# Denial: The Longest River in Egypt

**Baker Recommends the following to get past "the Nile":**

- **Link needed training/service to their goals**
- **Make the process fun**
- **Use a reward system**
- **Work on strengths before weaknesses**
- **Get examples of successful ASD adults (Dr. Grandin)**
- **Encourage them to teach younger ASD students**

**Baker, J. (2005). Preparing for Life: The Complete Guide for Transitioning to Adulthood for those with Autism and Asperger's Syndrome. Arlington, TX: Future Horizons.**

# What is Social Competence?

**“Social competence is an ability to take another’s perspective concerning a situation and to learn from past experience and apply that learning to the ever-changing social landscape. The ability to respond flexibly and appropriately defines a person’s ability to handle the social changes that are presented to us all.” (p. 1-2)**

**Semrud-Clikeman, M. (2007). Social Competence in Children. New York, NY: Springer, pp. 1-2.**

# Social Competence and Health

**“There is sufficient empirical evidence that links social competence to mental and physical health…It has been linked to such varied disorders as anxiety, cardiovascular disease, juvenile delinquency, and substance abuse, to name a few.” (p. 1)**

**Semrud-Clikeman, M. (2007). Social Competence in Children. New York, NY: Springer.**

# Ways Social Interactions Influence Physical Health

- **Social Support: Stress Buffering-Reduces the stressful event by promoting less threatening interpretation of the event.**
- **Social Integration: Main Effect-Promotes positive psychological states, social motivation and pressure to care for oneself.**
- **Negative Interactions: Relationships as a Source of Stress-Elicits psychological stress and increases risk for disease.**

**Cohen, S. (November, 2004). Social Relationships and Health. American Psychologist, 59 (8), pp. 676-674.**

# Skills of Social Emotional Competence

- **Awareness of one's 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.**

**Semrud-Clikeman, M. (2007). Social Competence in Children. New York, NY: Springer.**

# 25% of Americans Socially Isolated

- ✓**From 1985 to 2005 the typical American said the average number of people they could rely upon to help them with a significant concern dropped from 3 to 2.**
- ✓**In 2005 twenty-five percent reported they had no trusted friend they could rely upon which is double the rate of 1985.**

**McPherson, M., Smith-Lovin, L. and Brashears, M.E. (2006). Social Isolation in America: Changes in Core Discussion Networks Over Two Decades. American Sociological Review, 71 , 353-375.**

# Isolation and The Immune System

- ✓**Lonely people have more active genes that promote inflammation and less active genes that inhibit inflammation.**
  - ✓**This puts them at risk for some cancers, degenerative neurological disorders and cardiovascular problems.**
- ✓**Lonely people's immune systems are geared toward fighting bacteria not viruses.**
- ✓**Sociable people have immune systems geared toward viruses.**

# Isolation and The Immune System


**Azar, B. (May, 2011). The Psychology of Cells. Monitor On Psychology, 42 (5), 32-35.**

**Miller, G., Chen, E. and Cole, S. (January, 2009). Health Psychology: Developing Biologically Plausible Models Linking the Social World and Physical Health. Annual Review of Psychology, 60, 501-524.**

**Cole, S.W., Hawkley, L.C., Arevalo, J.M., Sung, C.Y., Rose, R.M. and Cacioppo, J.T. (2007). Social Regulation of Gene Expression in Human Leukocytes. Genome Biology, 8 (9), doi:10.1186/gb-2007-8-9-r189.**

**Cole, S.W., Hawkley, L.C., Arevalo, J.M.G. and Cacioppo, J.T. (February 15, 2011). Transcript Origin Analysis Identifies Antigen-Presenting Cells as Primary Targets of Socially Regulated Gene Expression In Leukocytes. Proceedings of the National Academy of Sciences of the United States of America (PNAS), 108 (7), 3080-3085.**

# Ostracism and the Brain

- **“No matter how and why people are left out their response is swift and powerful, inducing a social agony that the brain registers as physical pain.” (p. 32)**
- **“All social animals use this form of group rejection to get rid of burdensome group members. In nonhuman animals, an unaccepted member usually ends up dead.**

**Williams, K.D. (January/February, 2011). The Pain of Exclusion. Scientific American Mind, 21 (6), 30-37.**

# Ostracism and the Brain

- **All people, no matter what their psychological makeup feel the pain of rejection equally.**
- **Within minutes ostracized people experience significantly lower self-esteem, a lack of meaning in their life, a lack of control, sadness and anger.**
- **People can feel rejected even by people they do not know, or even by those they hate.**
- **Being rejected can lead to physical and psychological illness.**

**Williams, K.D. (January/February, 2011). The Pain of Exclusion. Scientific American Mind, 21 (6), 30-37.**

# Ostracism and the Brain

- **“Even in a verbal or physical altercation, individuals are still connected. Total exclusion, however, severs all bonds. Social rejection also deals a uniquely harsh blow to self-esteem, because it implies wrongdoing.” (p. 34)**
- **“After all, social exclusion interferes not only with reproductive success, but also with survival.” (p. 34)**

**Williams, K.D. (January/February, 2011). The Pain of Exclusion. Scientific American Mind, 21 (6), 30-37.**

# Ostracism and the Brain

- **In an fMRI study,…"As soon as students began to feel ostracized, the scanners registered a flurry of activity in the dorsal anterior cingulate cortex – a brain region associated with the emotional aspects of physical pain." (p. 34)**
- **Also the insula activates and judges the severity of the pain.**

**Williams, K.D. (January/February, 2011). The Pain of Exclusion. Scientific American Mind, 21 (6), 30-37.**

# Ostracism and the Brain

- **"…social rejection and physical injury are not much different experiences and share underlying neural pathways." (p. 35)**
- **MRI studies have shown that painkillers can reduce the pain of social rejection.**
- **To reduce the pain of social rejection people will agree, mimic, obey, or cooperate with the rejecting group. Even if it goes against their beliefs and/or judgment.**

**Williams, K.D. (January/February, 2011). The Pain of Exclusion. Scientific American Mind, 21 (6), 30-37.**

# Ostracism and the Brain

- **Depressed and/or socially anxious people take longer to recover from ostracism than others.**
- **“In extreme cases, ostracized humans may resort to aggressive or violent acts when they have lost hope of being included in any socially acceptable group.” (p. 36)**

**Williams, K.D. (January/February, 2011). The Pain of Exclusion. Scientific American Mind, 21 (6), 30-37.**

# Ostracism and the Brain

- **What to do if you are ostracized:**
  1. **Remove yourself from the situation and distract yourself.**
  2. **Remind yourself of your strengths.**
  3. **Exercise more control in your life; assert yourself.**
  4. **Reconnect with family and friends.**

**Williams, K.D. (January/February, 2011). The Pain of Exclusion. Scientific American Mind, 21 (6), 30-37.**

# Autism Spectrum Disorders

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

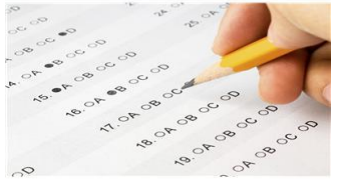
**Klin, A. (2001). Autism, Asperger's and the PDD Spectrum. Seminar presented at the 33rd Annual Arizona Association of School Psychologists Conference, "Across the Spectrum", October 11 and 12, 2001, Mesa, AZ.**

# 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.**

# 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***

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

# Williams Syndrome

**"Williams Syndrome is a genetic condition that is present at birth and can affect anyone. It is characterized by medical problems, including cardiovascular disease, developmental delays and learning disabilities. These occur side by side with striking verbal abilities, highly social personalities and an affinity for music… Individuals with Williams Syndrome have a very endearing personality. They have a unique strength in their expressive language skills and are extremely polite. They are typically unafraid of strangers and show a greater interest in contact with adults than with their peers."**

**Author (No Date). What Is Williams Syndrome? From Williams Syndrome Association website: http://www.williams-syndrome.org/what-is-williams-syndrome.**

# Williams Syndrome

**Williams Syndrome is a rare condition caused by missing genes. Parents may not have any family history of the condition. However, a person with Williams syndrome has a 50% chance of passing the disorder on to each of his or her children. The cause usually occurs randomly.**

**Williams Syndrome occurs in about 1 in 8,000 births.**

**One of the 25 missing genes is the gene that produces elastin, a protein that allows blood vessels and other tissues in the body to stretch. It is likely that having only one copy of this gene results in the narrowing of blood vessels seen in this condition.**

**A.D.A.M. Medical Encyclopedia (November 14, 2011). Williams Syndrome (Williams-Beuren Syndrome). Bethesda, MD: National Center for Biotechnology Information, U.S. National Library of Medicine. From website: http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002105/.**

# Williams Syndrome

**Those with Williams Syndrome have brains that are 20% smaller, particularly in the back of the brain which includes the occipital and parietal lobes. The temporal lobes are either normal in size or larger than normal. Their planum temporale is larger than normal and hence they often have perfect pitch. Finally, they use their cerebellum, brain stem and amygdala to process music thus it provides them an uniquely emotional experience when they hear it.**

**Sacks, O. (2007). Musicophilia:Tales of Music and the Brain. New York, NY: Alfred A Knopf.**

# ASD and Williams Syndrome

**ASD and Williams Syndrome, “two sides of the same coin,” Allan Reiss Stanford Medical School professor said. Social behavior and communication are underdeveloped in ASD and overdeveloped in Williams Syndrome.**

**Inman, E. (May 20, 2010). New Findings About Williams Syndrome May Shed Light On Autism Research. The Stanford Daily. From website: http://www.stanforddaily.com/2010/05/20/new-findings-about-williams-syndrome-may-shine-light-on-autism-research/.**

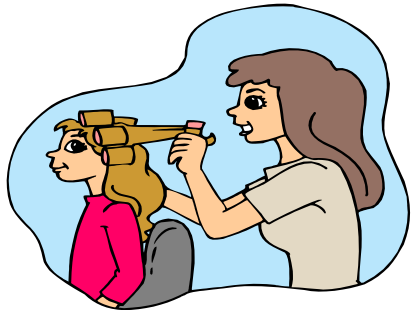
# *Asperger's and Gender*

- **Girls and women with Asperger's Disorder suffer more socially that 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).**

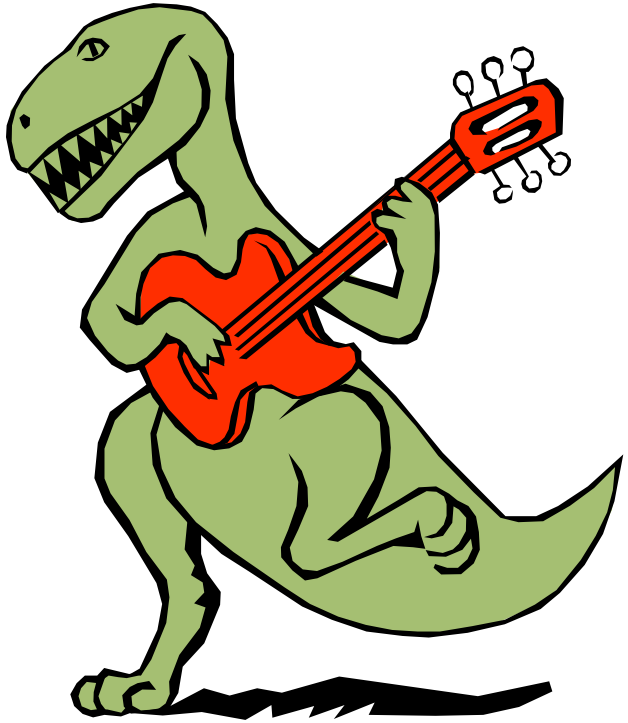

**Bronowski, J. (1977). Human and Animal Languages: In a Sense of Future. Cambridge, MA: MIT Press. pp. 104-131.**

**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.**

# *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.**



**Horner, J. (2000). Dinosaur Reproduction and Parenting. Annual Review of Earth and Planetary Sciences, 28, p. 19-45.**

# Compassion

**"The findings command attention, as the bonobo is just as close to us as its sibling species, the chimpanzee. According to DNA analysis, we share over 98 percent of our genetic with each of these two apes…the genetic makeup of a chimpanzee or bonobo matches ours more closely than any other animal…In terms of family resemblance, only two options exist: either we are one of them or they one of us." (p. 5)**

**DeWaal, F., and Lanting, F. (1997). Bonobo: The Forgotten Ape. Berkley, CA: University of California Press, p. 5.**

# 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)**

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

# Bonobo: Pan Paniscus

# *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.**

# *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 troops. 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.**

# Teco, The Autistic Bonobo Toddler

- **Recently the researchers at the Great Ape Trust in Iowa report that an 18 month old male bonobo toddler shows significant signs of autistic behavior.**
- **Additionally recent research has demonstrated that the bonobo social brain is much more similar to that of humans than to chimpanzees.**

# Teco, The Autistic Bonobo Toddler

**“When Teco was 2 months old, Elikya handed the baby off to his aunt, as if asking for help. The aunt, Panbanisha, brought him to institute staff, who took on more of the responsibility for rearing Teco.**

**That's when they began to notice that he also showed various autism-like symptoms: lack of eye contact, strict adherence to rituals or routines, repetitive behaviors, and an interest in objects rather than in social contact…”**

# Teco, The Bonobo Toddler

**"…A blanket, for example, has to be arranged just so or else Teco becomes agitated, says scientific director William Fields. Teco also shows repetitive movements similar to those seen in some children with autism."**

- **"He seemed to be fascinated by parts of objects, like wheels and other things and he wasn't developing joint attention," Fields adds. "The baby was avoiding eye contact — it was like it was painful for him."**

**Deweert, S. (April 15, 2011). An Ape With Autism. New York, NY: Simons Foundation, Autism Research Initiative (SFARI). From website: https://sfari.org/about-sfari/contact-us .**

# ASD Fruit Fly?

**Scientists at the University of Arizona have discovered a mutant fruit fly which constantly flies in circles and grooms itself. Other identical flies have been breed. In some ways it is genetically similar to those with ASD. They are trying to develop a medication that will change its behavior. In the future they hope to do the same with rats.**

**Huonker, M. (April 10, 2012). University of Arizona Neuroscience professor and team are doing research with fruit flies to find drug for autism. Tucson, AZ: Arizona Public Media. YouTube video: http://www.youtube.com/watch?v=42PVK7TnhVg&list=PL212BA630A5E8E1B4&index=9&feature=plpp_video.**

# *Alexithymia*

# What is Alexithymia?

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

**Goleman, 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)… 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 "Mirror Neurons"**

**Researchers 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.

Lametti, D. (June 9, 2009). Mirroring Behavior. Scientific American, from website: www.scientificamerican.com/article.cfm?id=mirroring-behavior.

# 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**

# 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 May Help Us Generate Appropriate Social Responses

**"These results suggest that a set of mirror neurons encodes the observed motor acts not only for action understanding, but to analyze such acts in terms of features that are relevant to generating appropriate behaviors."**

**Caggiano, V., Fogassi, L., Rizzolatti, G., Their, P., Casile, A. (April 2009). Mirror Neurons Differently Encode the Peripersonal and Extrapersonal Space of Monkeys. Science. 324 (5925), pp. 403-406; From website: www.sciencemag.org/cgi/content/abstract/324/5925/403.**

# Mirror Neurons & Executive Functions

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

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

# Mirror Neurons and Autism

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

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

# 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

**"…with empathic dysfunction are considered: autism and psychopathy. It is argued that individuals with autism show difficulties with cognitive and motor empathy but less clear difficulties with respect to emotional empathy. In contrast, individuals with psychopathy show clear difficulties with a specific form of emotional empathy but no indications of impairment with cognitive and motor empathy." (p. 1 of 2)**

**Blair, R.J.R. (December, 2005). Responding to the Emotions of Others: Dissociating Forms of Empathy Through the Study of Typical and Psychiatric Populations. Consciousness and Cognition, 14 (4), pp. 698-718. From Website: www.sciencedirect.com/science?_ob=ArticleURL&_=B6WD0-4H39727-2&_user.**

# Zero Degrees of Positive Empathy Vs Zero Degrees of Negative Empathy

- **What Blair wrote about empathy is essentially what Simon Baron-Cohen wrote regarding differentiating ASD and antisocial individuals in his book:**

**Baron-Cohen, S. (2011). The Science of Evil: On Empathy and The Origin of Cruelty. New York, NY: Basic Books.**

# Mirror Neurons

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


**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**

**Calvi-Merino, B., Glaser, D.E., Greeze, J., Passingham, R.E., and Haggard, P. (2005). Action Observation and Acquired Motor Skills: An fMRI Study with Expert Dancers. Cerebral Cortex, 15 (8), p. 1243-1249.**

# *Alexithymia MAY BE A NEUROBIOLOGICAL DISORDER!*

**"We now have a psychological term, *alexithymia*, to describe another characteristic associated with Asperger's syndrome, namely someone who has impaired ability to identify and describe feeling states." (p. 130)**

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

# *"Symptoms" of Alexithymia*

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

**Author (January 23, 2003). The Alexithymia FAQ. From web site: www.anglefire.com/al4/alexithymia/**

# 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, p. 74.**

# *What About PTSD?*

- **Hippocampus looses neuronal connections**
- **Medication and talk therapy can 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.**

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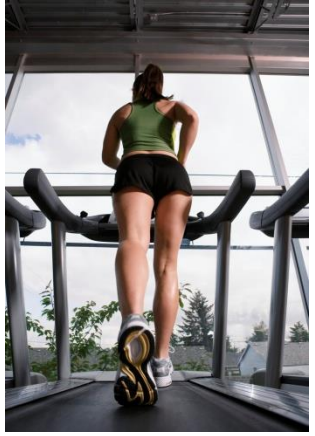
# *What About PTSD?*



**"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)**

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