal – the social rejection of Pepe and Old Mr. McGregor after they suffered polio.” (P. 227)

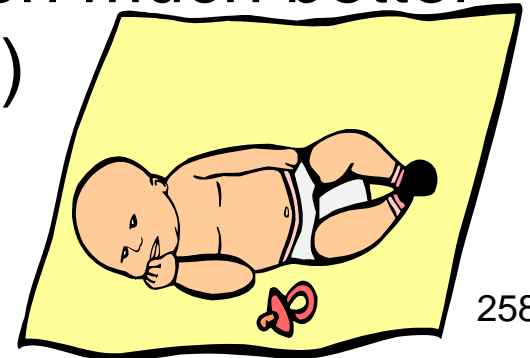
Goodall, J. (1986). Social Rejection Exclusion and Shunning Among Gombe Chimpanzees. *Ethnology and Sociobiology*, 7, pp. 227-239. From Website: <http://www.bepress.com/context/gruterclassics/article/1032/viewcontent/>.

But, What About Culture?

- “When Pat went to Japan to test adults on the American *r* and *l* sounds, she also tested babies. Japanese and American seven-month-olds discriminated *r* from *l* equally well. But just three months later, the two groups were as different as night from day. At ten months, Japanese infants could no longer hear the change from *r* to *l*. American infants not only could do so but had actually gotten much better at making this distinction.” (p.107)

Gopnik, A., Meltzoff, A.N. and Kuhl, P.K. (1999).

The Scientist In The Crib. New York, NY: HarperCollins, p. 107



But, What About Culture?

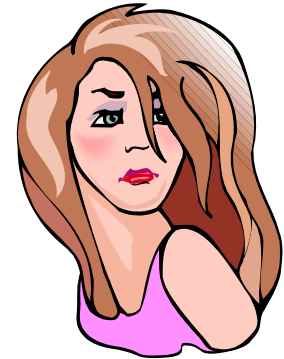
- “Like imitation, baby flirtation suggests that babies not only know people when they see them but also that they are connected to people in a special way. Like grown-up flirtation, baby flirtation bypasses language and establishes a more direct link between people (p. 31).

Gopnik, A., Meltzoff, A.N., and Kuhl, P.K. (1999). The Scientist In The Crib. New York, NY: HarperCollins, p. 31



How to Treat Flirting Difficulties

- Social Skills training by Mental Health Professionals and Speech-Language Pathologists
- Treat Neurosocial Comorbidities
- 9/11 & Future Prosthetic Devices (Azar, 2000)
- Try an “Emotional Seeing Eye Dog” (Grandin, 1995)



Azar, B. (2000). Two Computer Programs Face Off. Monitor on Psychology, 31 (1), pp. 48-49.

Grandin, T. (1995). Thinking in Pictures: And Other Reports From My Life with Autism. New York, NY: Vintage.

Grandin, T. (2006). Animals in Translation. New York, NY: Simon and Schuster.

Treatment of Visual-Spatial Processing Disorders



- “When Britt could talk through the task, she was successful even with space and time...Verbally mediated. Yes! Britt was at a loss when she could not talk her way through space and time tasks. That must be a key!” (Stockdale; From: Neff, Lippman-Neff and Stockdale, 2002, p. 54)

Neff, B., Neff-Lippman, J. and Stockdale, C. (2002). The Source for Visual-Spatial Disorders. East Moline, IL: LinguSystems.

ARK Foundation's Learning Window

Neff, B., Neff-Lippman, J. and Stockdale, C. (2002). The Source for Visual-Spatial Disorders. East Moline, IL: LinguSystems, p. 176.

ARK Institute of Learning:

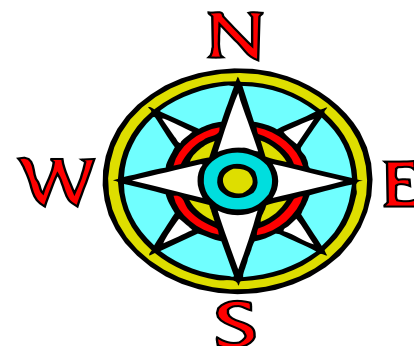
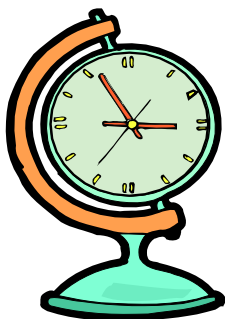
www.arkinst.org



NVLD/Asperger's Suggestions

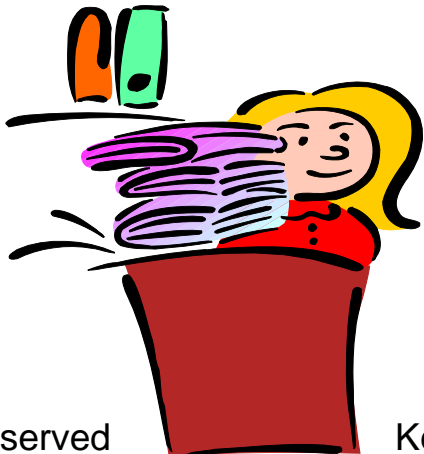
- “Children with temporal and spatial problems need to be taught the language of time and space, syntax, the vocabulary of position and direction, map and clock reading.”

Berg, M. & Stockdale, C. (2001). The Language of Space and Time. Paper presented at the 52nd International Dyslexia Association International Conference, Albuquerque, NM, October 24-27, 2001. Convention Recordings, Inc. – www.conventionrecordings.com; St. Petersburg, FL, Session S-168.



Excellent Resource on NVLD Treatment

- Neff, B., Neff-Lippman, J. and Stockdale, C. (2002). The Source for Visual-Spatial Disorders. East Moline, IL: LinguiSystems.



NVLD Treatment Plan for Social Skills



- Verbal Mediation of Poor Visual-Spatial Abilities
 1. Describe pictures in detail verbally
 2. Teach the relationship between objects and pictures
 3. Describe social interactions in movies
 4. Videotape child in social situation and teach from that

Rourke, B.P. (1995). Syndrome of Nonverbal Learning Disabilities: Neurodevelopmental Manifestations. New York, NY: Guilford.

NVLD/Asperger's Suggestions

- Photographs
- Movies
- Role Playing
- Coaching with mental health back-up
- “Rent a Friend”



Nowicki, S. and Duke, M. (2002). Will I Ever Fit In? New York, NY: Free Press.
Attwood, T. (1998). Asperger's Syndrome: A Guide for Parents and Professionals. Philadelphia, PA: Jessica Kingsley.

NVLD/Asperger's Suggestions

- Make abstract concrete
- Help with transitions
- Motivate
- Generalize:
 - Mass Practice to Learn Vs Distributed Practice - Generalization and Maintenance over time



Ozonoff, S. Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High – Functioning Autism. New York, NY: Guilford.

Harrison, L. (May 12, 2006). Personal Communication.

Job Accommodations for Adults with Asperger's Disorder

- “Encourage all employees to model acceptable social skills
- Provide a job coach to help understand different social cues
- Recognize and reward acceptable behavior to reinforce such behaviors
- Review conduct policy with employee to reduce incidents of unacceptable behavior...”

Job Accommodations Network (Jan) (4/7/09). Job Accommodations for People with Autism Spectrum Disorders. From website: <http://www.jan.wvu.edu/new/index.htm>, p. 2-3.

Job Accommodations for Adults with Asperger's Disorder (Continued)

- “Provide concrete examples to explain unacceptable behavior
- Provide concrete examples to explain consequences
- Use training videos to demonstrate acceptable behavior in workplace
- Use role-play scenarios to demonstrate acceptable behavior in workplace...”

Job Accommodations Network (Jan) (4/7/09). Job Accommodations for People with Autism Spectrum Disorders. From website: <http://www.jan.wvu.edu/new/index.htm>, p. 2-3.

Job Accommodations for Adults with Asperger's Disorder (Continued)

- “Provide workplace sensitivity training to promote disability awareness
- Help employee "learn the ropes" by providing a mentor
- Make employee attendance at social functions optional
- Allow employee to transfer to another workgroup, shift, or department
- Encourage employees to minimize personal conversation, or move personal conversation away from work areas...”

Job Accommodations Network (Jan) (4/7/09). Job Accommodations for People with Autism Spectrum Disorders. From website: <http://www.jan.wvu.edu/new/index.htm>, p. 2-3.

Job Accommodations for Adults with Asperger's Disorder (Continued)

- “Provide telework, or work-at-home, as a job accommodation
- Allow alternative forms of communication between coworkers, such as email, instant messaging, or text messaging...”

Job Accommodations Network (Jan) (4/7/09). Job Accommodations for People with Autism Spectrum Disorders. From website: <http://www.jan.wvu.edu/new/index.htm>, p. 2-3.

Job Accommodations for Adults with Asperger's Disorder (Continued)

- “Provide detailed day-to-day guidance and feedback
- Identify areas of improvement for employee in a fair and consistent manner
- Provide clear expectations and the consequences of not meeting expectations
- Establish long term and short term goals for employee...”

Job Accommodations Network (Jan) (4/7/09). Job Accommodations for People with Autism Spectrum Disorders. From website: <http://www.jan.wvu.edu/new/index.htm>, p. 2-3.

Job Accommodations for Adults with Asperger's Disorder (Continued)

- “Assist employee in assigning priority to assignments
- Assign projects in a systematic and predictable manner
- Adjust supervisory method by modifying the manner in which conversations take place, meetings are conducted, or discipline is addressed...”

Job Accommodations Network (Jan) (4/7/09). Job Accommodations for People with Autism Spectrum Disorders. From website: <http://www.jan.wvu.edu/new/index.htm>, p. 2-3.

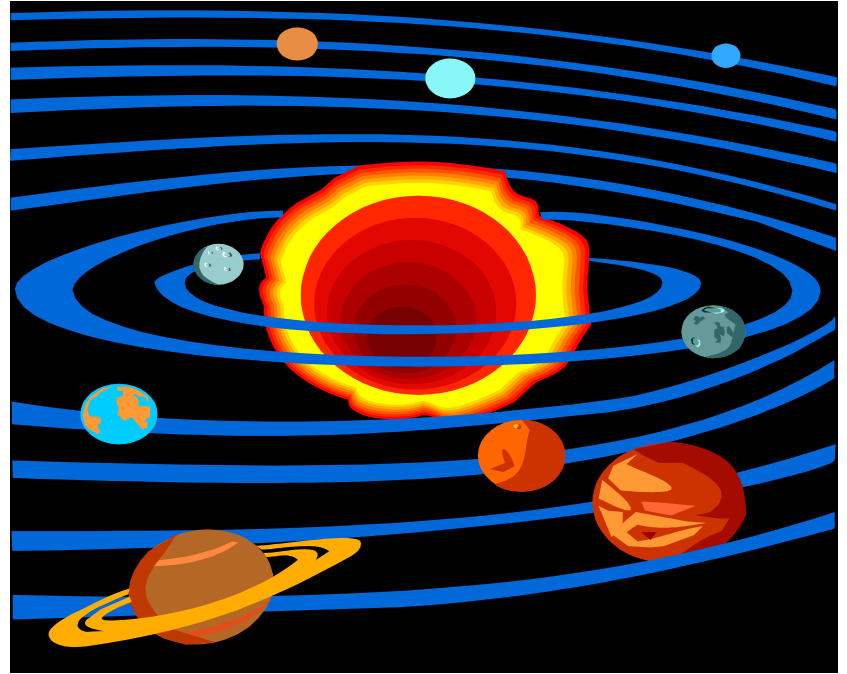
Job Accommodations for Adults with Asperger's Disorder (Continued)

- “Provide advance notice of meetings, particularly when employee is required to provide information to attendees
- Allow employee to provide written response in lieu of verbal response
- Provide advance notice of meeting topics, particularly when employee is required to participate verbally
- Allow employee to bring an advocate to performance reviews and disciplinary meetings...”

Job Accommodations Network (Jan) (4/7/09). Job Accommodations for People with Autism Spectrum Disorders. From website: <http://www.jan.wvu.edu/new/index.htm>, p. 2-3.

Social Space

- Intimate: 18 inches
- Personal: 4 feet
- Social 12 feet
- Public: 12 feet and beyond



Nowicki, S. and Duke, M. (2002). Will I Ever Fit In? New York, NY: Free Press.

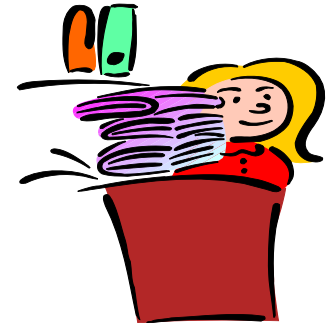
Good Publisher of Autism Spectrum Books



- Future Horizons:

<http://www.futurehorizons-autism.com/>

Social Skills Intervention Programs



Father Flanagan's Girls and Boys Town has done 40 years of social skills training research with many different child and adolescent populations. Many Books are available at Boy's Town Press:

- www.boystownpress.org
- www.girlsandboystown.org

Dowd, T., and Tierney, J. (1992). Teaching Social Skills to Youth. Boys Town, NE: The Boys Town Press.

BEST SOCIAL SKILLS PROGRAM FOR ASD

- Margaret Semrud-Clikeman's Social Competence Intervention Program (SKIP):
 - Semrud-Clikeman, M. (2007). Social Competence in Children. New York, NY: Springer-Verlag.
 - Guli, L.A., Wilkinson, A.D., and Semrud-Clickman, M. (2006). Social Competence Intervention Program. Chicago, IL: Research Press.
 - ABOVE MAY BE ADAPTED FOR ADULTS

Asperger's Social Skills Intervention Programs



Carol Gray's – Social Stories Unlimited- Future Horizons: <http://www.futurehorizons-autism.com/>

Gray, C.A. (1998). Social Stories and Comic Strip Conversations With Students With Asperger's Syndrome and High-Functioning Autism. In E. Schopler, G. B. Mesibov, & L. Kuncie (Eds.), Asperger's Syndrome or High-Functioning Autism. New York, NY: Plenum.

Good Resource On Dyssemia & Nonverbal Social Skills

Nowicki, S., and Duke, M. (2002). Will I
Ever Fit In? New York, NY: Free Press.



People Who Can Help with NVLD/Asperger's Disorder

- American Speech-Language Hearing Association:
www.professional.asha.org
- Behavioral Neurologist/Neuropsychiatrists and/or Neuro-Ophthalmologist: www.anpaonline.org and www.ama-assn.org
- Mental Health Professionals
- American Occupational Therapy Association:
www.atoa.org



Helpful Websites NVLD and Asperger's Disorder

- www.nldontheweb.org
- Nonverbal Learning Disability Association: www.nlda.org
- LD Online: www.ldonline.org
- MAAP Services for Autism and Asperger's Disorder: www.maapservices.org
- UC Davis M.I.N.D. Institute: www.ucdmc.ucdavis.edu/MINDInstitute
- Yale Child Study Center: www.med.yale.edu/chldstdy/autism/aspergers.html

Helpful Books NVLD and Asperger's Disorder

Ozonoff, S., Dawson, G. and McPartland, J. (2002). A Parent's Guide to Asperger Syndrome & High Functioning Autism. New York, NY, Guilford.

Neff, B., Neff-Lippman, J. and Stockdale, C. (2002). The Source for Visual-Spatial Disorders. East Moline, IL: LinguiSystems.

Attwood, T. (1998). Asperger Syndrome: A Guide for Parents and Professionals. Philadelphia, PA: Jessica Kingsley.

Thompson, S. (1997). The Source for Nonverbal Learning Disorders. East Moline, IL: LinguiSystems.

Helpful Books NVLD and Asperger's Disorder

- Kowalski, T. (2002). The Source for Asperger's Syndrome. East Moline, IL: LinguiSystems.
- Attwood, T. (2007). The Complete Guide to Asperger's Syndrome. Philadelphia, PA: Jessica Kingsley.
- Newport, J. and Newport, M. (2002). Autism-Asperger's & Sexuality: Puberty and Beyond. Arlington, TX: Future Horizons.
- Myles, B.M., Tapscott-Cook, K., Miller, N.E., Rinner, L. and Robbins, L. (2000). Asperger Syndrome and Sensory Issues: Practical Solutions for Making Sense of the World. Shawnee Mission, KS: Autism Asperger Publishing.