

enlarged brain volume

autism = less activity of mirror 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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Mirror Neurons in Autism = empathy

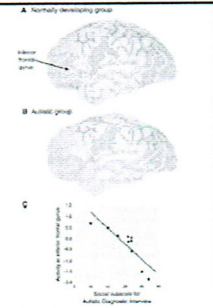


FIGURE 14.18 • Functional magnetic resonance imaging studies for normally developing patterns compared to high-functioning autism. (A) and (B) show brain activity in the mirror neuron system. (C) shows a brain slice with a red area indicating activity. (D) is a line graph showing the relationship between social skills and brain activity.

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↑ brain growth in first yr of life  
thinking casein and gluten-free diets are better for ASD

## 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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## 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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avoid eyes focus on mouth  
prefer to look at objects  
rather than people

## 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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## Environmental impact on ADHD

- Low birth weight/prematurity
- Maternal smoking/alcohol
- 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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Depression is about 40% heritability

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

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

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