Autism Spectrum Disorders

- Autism spectrum disorders occurs in 1/68 births
- More common in males than females (~4.5x more common in males) (1 in 42♂ and 1 in 189 ♀)
- Severity and expression may be different in females
- Considered a “syndrome”—multiple causes lead to expression of characteristics
- Genetic influences (genetic predisposition)
DIAGNOSIS

- Research has shown that a diagnosis of autism at age 2 can be reliable, valid, and stable. *(Kleinman et al., 2008)*

- Even though ASD can be diagnosed as early as age 2 years, most children are not diagnosed with ASD until after age 4 years. The median age of first diagnosis by subtype is as follows.
  - Autistic disorder: 3 years, 10 months
  - Pervasive developmental disorder-not otherwise specified (PDD-NOS): 4 years, 1 month
  - Asperger disorder: 6 years, 2 months
DIAGNOSIS

- Studies have shown that parents of children with ASD notice a developmental problem before their child's first birthday. (Kozloski et al., 2011).

- Concerns about vision and hearing were more often reported in the first year, and differences in social, communication, and fine motor skills were evident from 6 months of age. (Bolton et al., 2012)
Autism Spectrum Disorders

- Used to have overarching category of “Pervasive Developmental Disorders” in DSM-IV

- Autism
- Asperger’s Syndrome
- Pervasive Developmental Disorder Not Otherwise Specified (NOS)
- Rett’s Syndrome
- Childhood Disintegrative Disorder
Chicken vs. Meatloaf Analogy

Asperger’s Syndrome??

High Functioning Autism??
PDD-NOS??

Classic Autism??

Autism Spectrum Disorder

Where is the HFA joint vs the Asperger’s joint??
### Autism Spectrum Disorders
**DSM-5 (2013):** *(The three slices of meatloaf)*

<table>
<thead>
<tr>
<th>Severity Level</th>
<th>Social Communication</th>
<th>Restricted, repetitive behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 3 (requiring very substantial support)</td>
<td>Severe deficits in verbal and nonverbal social communication skills;</td>
<td>Inflexibility of behavior</td>
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<tr>
<td></td>
<td>Very limited initiation of social interactions;</td>
<td>Extreme difficulty coping with change</td>
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<tr>
<td></td>
<td>Minimal response to social overtures from others</td>
<td>Restricted and repetitive behavior markedly interfere with functioning in all specter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Great distress/difficulty dealing with a change in focus or action (transitions)</td>
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## Autism Spectrum Disorders

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<tbody>
<tr>
<td>Level 2 (requiring substantial support)</td>
<td>Marked deficits in verbal and nonverbal social communication skills;</td>
<td>Inflexibility of behavior</td>
</tr>
<tr>
<td></td>
<td>Social impairments present even with supports in place</td>
<td>Difficulty coping with change</td>
</tr>
<tr>
<td></td>
<td>Limited initiation of social interactions</td>
<td>Restricted and repetitive behavior appear frequently enough to be</td>
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<tr>
<td></td>
<td>Reduced or abnormal response to social overtures from others</td>
<td>obvious to the casual observer. And interferes with functioning in a</td>
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<tr>
<td></td>
<td></td>
<td>variety of contexts</td>
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## Autism Spectrum Disorders

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<tr>
<td>Level 1 (requiring support)</td>
<td>Without supports in place, deficits in social communication cause noticeable impairments; Difficulty initiating social interactions and clear examples of atypical or unsuccessful responses to social overtures in others. May appear to have decreased interest in social interactions. (or desire them but have trouble pulling them off).</td>
<td>Inflexibility of behavior Difficulty coping with change Restricted and repetitive behavior appear frequently enough to be obvious to the casual observer. And interferes with functioning in a variety of contexts Distress/difficulty dealing with a change in focus or action (transitions)</td>
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DIAGNOSTIC PROCESS (Eval. Day)

- **Parent/Caregiver Interview**
- **Administration of Autism Diagnostic Observation Schedule, 2\textsuperscript{nd} Edition (ADOS-2)**
- **Parent rating forms**
  - a) SRS-2
  - b) Autism Quotient (Child or Adolescent version)
  - c) Childhood Autism Rating Scale, 2\textsuperscript{nd} Edition (Standard or High Functioning Version)
SOCIAL RELATEDNESS AND COMMUNICATION

Doesn’t understand “reciprocity” so well

Differences observed in eye contact during “social times”

"Joint attention" problems

Greater preference for being alone

May be affectionate, but frequently on own terms

Higher interest in objects than people during toddler years

Nonverbal social cues hard to interpret (e.g., body language or facial expressions)

Poor understanding of social rules, social engagement, and maintaining interaction
SOCIAL RELATEDNESS AND COMMUNICATION

Doesn't understand the process of communication and reciprocity

Range from nonverbal or low verbal to high verbal (but odd/unusual)

Literal interpretation of language

Immediate or delayed echolalia may be observed

Difference in tone, pitch, volume or inflection of voice

Abstract concepts more poorly understood

Gestures or facial expression may be used less

Pragmatic language impairments
RESTRICTED AND REPETITIVE INTERESTS AND BEHAVIOR

Restricted interests, thoughts or ideas

Repetitive or compulsive behavior

Preference for routines or rituals (need for sameness)

Difficulty making transitions or handling changes

May be overly anxious

Meltdowns/tantrums
SENSORY ISSUES

Sensory information may be processed differently

Poor "filtering mechanism" for incoming sensory information

Cannot modulate and easily overstimulated

Unusual pain reactions--either high pain threshold or over-reactions; self-injury
THINKING STYLE

Problems understanding meaning

Problems connecting ideas (Cause and effect, concept of finished, first work…then play)

Disorganized

Distractible (internal and external)

Difficulty with sequencing

Extreme problems with generalization

Focus on details

Lesser ability to differentiate relevant from irrelevant information and prioritize
Executive Functioning

- Hallmark features
  - Regulating attention and behavior to match environmental demands
  - Demonstrating judgment and foresight
  - Shifting flexibly between competing activities/trains of thought
  - Generalize learning to new situations
Executive functioning

- Inhibit impulsive responses
- Plan ahead
- Distinguish relevant from irrelevant pieces of information
- Initiate or getting started on tasks
- Utilize working memory (i.e., holding information in your head and manipulating it)
- Organization
Executive functioning

- Initiate or getting started on tasks
- Utilize working memory (i.e., holding information in your head and manipulating it)
- Organization
- Carrying out goal-directed behavior or future-oriented behavior
- Multitasking
- Using feedback effectively
Intense World Theory

THE 'INTENSE WORLD THEORY OF AUTISM' SUGGESTS THAT AUTISTIC PEOPLE SHUT DOWN BECAUSE THEY EXPERIENCE AND FEEL TOO MUCH.

#STAYCURIOUS
Input and the Amygdala

Six steps to unthinking response

1. Sensory data fed to thalamus

All sensory data (except, curiously, for the sense of smell) is sent by the body first to the Thalamus, which acts like a switchboard, sending it to the relevant part of the brain.

2. Data sent to amygdala

The thalamus sends the data to a small part of the mid-brain called the amygdala.
3. Data also sent to cortex

- When the information is sent to the cortex, we, of course, *think about it*. The problem is, that sometimes there is no time to think -- in fact too much thinking can sometimes leave you dead.

4. Amygdala does quick threat assessment

- The senses are compared in the amygdala with our stored fear responses. If any of these are triggered, then the amygdala has to act quickly.

5. Amygdala blocks 'slow' thinking

- If the fear response is triggered, then the amygdala floods the cortex with chemicals to stop it taking over.

6. *Unthinking Response* -- *Move it or lose it.*
Figure 1: Step-by-step process of an amygdala hijack

1. Sensory data fed to Thalamus
2. Data sent to Amygdala
3. Data also sent to Cortex
4. Amygdala does quick threat assessment
5. Amygdala blocks 'slow' thinking
6. 'Unthinking' response
Implications for the medical setting

- Talking and verbal processing
  - "There are things I would rather do?" Do you have a problem with tics?" No.

- Fight or Flight
Implications for the medical setting

- “White coat” phenomenon
  - Past learning history
  - Sensory processing issues
  - Transitions from home, car, elevator, check in desk, waiting area, art table, nurses check in, physician’s room... then leaving—that toy you like, the elevator button you have to push, that great train in lobby (or Ballapalloopa)
Sensory Funnel

- Executive Function
- Social
- Emotional
- Focus
- Awareness

Sensory
The End
AUTISM 101

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