

## Slides for Weeks 4 and 5

### Looking forward

Week 4:	Autism	Web pages
Week 5:	Autism	Quiz 2 (postponed)
Week 6:	Aphasic Language	Ch. 2 & 10, Quiz 2 Paper Topic
Week 7:	Aphasic Language	
Week 8:	SLI Language	Ch. 4 & 9 Paper Due

Autism: the strange condition that isolates children from their culture.

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## Definitions and Linkages

- Autism is a complex developmental disorder of biological origin caused by brain dysfunction and defined by impairments in social development and interaction, communication, and by unusual activities, interests, and behaviors.
- Language problems of autistic children bear similarities to the problems encountered when teaching language to animals -- they both "just don't get it".

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## Definition of Terms

- **Developmental Disability**
  - > Symptoms are noted in infancy or early childhood and last for the rest of one's life
- **Brain Dysfunction**
  - > A physical disturbance of the brain probably caused by a combination of genetic, immune, and chemical factors

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## Diagnostic Criteria: Interaction

- Shows a marked lack of awareness of the existence of feelings of others
- No or abnormal seeking of comfort at times of distress
- No or impaired imitation in context
- No or abnormal play
- Gross impairment in ability to make peer friendships

DSM III-R

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## Diagnostic Criteria: Communication

- No or restricted mode of communication
- Absence of imaginative activity
- Abnormal speech in terms of loudness, prosody, and rhythm
- Abnormal language ability
- Abnormal conversational ability

DSM III-R

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## Diagnostic Criteria: Activities and Interests

DSM III-R

- Stereotyped body movements
- Persistent preoccupation with parts of objects
- Distress over changes to trivial aspects of environment
- Unreasonable insistence that routines be followed
- Restricted range of interests and preoccupation with one narrow interest

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### Clues about potential causes

- Symptoms begin in early childhood and last for life
- Related symptoms suggest brain damage
  - > 80% of autistic children also have mental retardation
  - > 20-30% of autistic children have or develop epilepsy
  - > Deafness and hearing impairment are common correlates
- Research that suggests autism is inherited
  - > 8% of the siblings of autistic children are autistic compared to .16% risk of the general population
  - > 4 out of 5 children with autism are male
- Many researchers believe that autism is caused by something that goes wrong during a critical fetal brain development period that is controlled by about 15 genes.
  - > One of the genes was identified in November

### Incidence of Autism in 1991

Indiana	
Age	Number
0-4	600
5-9	600
10-14	600
15-19	600
<b>Total</b>	<b>2400</b>
<b>Incidence: 1/20,000</b>	

### Increasing Incidence

- California Report on Autism indicates a dramatic increase in incidence

	1987	1998	Percent Change
Autism (All Diagnoses)	3,804	11,981	210.42%
Cerebral Palsy (All Diagnoses)	18,912	28,219	49.16%
Epilepsy (All Diagnoses)	22881	29,643	29.00%
Mental Retardation (All Diagnoses)	11,987	136,563	1137.54%
Whole Population	30,411	135,583	444.08%

### Increases are occurring at youngest age range (CA)

5 to 9 year olds show the largest increase

Increases began in 1981

### MR co-occurrence is lessening

Now most are not retarded where formerly most were moderately to severely retarded

What is causing the marked increase?  
Different symptoms suggest a different cause.  
MMR vaccination/immunization program?

### Natural History of Autism

- Infant and toddler
  - > detected usually by 18 months by lack of joint attention, communication, play, and an unusual aloofness
- Later childhood: development of noncommunicative language
  - > half become verbal, clearly pronouncing words and phrases, but uses them only in imitation or as verbal routines -- phrases repeated over and over. Can follow directions.
  - > half remain nonverbal, usually the more severely retarded
  - > most develop stereotyped repetitive behaviors, sometimes self injurious, acquire an absolute insistence on routines
- Adolescence:
  - > >50% suffer aggravation of symptoms, become less social
  - > Some become more calm and socially compliant


## Autistic Language

- **More Normal Abilities: Language**
  - > Phonology: speech can be almost adult-like
  - > Lexicon & syntax: make & comprehend sentences
- **Less Normal Abilities -- communication**
  - > Speech often singsong, sometimes whispered, always monotonous, with rapidly spoken repetitive phrases, not intended to communicate
  - > Pronoun confusions: I = you
  - > Frequently imitate commands and questions
  - > They just don't get it : limited to giving and following commands, unable to converse

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## William's Syndrome

- We have 2 copies of the elastin gene (one on each of our chromosomes #7. WS individuals only have one copy. One birth in 20,000 has this disorder.
- IQ is typically between 50 and 70
- Deficits most obvious in spatial skills and motor control;
  - Can't tie their shoes or cut with a knife.
  - Can't learn arithmetic
  - Can't learn directions to locations or use maps




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## William's Syndrome



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## William's Language



Compared to other retarded children, WS children are language geniuses.

For example: a Down syndrome child was asked to name all the animals he could think of, his reply was "Dogs, cats, fish, bird, fish."

A William's child of the same age and IQ answered, "Brontosaurus, tyrannosaurus, brontosaurus rex, dinosaurs, elephant, dog, cat, lion, baby hippopotamus, ibex, whale, bull, yak, zebra, puppy, kitten, tiger, koala, dragon."

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## Opposite symptoms: William's Syndrome and Autism

WS	Autism
Overly social	Overly nonsocial
Overly sensitive to the feelings of others	Oblivious to the feelings of others
Highly verbal, capable conversants	Often nonverbal, incapable conversants
Always mentally deficient	Usually mentally deficient

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## Two Theories of Autism

- **Mindblindness:** autistic children have an inability to build a mental module that constructs a network of minds
 

Baron-Cohen
- **Whole-body Apraxia:** autistic children have completely normal minds that are held prisoner inside a body that they cannot control

Biklen, Crossley 18

## The Virtual World of Minds

- > The warmth of a smile
- > The meaning of a glance
- Our minds recognize and categorize facial configurations and interpret them into models of internal states of another's mind.
- Facial configurations are universally tied to mind states
- Humans are constantly seeking evidence to use to construct models of the internal state of another's mind: called mindreading

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## Universal Emotions



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## Unconsciousness of Mindreading

- We see the following movie clip.
  - > John walks into the bedroom, walks around, and then walks out.
- And we unconsciously reason:
  - > Maybe John was **looking** for something he **wanted**, and he **thought** it was in the bedroom.
  - > Maybe John **forgot** where he was going and maybe he really **intended** to go downstairs
- Part of our understanding of human events involves our hypothesizing the content of the participants' minds

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## Mindreading

- The capacity to endow agents in our social world with motives, beliefs, pretenses, intentions, feelings, hopes, and desires.
- An ability that allows humans to operate within a network minds
- The "self" is, to some degree, one's estimation of the collective conception of one's beliefs, desires, goals, and attitudes held in the minds of others.
- Humans have evolved to be woven into the minds of parents, friends, and companions.

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## Mindblindness of Autism

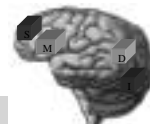
- The catastrophic inability to live in the social network constructed by human minds
  - > A blindness to the existence of other minds causing autistic individuals to be recluses in a social world
- Isolation explains their lack of communication
  - > Language is a tool of mindreading, a mechanism for sharing of information within the network of minds
  - > Like chimpanzees who are taught ASL, autistic children just don't get it
    - Unlike animals, they can acquire words and grammar because they have an innate module
    - but like animals, they cannot put it to use

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## Acquisition of Mindreading

Mindreading develops as the result of the maturation of four brain modules


- > A module that identifies agents (I)
- > A module that finds eyes and detects their direction (D)
- > A module that finds where eyes are looking and shares the perceptual experience (S)
- > A module that constructs a model of the internal state of the mind of another (M)



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### I: Identifying Agents

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People and animals are self propelled and have desires and goals

**Normal Development**  
 In operation at or shortly after birth.  
 Infants react to people differently than non-animate objects.

**Autistic Development**  
 In operation by early childhood  
 Act differently toward people and objects in that they only avoid people.

### D: Eye Direction Module

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Allows child to search for and find eyes, identify their direction (self or elsewhere), and infer that the agent "sees" the target

**Normal development**  
 In operation within the first 2 months  
 Infants detect eyes looking at them and detect when they are looking away

**Autistic development**  
 In operation in early childhood in that they avoid eye contact

### Eye gaze

Even in this poor quality picture, we can tell which object the man is looking at.

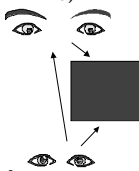


### S: Shared Attention Module

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Realizing that someone else is looking at a particular object and perceives its existence (has a representation in mind)

**Normal development**  
 In operation before 9 months  
 Gesture to objects to gain attention  
 Gaze monitor, looking to same targets



**Autistic development**  
 Massively impaired, never develops  
 Don't direct other's attention or gaze to objects  
 Don't gaze monitor to see where another is looking  
 Speak too loudly or softly, in a monotone, not listener sensitive  
 Will take someone to an object to get it turned on (like the TV), but will not do so just to show the object to them.

### Model of Internal States of Minds

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The ability to differentiate and compare the contents of one's mind and the contents of another's.

**Normal development**  
 In operation by 18 months  
 Can pretend to be another person in play  
 Can signify disbelief of a proposition  
 Understand when another is pretending in play  
 By 4-years old are competent mindreaders

**Autistic development**  
 Never develops -- presumably due to the lack of development of shared attention  
 Never pretend, play, imagine, register disbelief, demonstrate surprise that appearance is not reality (for example, when a sponge looks like a rock)

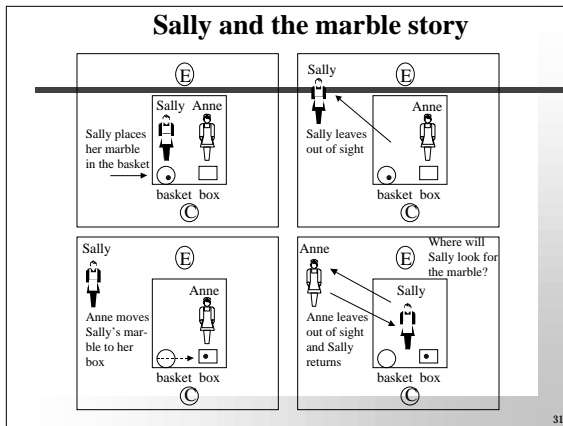
### Evidence of Mindblindness

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**Sally and the marble story.** --->  
 Sally puts a marble one place and when she is away Anne puts in somewhere else. Sally returns and the subject is asked "Where will Sally look for her marble?"

**Results:**  
 Normals at 3-4 years pass this test (basket).  
 Down Syndrome children with 3-4 MAs pass it also  
 Almost all autistic children fail regardless of MA

**Interpretation**  
 Autistic children have mindblindness and are unable to know other people's mind states and therefore assume all other mindstates are like theirs.



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## The Theory of Whole-body Apraxia

- Autistic children are fully networked into the social world of minds but they physically cannot participate
  - They are isolated because they have apraxia: a neurological dysfunction that results in an inability to willfully control the body. They are essentially paralyzed.
- Autistic children have acquired language normally
  - They cannot demonstrate their knowledge by talking or by demonstrating their understanding of what others are saying because the apraxia does not allow them to respond willfully.
- Autistic children learn to read by themselves
  - Because they are exceptional learners, they can learn to read without instruction
  - However, they cannot demonstrate their reading ability because their apraxia does not allow them read aloud or demonstrate that they understand what they are reading

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## Claims of the Theory

- Autistic children have whole body apraxia: an inability to willfully control their bodies
- They have a normal intellect and a superior ability to learn without active participation
- With this superior ability, they can acquire
  - > Adult-like understanding of social relationships
  - > Adult-like knowledge of the physical and natural world
  - > Adult-like logic and reasoning abilities
  - > Adult-like knowledge of English
  - > Adult-like knowledge of reading and writing
- They are unable reveal this knowledge or report frequent instances of sexual abuse by their caregivers

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## Teaching a child to communicate using Facilitated Communication

- FC holds that the lack of willful control of the body can be circumvented by the assistance (facilitation) of a facilitator
- The developers claim that FC can be taught in a series of steps in which facilitator support is gradually removed.
  - > 1. communicator types with index finger with hand-over-hand support
  - > 2. index finger with hand-at-the-wrist support
  - > 3. with hand-at-the-elbow support
- And the complexity of responses is increased in steps
  - > 1. initially respond to fill-in-the-blank questions
  - > 2. multiple choice
  - > 3. open ended questions
- Final goal: subject types messages without any support

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## What is not taught

- Language
  - > No lessons on lexicon, morphology or sentence structure are given because it is assumed that the child has already learned the language to at least the facilitator's level
- Reading
  - > No lessons on the mechanics of reading, for example: sound letter correspondences, spelling rules, punctuation, etc. because it is assumed the child can read at the facilitators' level
- General information about the world
  - > No lessons on the information that provides the background for subjects like math, history, science, English, literature before children are placed in grade-level classes
  - > The children seem to know just what the facilitator knows.

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