

enlarged brain volume

Autism = less activity of motor neurons in frontal lobe

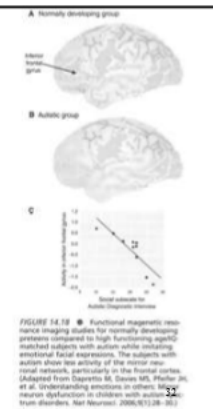
Neurobiology

- **Macrocephaly (20% cases)**
 - not observed at birth,
 - postnatal growth acceleration (0-12 mos)
 - Returns to normal range by adulthood
 - most prominent in the frontal lobes and anterior temporal regions
 - May indicate abnormal neural connectivity and a local processing bias (details > big picture) (White, 2009)

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↑ brain growth first month of life

Mirror Neurons in Autism



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ASD: Social Deficits

Individuals with autism look at mouths, rather than eyes in observing social interaction

Social Deficits

- * limbic system dysfxn
- * Theory of Mind difficulty conceptualizing other person's point of view



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Avoid eyes, focus on mouth
prefer to look at objects
rather than people

Attention-Deficit & Disruptive Behaviors



- **ADHD:**
Attention-Deficit/Hyperactivity Disorder
 - Must have impairment before age 7
 - Impairment in 2+ settings
 - predominantly inattentive
 - predominantly hyperactive-impulsive
 - combined type
 - ADHD NOS

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Genetics of ADHD

- Heterogenous yet highly heritable
 - Heritability 60-90%
- 18 + susceptibility genes found
 - DAT, D4 & D5 receptor genes among the most studied
 - DAT overactive?
 - Abnormal NE?

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Stimulents ↑ DA & NT
frontal cortex, ↑ DA in
striatum

Environmental impact on ADHD

- Low birth weight/prematurity
- Maternal smoking
- Exercise
 - Improves executive function, ↑ DA release?
- Diet
 - Western diet = probably bad
 - Elimination of dyes, food antigens
 - Omega-3 supplementation
 - More info: Millichap & Yee. 2012. **The Diet Factor in Attention-Deficit/Hyperactivity Disorder.** Pediatrics.

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Smaller total brain volume
in all lobes & cerebellum
global thinning of all grey matter