Appreciating Autism

Issues in understanding the world's fastest-growing disorder

Today's Plan

What Is Autism?

Is Autism Increasing?

Causal Factors

Perspectives

Are There Treatments?

Hysteria, Myths & Fraud

Introduction

“There are relatively few solid facts about autism”

“With autism almost nothing is as it seems”

What’s Going On?

Why Is Autism Increasing?

More cases?

Greater awareness?

Better detection?

Misuse of the term?

Over-generalization?

What Is Autism?

What Is Autism?

The symptom profile we now call autism was first described in the 1930s and 40s

Dr. Kanner and Dr. Asperger simultaneously published papers describing severe impairments in learning and socialization

Dr. Kanner

In 1943 Leo Kanner described a group of eleven children found in his Baltimore clinic who had what he called “autistic aloneness”.

These children showed little interest in people and had Severely impaired social skills.

All were mentally retarded with IQs below 70.

Kanner's Disease

Dr. Kanner's original definition of autism now describes only a small minority of the patients diagnosed with the condition

Kanner’s autism

Kanner’s reports described:

1. “autistic aloneness”

2. a desire for sameness

3. an inability to form normal social relationships

Symptoms exist in the context of some normal development

Dr. Asperger’s Disease

In Vienna, Dr. Asperger described a group of children without mental retardation who also showed significant impairment in social skills.

These children also showed narrow interests (savantism) and sometimes an exceptional memory for detail

In The Beginning

Dr. Kanner and Dr. Asperger were unaware of each other

Initial research used the criteria set down by Dr. Kanner

Autism was considered rare and diagnosed only in children with an IQ below 70.

DSM IV diagnostic criteria were a mixture of both Dr. Kanner and Dr. Asperger’s descriptions

DSM III had no criteria for diagnosing Autism

Classic Autism

Individuals with classic autism show severe impairments in cognition, language, social skills/empathy

It took decades to separate the symptoms of autism from those of mental retardation

There is still considerable overlap in diagnosis

Common Diagnostic Signs
No babbling or pointing by age one
No single words by 16 months
No response to name
Poor eye contact
Excessive lining up of toys
Limited smiling and poor social responsiveness

Temple Grandin
Over time, researchers and parents came to understand that poor social skills and impairments in the ability to read the emotions of others was not limited to autistic children with mental retardation

Temple Grandin
TED Talk February 2010

Uta Firth
“To see a child with classic autism has become the exception”
“As long as the diagnosis of autism is based on behavior, the definitive pronouncement (diagnosis) can only be made in hindsight”

Independent Factors
Developmental disabilities can affect physical appearance, cognitive ability and capacity for socialization
It is now understood that these are separate domains which can show differing amounts of impairment

Developmental Disorder
Autism starts to be noticed in childhood, but it is not a disorder of childhood. Instead it is a disorder of development.
Since it is a disorder that affects all of mental development, symptoms will necessarily look different at different ages

Diagnostic Criteria Today
Impaired ability for reciprocal social interaction
Averted eye gaze, minimal use of gestures, lack of personal relationships, little interest in other children
Impairment in verbal and nonverbal communication
Language delay, lack of spontaneous play, lack of social or emotional reciprocity
If speech is normal, interest in communication is impaired
Markedly restricted activities and interests
Repetitive, stereotyped movements, intense abnormally narrow interests, rigid inflexible behavior

Diagnostic Criteria DSM 4
Onset prior to age 3
Lack of developmental progress
Not due to Rett’s Syndrome
Not due to Childhood Disintegrative Disorder
Kanner & Asperger both emphasized that Autism is development disorder not a progressive disease

Childhood Disintegrative Disorders
A variety of neurological disorders that onset after age three
Examples include:
Lipid Storage Diseases
Subacute sclerosing panencephalitis
Brain effects of measles or other viruses
Tuberous sclerosis
Now part of Autistic Spectrum in DSM 5

Autism vs CDD
Distinguishing between childhood disintegrated disorder and autism is not easy
Earliest signs of autism may go unnoticed. Behavioral diagnosis of autism in infancy has been unreliable as behavior repertoire is limited
Children with CDD generally lack the autistic’s focus on objects rather than people

Autistic Focus
Autistics focus on non-relevant objects rather than facial features which contain social information

Heller’s Syndrome
Described by Theodore Heller in 1908
Often mistaken for Autism
28 Adolescent Disintegrative Disorder
- Better known as schizophrenia

29 PANDAS
- Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcus
- A childhood disintegrative disorder with known cause
- Not supposed to be counted as Autism
- Symptoms are more suggestive of OCD

30 Symptoms of Autism

31 Autism Is Not A Disease
- The symptom cluster we refer to as Autism does not meet the criteria for a disease
- The DSM 5 calls it a “disorder”
- Autism is best thought of as a cluster of symptoms whose cause (or causes), course and treatment is poorly understood
- Until biomarkers can be found, researching autism will be highly confounded by conflicting diagnostic criteria and inherently poor design

32 Headache
- Headache is a symptom which can occur in many different diseases
  - Tension, migraine, allergies, brain tumors, etc.
- If we mislabel headache as a disease, research results would become quite confusing
- A clinical trial of Benadryl for the treatment of Headache would give very misleading results

33 Autistic Individuality
- Because it’s a symptom cluster and not a disease a wide variety of signs and symptoms have been associated with autism
- Autistic children can vary widely in their presentation each showing dramatically different behaviors
- Making diagnosis extremely challenging

34 Core Features of Autism
- Impaired reciprocal social interaction
- Impaired communication even when language is present
- Restricted and repetitive behavior

35 Lack of Social Engagement
- Impaired peer relationships
- Behavior with adults may be intact
- Behavior is sometimes described as aloof or passive
- In Asperger’s this may improve as the child ages

36 Because autism starts so early in life, many of the social roots to learning about the world are blocked. Normally developing children can easily follow the path that has been carved out by evolution and culture. But autistic children have to find their own special routes on the backroads. This makes them very different from each other as well as different from children who do not have autism

37 Normal Facial Recognition
- Individuals without autism spend most of their time seeking information from vital facial features
- Autistic individuals focus on irrelevant features or none at all

38 Facial Recognition

39 Emotional Perception
- When looking at photographs of people, the brains of individual’s with autism appear to be looking at inanimate or nonemotional objects
40 **Impaired Communication**
- Communication is not just spoken words but includes gesture and facial expressions
- Use of language may be instrumental rather than social
- Speech may show lack of prosody i.e. have metallic robot-like characteristics

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42 **Repetitive & Narrow Interests**
- Frequent obsessive, repetitious behaviors
- Resistance to change
- Aversion to novelty
- Inability to cope with unpredictable situations

43 **Routines and Rigidity**
- Autistic individuals can exhibit obsessive behavior, perseveration, rigidity and resistance to change
- They are often inflexible and over-controlled

44 **Asperger’s disorder**
- Similar criteria to autism but no clinically significant delay in language and no delay in cognitive development
- Many researchers consider Asperger’s to be the “purest” form of autism

45 **The Big Bang Theory**
- Dr. Sheldon Cooper

46 **Widening Diagnostic Criteria**
- Asperger’s syndrome tends to be diagnosed later in life but symptoms have been present since childhood

47 **John Elder Robison**
- Undiagnosed until his 40s, John Elder Robison has written a unique and beautiful autobiography describing his difficulties with relationships

48 **Asperger’s Syndrome**
- Many families desire a diagnosis of Asperger’s as it connotes intelligence and giftedness
- While this may not always be true, “Aspies” often do not need the extensive supervision required in classic autism

49 **John Elder Robison**
- Author of *Look Me In The Eye*

50 **Diagnostic Issues**
- Current diagnostic criteria are vague and often ignored
- Quite a number of childhood disorders are now being lumped with autism including Retts Syndrome, Fragile X and a number of other disintegrative disorders which were previously excluded
- By definition, deterioration after normal development is not supposed to be called autism
- The DSM 5 is looking to return to a more restrictive definition

51 **The Spectrum**
- Autistic Disorder (classic autism)
- Pervasive Developmental Disorder NOS
- Asperger’s Syndrome

52 **The Spectrum Gets Bigger**
- Increasingly, more and more previously known neurological conditions are being called Autism

53 **Diagnostic Issues**
Autisms
- Fragile X Syndrome
- Down’s Syndrome
- Rett Syndrome
- Pervasive Developmental Disorder
- Heller’s Syndrome
- Fetal Testosterone Disorders
- Porphyria
- Williams Syndrome
- Smith–Lemli–Opitz Syndrome

Are all of these disorders really autism?
- Fragile X Syndrome
- Down’s Syndrome
- Rett Syndrome
- Pervasive Developmental Disorder
- Heller’s Syndrome
- Fetal Testosterone Disorders
- Porphyria
- Williams Syndrome
- Smith–Lemli–Opitz Syndrome

Kim Peek
- Kim Peek was a famous savant commonly described as autistic
- He was the inspiration for Dustin Hoffman’s character in Rainman
- Kim Peek died in 2009 of a heart attack

Kim Peek’s Brain
- Was Kim peek really autistic?
- Autopsy data showed that he had Opitz–Kaveggia syndrome a rare X-linked disorder of the brain

Lumpers and Splitters
- A “lumper” is an individual who takes a gestalt view of a definition, and assigns examples broadly, assuming that differences are not as important as signature similarities. A “splitter” is an individual who takes precise definitions, and creates new categories to classify samples that differ in key ways.

The DSM–4
- Robert Spitzer was chair of the DSM committee for 25 years
- He now regrets liberalizing the criteria for autism, ADD and childhood bipolar disorder
- He believes that the changes in the definitions of these diseases have led to “false epidemics”

The DSM–4
- Dr. Spitzer has retired from the committee but supported the removal of Asperger’s Disorder from the DSM as he believed that much of the increase in diagnosis stems from his inclusion of this label in the DSM 4

The DSM 5
- It is important to remember that the DSM manuals are not based on any type of scientific research but are created for the purpose of “reliable” IP read eat. consistent diagnosis
- The issue of validity has never been addressed

The DSM 5
- A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following:
  1. Deficits in social–emotional reciprocity ranging from abnormal social approach and failure of normal back-and–forth conversation to reduced sharing of interests, and motions or affect or failure to initiate or respond to social interactions
  2. Deficits in nonverbal communication used for social interaction ranging from poorly integrated verbal and nonverbal communication to abnormalities in eye contact, body language or deficits in use of gestures to a total lack of facial expressions and nonverbal communication
  3. Deficits in developing, maintaining and understanding relationships ranging from difficulties adjusting behavior to suit various social contacts to difficulties in imaginative play, making friends or absence of interest in peers
The DSM 5

- B. Restricted, repetitive patterns of behavior interests or activities as manifested by at least 2 of the following:
  1. Stereotyped or repetitive motor movements, use of objects, lining up of toys, flipping objects, echolalia, idiosyncratic phrases
  2. Insistence on sameness, inflexible adherence to routines or ritualized patterns of verbal or nonverbal behavior, distress at small changes, rigid thinking patterns, greeting rituals, etc.
  3. Highly restricted, fixated interests that are abnormal in intensity or focus
  4. Hyper or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment

- C. Symptoms must be present in the early developmental. But may not become fully manifest until social demands exceed limited capacities or may be masked by learn strategies later in life

- D. Symptoms cause clinically significant impairment in social, occupational or other important areas of current functioning

- E. These disturbances are not better explained by intellectual disability or global developmental delay. Intellectual disability and autism spectrum disorder frequently co–occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for the general developmental level

Summary DSM 5

- In the DSM 5 an autism spectrum disorder is defined as persistent deficits in social communication and social interaction associated with restricted repetitive patterns of behavior interests or activities.
- Symptoms have to begin in childhood and severely limit functioning.
- Childhood disintegrative disorder and pervasive developmental disorder are now included in the spectrum.
- The DSM 5 offers a new category called “social communication disorder” that describes milder symptoms where verbal and nonverbal communication are impaired without requiring fulfilling criteria for autism spectrum disorder

Criticism of DSM 4 & 5

- On the milder and one finds a fuzzy boundary with normal levels of introversion
- The result of these changes in diagnostic practice is that autism has changed from a rare disease into a very common one
- Estimates of prevalence are inflated by including subclinical cases as has been the case with the prevalence for so many psychiatric disorders

Why Does Autism Exist?

- Autism is a defect in the capacity for socialization associated with an inability to perceive and comprehend the emotions of others

Errors In Social Development

- Autism is a defect in the capacity for socialization associated coupled with an inability to perceive and comprehend the emotions of others

The central thing to know about autism is that it is, first and foremost, a disorder of empathy

Kanner, 1943

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Kanner, 1943

Why Is Empathy Important?

- Empathy allows us to see and comprehend emotional communication from others
- The emotions predate the development of humans as a method of communication designed to increase survival

What Are Emotions?

- The emotional system developed as a method of communication between social animals
- Animals who can communicate can work together to promote their survival

Lions & Tigers

Survival of the Affectionate
• Emotions evolved to assist social animals to communicate their needs
• Mammals must select mates, reproduce and care for their young
• Social skills are enormously helpful in achieving these goals

76 What’s Love Got To Do With It?
• Social bonding appears to be one of the most powerful survival mechanisms ever developed

77 Emotion At Work

Primates
• The great apes use and understand emotional expression
• They can communicate
• They have a rudimentary sense of number
• What has prevented their further development?

79 Impulsivity

80 Human nature
• For centuries science has suggested that the difference between Homo sapiens and the “lower” animals has to do with our ability for emotional self-control

81 Control

82 Self-control

83 Mental Balance
• Mental health requires smooth communication between all three levels of the brain
• In the past, mental illness has generally been characterized by an excess of emotion

84 Delicate Balance

85 Social Balance Through Empathy
• Empathy is different from compassion
• Empathy is the ability to see the world from another’s perspective
• Researchers also refer to this ability as “mind reading”
• Individuals with autism have variations in the ability to understand the emotions or perspective of another person

87 Emotional Contagion
• Empathy is the ability to perceive what another person is feeling
• We have special neurons that activate in the brain and mirror the reactions of others
• “I feel your pain”

88 Mind blindness
• This term was coined by Dr. Simon Baron-Cohen
• Dr. Baron-Cohen presented a model of autism which suggested that individuals with autism had difficulty perceiving or comprehending the thoughts and emotions of others
• They show limited interest in the emotional life of others
• Another term for this is egocentrism, but this term suggests that the behavior is chosen and/or selfish

89 Color Blind

90 Mind Blind
• Color Blind

91 Color Naming
• Women name more colors than men
• They see the same frequencies but assign them different levels of meaning

92 The Basis for Empathy
Mind Blindness
- The opposite of theory of mind is mind blindness
- Autistic children fail in the capacity to infer the thoughts of others
- They also have difficulty inferring the intentions of others

A Test for Theory of Mind
- All criteria for autism include descriptions of mind blindness and a reduction in the ability to identify and understand another person’s point of view

Theory of Mind

The 4 steps of Mind Reading
- An intentionality detector
- Eye direction detector
- Shared attention mechanism
- Theory of mind mechanism

Assessment of Agency
- Remake of Himmel & Simmer 1940

The Language of the Eyes
- Only humans have sclera
- The sclera help us to analyze where someone else is looking
- This helps us to understand the needs of others and also anticipate their actions

Understanding Glances
- The sclera
- The purpose of the sclera is to allow us to anticipate the behavior of others
- Other animals lack sclera because they rely on surprise attack and less on cooperation

Shared Attention
- The ability to understand what others are looking at is crucial for the development of complex human relationships

can we localize theory of mind?

Mirror neurons
- Nova PBS January 1, 2005

Mirror Neurons
- Mirror neurons are found in the insula cortex
- The insular cortex is associated with the ability to feel love and attachment
- Individuals with autism have recently been found to have defects in the insula cortex

Mirroring At Birth

Impaired Perception of Emotion
- Research has attempted to localize areas in the brain which may be defective in autistic individuals
- Some individuals with autism show a defect in the insular cortex which contains the mirror neurons and prevents autistic individuals from perceiving the emotions of others

Emotional Perception
- Scan of a woman presented with a picture of her own child and a picture of an unrelated child

Empathizing & Systemizing
Simon Baron Cohen, PhD
- One of the world’s foremost researchers in autism
- Dr. Baron–Cohen has developed an intriguing theory about Autism
- He states that the symptoms of Autism represent a “hyper male” brain

Sasha Baron Cohan
- The actor who played Borat and the station inspector in Hugo

Simon Baron Cohen, PhD
- The female brain is predominantly hardwired for empathy
- The male brain is predominantly hardwired for understanding and building systems

Dr. Simon Baron Cohen

The Male Brain
- Competition
- Poor theory of mind
- Values power
- Active aggression
- Poor reader of facial expression
- Good visual spatial skills
- Mechanical ability

The Female Brain
- Sharing, turn taking
- Better theory of mind
- Values relationships
- Indirect aggression
- Better reading faces
- Discusses feelings
- Good verbal ability

Empathizing
- The drive to identify another person’s emotions and thoughts and to respond to them appropriately
- Research tends to bear out that females tend to empathize with others to a greater degree than males
- Empathizing is a way of understanding other people and their needs

Systematizing
- On average, males tend to be better at creating and predicting rule-based systems
- Males succeed in physics, architecture, computer science and other areas that do not require mind reading and empathy
- Naturally, there is much individual variation and any specific person may be an exception to the rule

EQ
- v
- SQ
- Him

The Extreme Male Brain
- Initially described by Dr. Asperger who stated in 1944:
  - “In the autistic individual, the male pattern is exaggerated to the extreme”
- This quote was not discovered until 1991 after Dr. Baron–Cohen had published the same concept

Empathizing versus Systematizing
- Research has analyzed whether these ideas can be supported by text data

Alexithymia
- “Without words for feelings”
- All individuals with autism have alexithymia but not all individuals with alexithymia have autism
- Alexithymia affects about 10% of the overall population
Individuals with alexithymia have difficulty identifying and describing their own emotions and the emotions of others

**Feeling Naming**
- Women can usually discuss feelings in detail
- Individuals with alexithymia have feelings but have difficulty describing them

**Features of Alexithymia**
- Difficulty identifying feelings and distinguishing between feelings and bodily sensations of emotional arousal
- Difficulty describing feelings to other people
- Cognitive rigidity
- Lacking sentimentality; unable to attach emotion to memories

**Behavioral Patterns**
- Individuals with alexithymia have difficulty seeing the needs of others
- Appear emotionally restricted with occasional emotional overreaction
- Parents with alexithymia may ignore symptoms of distress in children or appear confused by symptoms of illness or injury
- Initially studied by emergency room physicians

**Wife Lessons**

**Mind Blind**

**Brain**
- Vol 133 pp 1515–1525

**Association with Insula Function**
- Limited research suggests that individuals with alexithymia have alterations in insula function

**Jason Thompson**
- A good, short summary of alexithymia
- Includes the effects of alexithymia on children
- Available only on Kindle

**Online Assessment**

**Types of Empathy**

**Affective Empathy**

**Is Autism Increasing?**

**The Hidden Face of Autism**
- There are detailed reports of cases that predate Kanner and Asperger by many years
- Some accounts date back to the Middle Ages
- Autism is probably as old as mankind

**Bethlehem Hospital**

**Emile Kraeplin, MD**
- First to describe manic depression disorder and schizophrenia
- Within 20 years, tens of thousands of people were diagnosed with these conditions
- No one suggested that this was a new epidemic

**Severity**
- Until the 1940s only the most severe cases of mental illness were diagnosed
- Treatment mainly consisted of confinement in an asylum
- Families avoided diagnosis as humane treatment was mostly nonexistent
As state hospitals have closed, doctors have found many hundreds of patients who were initially diagnosed with mental retardation who would now likely be diagnosed as autistic.

Prevalence of Mental Illness

- 1% of American population is diagnosed with Schizophrenia
- 4% are diagnosed with Depression/Mood disorder
- In 1950 4% of the population was institutionalized
- This would translate to 12,000,000 today
- Deinstitutionalization has dramatically reduced hospitalization but the mentally ill remain among us

Early Research

- In 1966 a study in England using in-person interviews and assessment revealed a rate of autism at 4.5 per 10,000 children aged 8 to 10 with a ratio of 2.6 boys to girls
- These figures were widely cited and autism was called rare
- Later, it was discovered that all children of normal intelligence or higher had been excluded from this study and it seriously underestimated the true incidence of the disorder

Later Research

- Most experts do not believe there has been a rapid recent increase in cases
- They do think that most prior population studies have studied children and excluded adults or used criteria that were too restricted
- Comparisons become difficult as researchers often use different criteria to define “autism”

Poor Quality Research

- Some studies have used poor study design or have used measures that are so informal as to render the resulting data meaningless
- A recent study that created near panic in the media seems to fall into this category
- This study reported 2.6 cases of autism per 100 children

Has a doctor, health professional, teacher, or school official ever told you [CHILD’S NAME] has Autism, Asperger’s Disorder, pervasive development disorder, or other autism spectrum disorder?

Increase in diagnosis

- In the last 20 years, individuals diagnosed with autism have increased exponentially
- There is continued debate whether this represents an actual increase in the number of individuals with autism
- The label of autism is now being used as a slang term for any form of childhood impairment

Causal Factors

Factors Associated with Autism

- Genes
- Age of parent
- Use of SSRIs
- Environmental Factors?

Early Genetic Studies

- Folstein and Rutter (1977) published the first genetic study on autism
- They found that 4 of 11 monozygotic twins were concordant for autism in contrast to 0 of 11 dizygotic twins
- The non-autistic monozygotic twins showed milder symptoms of language, social and cognitive impairment

Candidate Genes

- Deletions on chromosome 16
- Additions to chromosome 5
- Numerous copy number variations
- Hundreds of possible point mutations

Cause Of Autism

DeNovo Mutation

- Neither parent shows the mutation
- Can be caused by aging, exposure to radiation
- Once present, can be inherited like any genetic material

Cell Division
Genes spend most of their time loose in the cell. They form chromosomes only when about to divide. During this process mistakes can happen.

**Copy Number Variations**
- Alterations of DNA that result in the cell having an abnormal number of copies of one or more sections of the chromosome
- They may be inherited or caused by de novo mutation
- Most are benign but some are associated with disease

**Erroneous Gene Copying**

**Epigenetic Inheritance**
- Epigenetics is the study of environmental impact on genes
- Exposure to toxins can affect multiple generations

**Study Findings**

**Increased Brain Size**
- Autism is associated with an increase in the size of the brain
- Individuals with autism often show a larger cranium
- Increase in tissue may be 10 to 15%

**Cranial Circumference**
- Symptoms of autism are often found in people whose brains have not undergone the pruning necessary for normal cognitive development

**Too Many Neurons**
- The human brain is born with an overgrowth of neurons
- During childhood, roughly half of the neurons present at birth are pruned back to allow new learning to occur

**Macroencephaly**
- There can be many reasons for an enlarged cranium including hydrocephalus, genetic abnormalities and autism
- Individuals with autism are also more likely to have been born through Cesarean section

**Synaptic Pruning**
- Adult memory performance is maximized if synapses are first overgrown and then pruned following optimal deletion
- This creates the capacity for maximal learning
- May be the cause of "infantile amnesia"

**Cellular Pruning**

**Cleaning the Closet**

**Excess White Matter In Autism**
Brain Freeze

Genetic analysis has revealed that many autistics have genetic abnormalities in the genes for making glia. These genetic abnormalities appear to cause the neurons to “harden” too soon and trap in the brain in an immature state. Therapeutic interventions may work by overcoming this deficit but it takes a lot of work to alter these rigid brain systems and create the flexibility for new learning.

Better prenatal care

Serotonin and Autism

30% of individuals with autism show elevated levels of serotonin. Researchers are investigating whether the increase in autism can be associated with an increase in use of SSRI antidepressants.

Immunity & Inflammation

Some research has found alterations in the immune system in both mothers and children with autism. Observations have shown that autistic symptoms can sometimes temporarily remit during fever. Research projects at Albert Epstein School of Medicine are targeting the immune response and the role of inflammation in the development and treatment of autism.

Inflammation and Autism

The reduction in symptoms during fever have been observed. This could be due to:
- the direct effect of temperature
- a change in the inflammatory system
- an improvement in the nor–adrenergic system (norepinephrine)

Maternal infection can cross the blood–brain barrier in the first trimester. Resulting in disorders like schizophrenia and possibly autism.

Anti–brain Antibodies

Mothers of ASD children have high levels of brain–reactive antibodies which can alter brain growth and white matter development during gestation.

Treatments

Most people have accepted that autism is a lifelong condition and that it is inappropriate to expect a cure. It is rather like blindness which is also a lifelong condition with extensive effects on the family and the community.

The Transporters

Transcranial Magnetic Stimulation

Uses large magnets to create electrical fields. Applying electricity to specific areas in the brain can alter chemical transmission.

Transcranial Magnetic Stimulation

Used to treat:
- Alcoholism
Depression
Obesity
and now Asperger’s

TMS for Asperger’s

Hysteria, Myths & Fraud

Why The Outrage?
- There are other significant and more common neurological disorders that strike children that do not cause so much agitation
- We may subconsciously expect children with significant genetic defects to “look” different

“More often than not, the young child with autism strikes observers with a haunting and somewhat otherworldly beauty”

Human Attraction
- The Role of Facial Symmetry

Changes In Diagnostic Criteria
- Widened criteria and frank over-diagnosis creates fear and a sense of helplessness

The Vaccine Controversy

Andrew Wakefield
- A physician in England who now admits that he took money from a legal firm to create studies that suggested a strong link between autism and vaccines
- He has lost his license and may be charged with manslaughter due to deaths in children who have not been vaccinated

Thimerosal
- Initially used to reduce the risk of infection with multi-use viles
- Removed in 1998 when it was questioned as a risk for autism
- The public then viewed the removal as evidence it was causing autism

Merthiolate
- The trade name for thimerosal
- Widely used from 1940 through 1980 to treat minor cuts and abrasions
- Never shown to be associated with any long term harm
- Average use is many times that found in any vaccine

Autism and Giftedness

Exceptional Ability
- Some of the “deficits” of autism can have benefits
- Extreme systematizing can assist in physical analysis and mathematical reasoning

Giftedness Is Misunderstood
- We assume that individuals who lack intellectual or social capacity should lack artistic or musical ability as well
- This belief is not supported by evidence

Rote Memory
- Some individuals with brain damage show high levels of rote memory
- This can be due to the presence of autism, stroke traumatic brain injury or other neurological disorder

Stephen Wilshire
- Manhattan Skyline

Optical Illusions
- Some autistics appear to be immune from certain optical illusions
- They may be able to more accurately perceive visual information

Giftedness
- Individuals with autism are neither more nor less likely to have exceptional ability
- Because of our low expectations we are surprised when they show specific abilities

Shine (1996)
- Geoffrey Rush As David Helfgott
Summary
- Autism is a disorder of social and emotional perception characterized by deficits in empathy and impairments in "theory of mind"
- Autism was first described in the 1940s, but clearly existed prior to that time
- Changes in diagnostic criteria, qualification for services, and wider awareness of the condition have all contributed to apparent changes in prevalence

Summary
- Many, many genes are associated with "the autism's"
- Advanced parental age and the presence of maternal diabetes and obesity are associated with higher rates of autism and may be a major cause for genetic issues
- The vaccine controversy was sadly due to criminal fraud
- Treatment with transcranial magnetic stimulation has shown promise but is not yet ready for wide use

Thank you for your attention
- Questions?