Attention Deficit Hyperactivity Disorder
Developmental Psychopathology: -Overview

• Development
  – Normal vs. Abnormal
  – Psychopathology
    • Etiology
    • Course

  – Developmental impact of early skill impairments
Developmental Psychopathology: An Overview

• Developmental Disorders
  – First diagnosed = infancy, childhood, adolescence

  – 1. Attention deficit hyperactivity disorder (ADHD)
  – 2. Learning disorders
  – 3. Autism
  – 4. Mental retardation
Attention Deficit Hyperactivity Disorder (ADHD)

- Central Features and DSM Symptom Types
  - Inattentive
  - Hyperactive
  - Impulsive

- Impairments
  - Behavioral
  - Cognitive
  - Social
  - Academic
DSM-IV Diagnostic Criteria for ADHD

Criterion A: Symptoms of inattention or hyperactivity/impulsivity that are inconsistent with developmental level.
**DSM-IV Inattention**

- Careless mistakes
- Difficulty sustaining attention
- Does not listen
- Does not finish work
- Difficulty organizing tasks
- Avoids tasks that require mental effort
- Loses things necessary for tasks
- Easily distracted
- Forgetful
DSM-IV Hyperactivity/Impulsivity

- Fidgets
- Leaves seat
- Runs or climbs excessively
- Difficulty playing quietly
- “on the go” or “driven by a motor”
- Talks excessively
- Blurts out answers before question completed
- Difficulty awaiting turn
- Interrupts or intrudes on others
<table>
<thead>
<tr>
<th>6 or more symptoms of inattention?</th>
<th>6 or more Symptoms of hyperactivity/impulsivity?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>No</td>
<td>No ADHD Diagnosis</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes ADHD Diagnosis</td>
</tr>
<tr>
<td>Hyp/Imp Type</td>
<td>Combined Type</td>
</tr>
<tr>
<td>Inattentive Type</td>
<td></td>
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</table>
Impairment associated with ADHD

- **Academic**
  - Learning disabilities and underachievement
  - More likely to be expelled / drop out of school
- **Social / Emotional**
  - More likely to be ignored and actively disliked
  - Low self-esteem
- **Occupational**
  - More likely to be fired
  - More frequent job changes
- **Adaptive**
  - Accidental injuries during childhood
  - Car accidents in adolescence / adulthood
  - Shorter life-span
DSM-IV Diagnostic Criteria for ADHD

**Criterion A:** Symptoms of inattention or hyperactivity/impulsivity that are inconsistent with developmental level.

(remaining issues: how well can we measure this in adults, and how well can we distinguish in 2-year-olds who are all fairly active?)

**Criterion D:** There must be clinically significant impairment in academic, social, or occupational functioning as a result of these symptoms.

(strong agreement in the field for this criterion)

**Criterion B:** Onset of symptoms and impairment before age 7.

(Likely to be softened to “before age 12” in DSM-V)

**Criterion C:** Impairment must be present in two or more settings

(good idea to ensure not just one distressed parent or teacher, but bumps into the psychometric issues that arise when looking for agreement between different raters of any construct)

**Criterion E:** The symptoms are not better accounted for by another mental disorder.
ADHD: Statistics

• **Prevalence** = 3-7% of school-aged children
  – 5.2% worldwide

• **Onset** = age 3 or 4

• **Boys : Girls** = 3:1
  – Different symptom manifestations?
  – Girls less over-active, may be tolerated more and Not diagnosed.

• Possible cultural construct?
  – Likely not
ADHD: Statistics

• High comorbidity
  – 80% of children
    • Oppositional Defiant Disorder (ODD)
  – 90% of adults
    • Mood disorders
ADHD: Causes

- Genetics
  - Familial component
  - Dopamine
    - DRD4 & 5, DAT1
    - (ritalin inhibits this gene and increases DA)
  - Norepinephrine
  - GABA
  - Serotonin
ADHD: Causes

- **Neurobiological Contributions**
  - Smaller brain volume
    - 3-4% smaller than children W/O
  - Frontal cortex and basal ganglia
    - Inactivity
    - Abnormal development
ADHD: Causes

- **The Role of Toxins**
  - Allergens and food additives
    - No evidence
  
  - Maternal smoking
    - Increases risk
    - Interacts with genetic predisposition
ADHD: Causes

- **Psychosocial Factors**
  - Negative feedback
    - Teachers
    - Peers
    - Adults
  - Peer rejection
  - Social isolation
  - Low self-esteem
  - Poor self-image
Treatment of ADHD: Biological

• Goals
  – Reduce impulsivity and hyperactivity
  – Improve attention

• Stimulants
  – Effective for 70%
  – Ex: Ritalin, Addreall

• Other Medications
  – Strattera (Problems with not really helping attention, but just making the patient calmer/ less disruptive to class!)
  – Imipramine
  – Clonidine
Treatment of ADHD: Biological

- Effects of Medications
  - Improve compliance
  - Decrease negative behaviors
  - Do not affect learning and academic performance
  - Benefits are not lasting following discontinuation

<table>
<thead>
<tr>
<th>Medication</th>
<th>Frequency</th>
<th>Peak Effect</th>
<th>Duration of Action</th>
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<tbody>
<tr>
<td>Amphetamines</td>
<td>Short-Acting: Dextroamphetamine: b.i.d. or t.i.d.</td>
<td>1-3 hours</td>
<td>5 hours</td>
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<tr>
<td>Adderall</td>
<td></td>
<td></td>
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<tr>
<td>Long-Acting: Dextroamphetamine Sustained Release: q.m.</td>
<td>1-4 hours</td>
<td>6-9 hours</td>
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<tr>
<td>Adderall XR</td>
<td>q.m.</td>
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<tr>
<td>Methylphenidates</td>
<td>Short-Acting: Ritalin</td>
<td>q.m. or b.i.d.</td>
<td>3 hours</td>
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<tr>
<td>Concerto</td>
<td>q.m.</td>
<td></td>
<td>8 hours</td>
</tr>
<tr>
<td>Metadate CD</td>
<td>q.m.</td>
<td></td>
<td>12 hours</td>
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Treatment of ADHD: Behavioral and Combined

• **Behavioral Treatment**
  – Reinforcement programs
    • Reward – appropriate behaviors
    • Punish – inappropriate behaviors
  – Parent training
  – Social skills training

• **Combined Treatments**
  – Recommended
  – Superior to individual treatments?
Adults with ADHD

• ~50% have problems as adults
  – Inattention persists
  – Hyperactivity, impulsivity decline
Learning Disorders and Mental Retardation
What do IQ and Achievement mean?

- The Verbal Comprehension Index is an overall measure of verbal concept formation, the child's ability to verbally reason and is also influenced by knowledge learned from their environment.

- **The Verbal Comprehension (VCI) subtests are as follows:**
  - **Vocabulary** - examinee is asked to define a provided word
  - **Similarities** - asking how two words are alike/similar
  - **Comprehension** - questions about social situations or common concepts

- **The Perceptual Reasoning (PRI) subtests are as follows:**
  - **Block Design** - children put together red-and-white blocks in a pattern according to a displayed model. This is timed, and some of the more difficult puzzles award bonuses for speed.
  - **Picture Concepts** - Children are provided with a series of pictures presented in rows (either two or three rows) and asked to determine which pictures go together, one from each row.
  - **Matrix Reasoning** - children are shown an array of pictures with one missing square, and select the picture that fits the array from five options.

- **The Working Memory (WMI, formerly known as Freedom from Distractibility) subtests are as follows:**
  - **Digit Span** - children are orally given sequences of numbers and asked to repeat them, either as heard or in reverse order.
  - **Letter-Number Sequencing** - Children are provided a series of numbers and letters and asked to provide them back to the examiner in a predetermined order.
  - **Arithmetic** (supplemental) - orally administered arithmetic questions. Timed.

- **The Processing Speed (PSI) subtests are as follows:**
  - **Coding** - children under 8 mark rows of shapes with different lines according to a code, children over 8 transcribe a digit-symbol code. Time-limited with bonuses for speed.
  - **Symbol Search** - children are given rows of symbols and target symbols, and asked to mark whether or not the target symbols appear in each row.
Learning Disorders

• Performance substantially below expected levels
  – IQ
  – Age
  – Education
• Actual vs. expected achievement
• Not due to sensory deficits

• Reading Disorder
  – Recognition (dyslexia)
  – Fluency
  – Comprehension
• Mathematics Disorder
• Disorder of Written Expression
Learning Disorders: Facts and Statistics

• **Prevalence = 5-10% (US)**
  – 1% Caucasian
  – 2.6% African American
  – 4-10% for reading difficulties

• **Boys : Girls = 1:1**

• Higher drop-out rates

• Negative school experiences
Learning Disorders: Causes

• Genetic and Neurobiological Contributions
  – Familial component
  – Polygenetic influence
  – Cortical structure = inconclusive
  – Cortical activation = different patterns
Learning Disorders: Causes

- **Psychosocial Contributions**
  - Motivational factors
  - Socioeconomic status
  - Cultural expectations
  - Parental interactions
  - Expectancies
Treatment of Learning Disorders

• Educational Interventions
  – Specific skills instructions
    • Vocabulary
    • Discerning meaning
    • Fact finding
  – Strategy instruction
    • Decision making
    • Critical thinking
  – Compensatory skills
Links!

- http://www.youtube.com/watch?v=5SSngARBJiM
- http://www.youtube.com/watch?v=p65xPzJxHfU
- http://video.yahoo.com/watch/244126/1913100
- http://www.youtube.com/watch?v=KQ00NIbxGFk
- http://www.youtube.com/watch?v=egElwiVyZwY
- http://www.5min.com/Video/Accommodating-Kids-with-Disabilities-264563408