Identifying, Screening, & Assessing Autism at School

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Acknowledgement

Adapted from…

Brock, S. E., Jimerson, S. R., & Hansen, R. L. (in press). *Identifying, assessing, and treating autism at school.* New York: Springer.

Presentation Outline

- Introduction: Reasons for Increased Vigilance
- Diagnostic Classifications and Special Education Eligibility
- School Psychologist Roles, Responsibilities, and Limitations
- Case Finding
- Screening and Referral
- Assessment: Causes, Diagnosis, Psycho-educational Evaluation

Introduction: Reasons for Increased Vigilance

- Autistic spectrum disorders are much more common than previously suggested.
  - 60 (vs. 4 to 6) per 10,000 in the general population (Chakrabarit & Fombonne, 2001).
  - 600% increase in the numbers served under the autism *IDEA* eligibility classification (U.S. Department of Education, 2003).
  - 95% of school psychologists report an increase in the number of students with ASD being referred for assessment (Kohrt, 2004).

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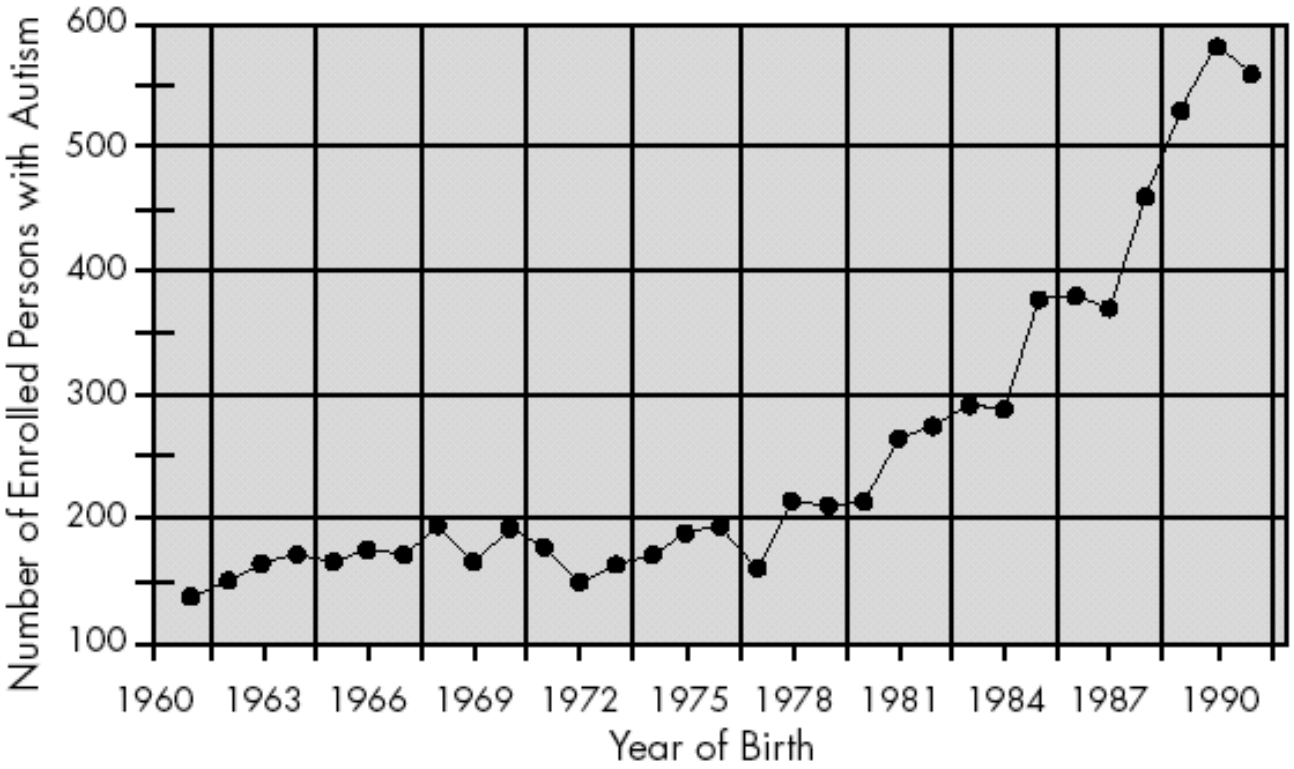
Increased Prevalence in California

Figure 1. *Distribution of birth dates of regional center eligible persons with autism*



Report to the Legislature on the Principal Findings from The Epidemiology of Autism in California: A Comprehensive Pilot Study. M.I.N.D. Institute, University of California, Davis. October 17, 2002

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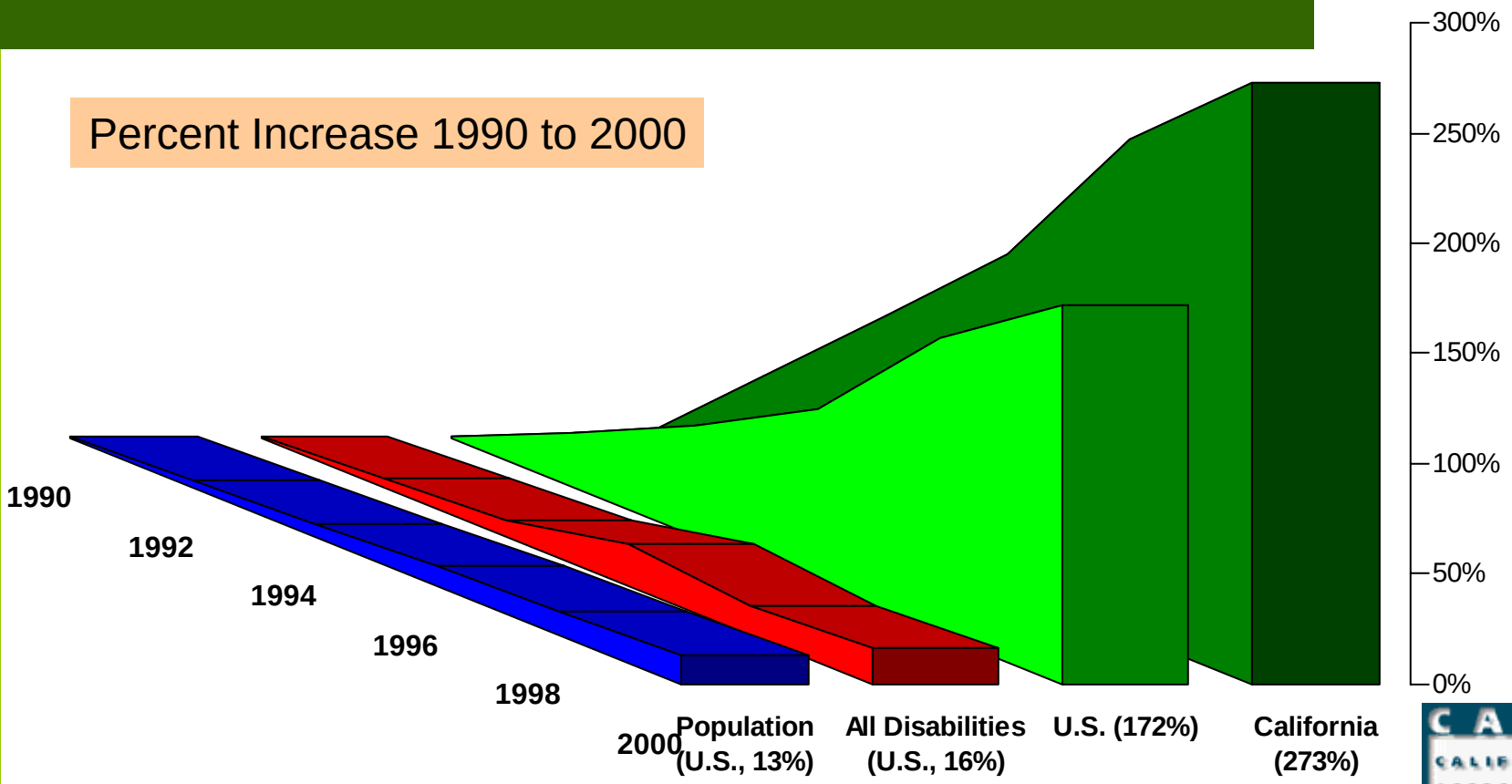
Increased Prevalence (CA and U.S.)



Source: Autism Society of America (2003)

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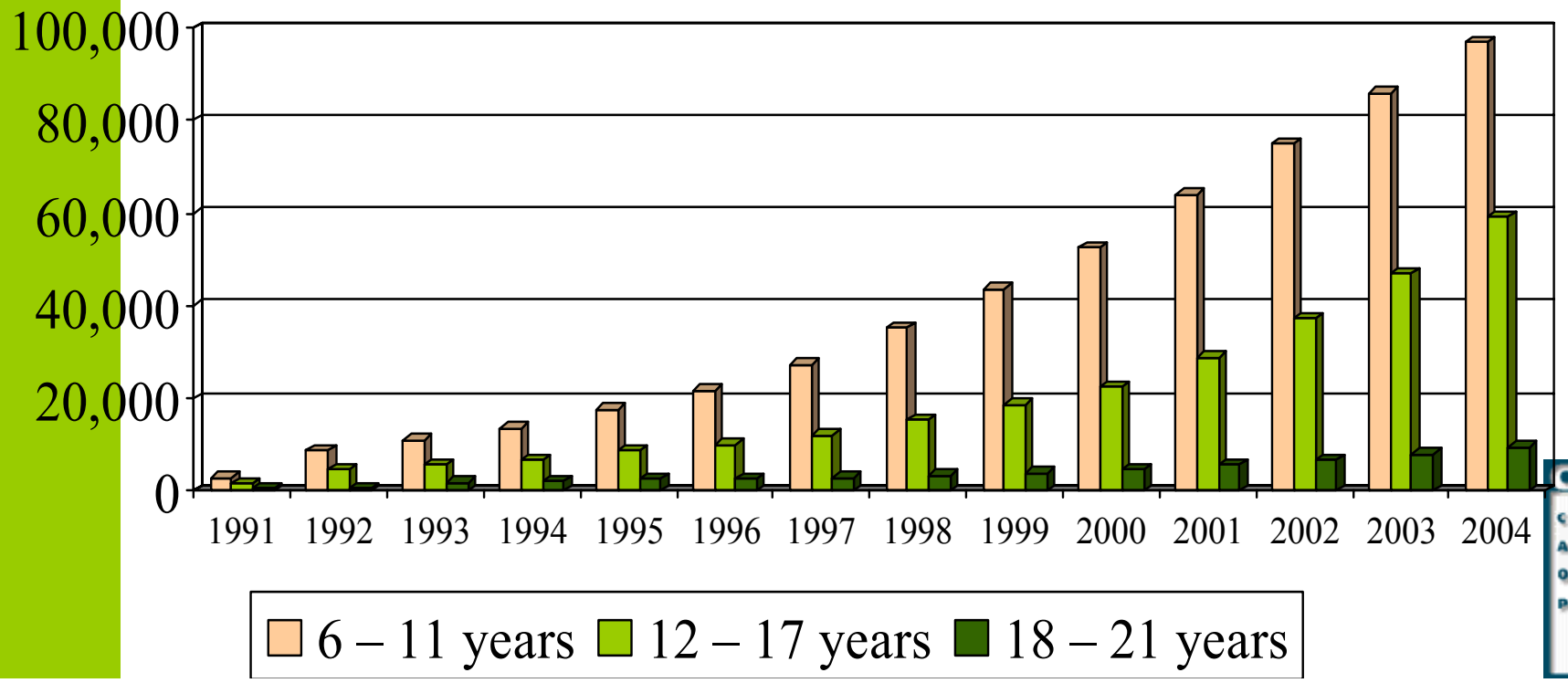
Explanations for Changing ASD Rates in the General Population

- Changes in diagnostic criteria.
- Heightened public awareness of autism.
- Increased willingness and ability to diagnose autism.
- Availability of resources for children with autism.
- Yet to be identified environmental factors.

Increased Prevalence in Special Education (U.S. Department of Education, 2005)

Total Number of Student Classified as Autistic and Eligible for Special Education Under IDEA by Age Group



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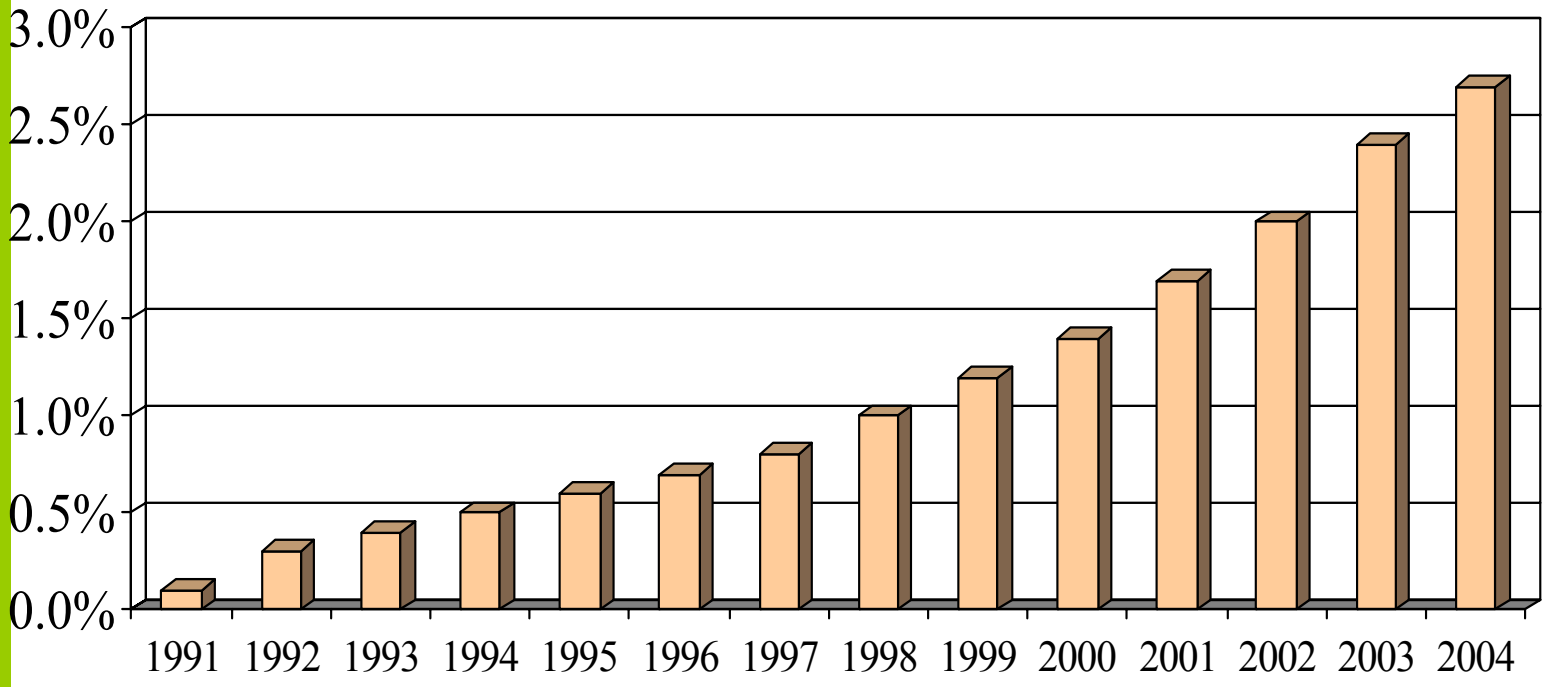
Increased Prevalence in Special Education (U.S. Department of Education, 2005)

Student Classified as Autistic Under IDEA as a Percentage of all Students with Disabilities: 1991 to 2004



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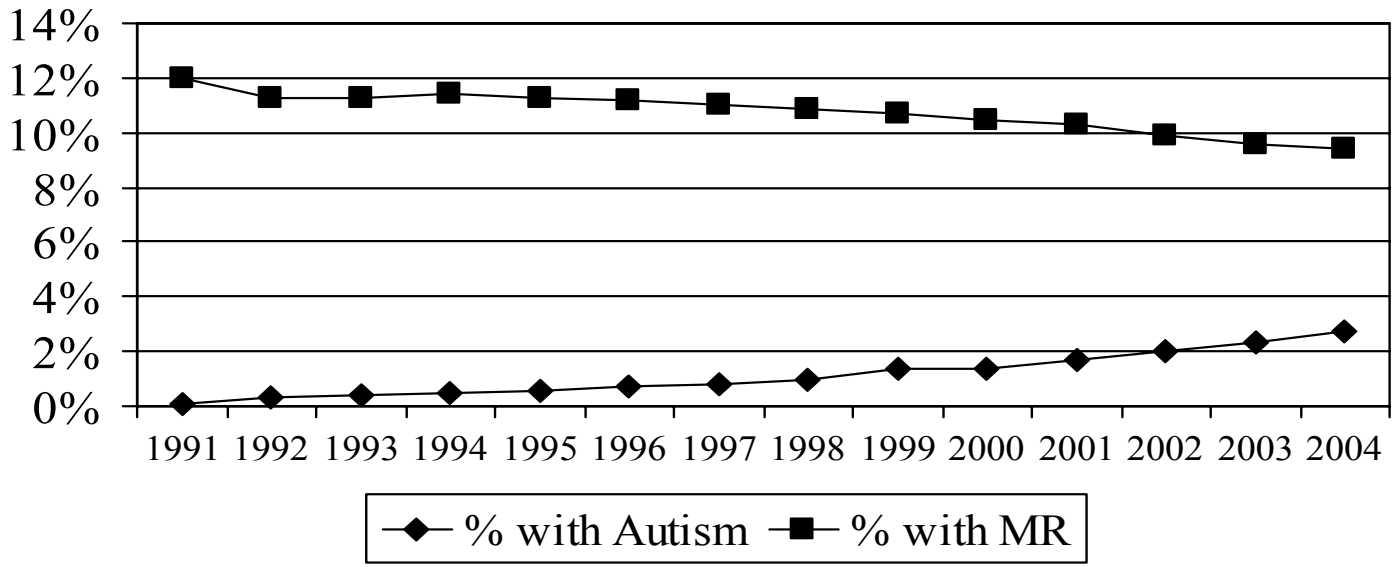
Explanations for Changing ASD Rates in Special Education

- Classification substitution
  - IEP teams have become better able to identify students with autism.
  - Autism is more acceptable in today's schools than is the diagnosis of mental retardation.
  - The intensive early intervention services often made available to students with autism are not always offered to the child whose primary eligibility classification is mental retardation.

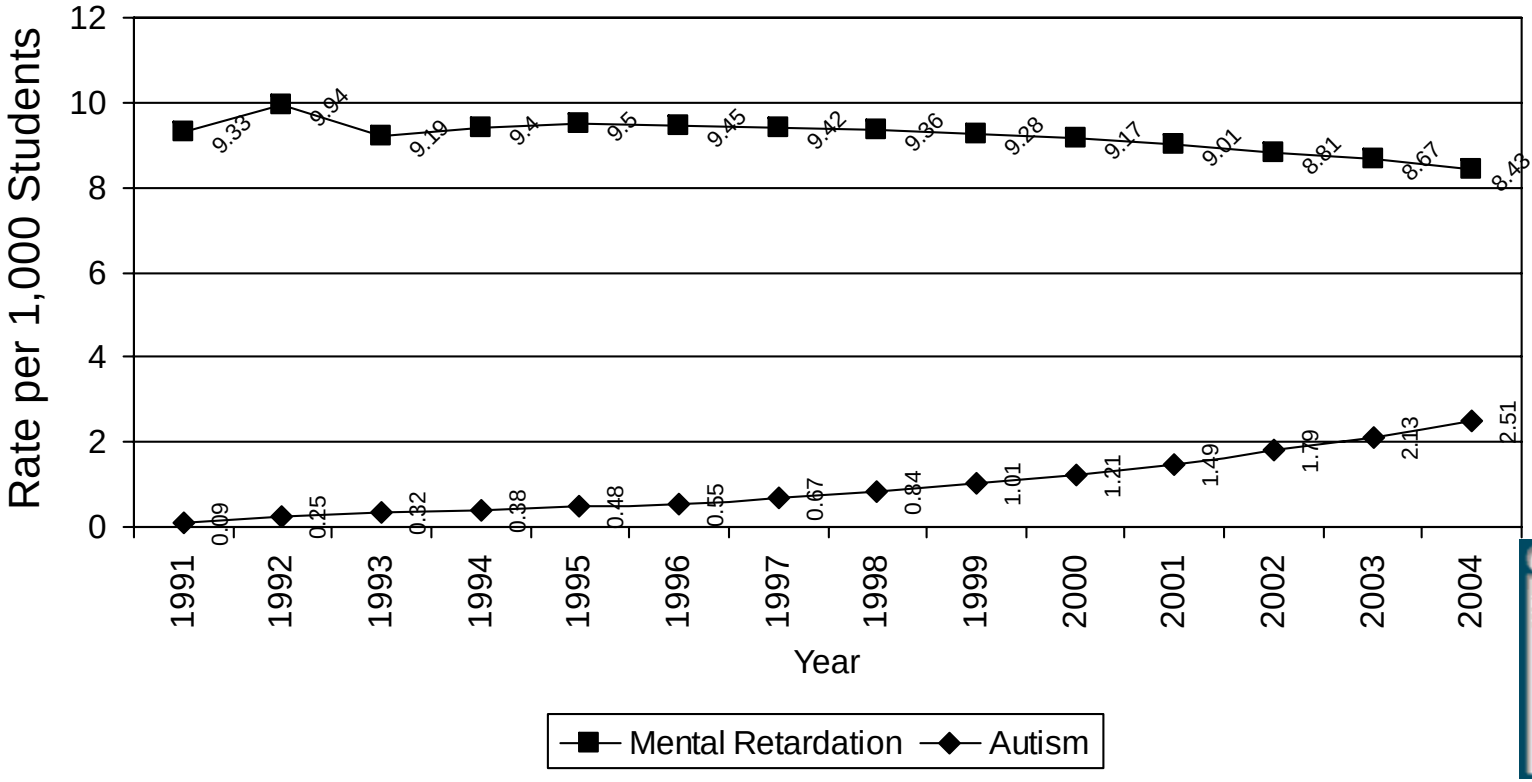
Increased Prevalence in Special Education (U.S. Department of Education, 2005)

Percentage of Students Classified as Autistic or Mentally Retarded Under IDEA as a Percentage of all Students with Disabilities: 1991 to 2004



Increased Prevalence in Special Education (U.S. Department of Education, 2005)

School Population Rates of Mental Retardation and Autism
Special Education Eligibility Classifications: 1991 to 2004



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Reasons for Increased Vigilance

- Autism can be identified early in development, and…
- Early intervention is an important determinant of the course of autism.

Reasons for Increased Vigilance

- Not all cases of autism will be identified before school entry.
  - Average Age of Autistic Disorder identification is 5 1/2 years of age.
  - Average Age of Asperger's Disorder identification is 11 years of age Howlin and Asgharian (1999).

Reasons for Increased Vigilance

- Most children with autism are identified by school resources.
  - Only three percent of children with ASD are identified solely by non-school resources.
  - All other children are identified by a combination of school and non-school resources (57 %), or by school resources alone (40 %) Yeargin-Allsopp et al. (2003).

Reasons for Increased Vigilance

- Full inclusion of children with ASD in general education classrooms.
  - Students with disabilities are increasingly placed in full-inclusion settings.
  - In addition, the results of recent studies suggesting a declining incidence of mental retardation among the ASD population further increases the likelihood that these children will be mainstreamed (Chakrabarti & Fombonne, 2001).
  - Consequently, today's educators are more likely to encounter children with autism during their careers.

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Evolution of the Term “Autism”

- First used by Swiss psychiatrist Eugen Bleuler in 1911.
  - Derived from the Greek *autos* (self) and *ismos* (condition), Bleuler used the term to describe the concept of “turning inward on ones self” and applied it to adults with schizophrenia.
- In 1943 Leo Kanner first used the term “infantile autism” to describe a group of children who were socially isolated, were behaviorally inflexible, and who had impaired communication.
- Initially viewed as a consequence of poor parenting, it was not until the 1960’s, and recognition of the fact that many of these children had epilepsy, that the disorder began to be viewed as having a neurological basis.

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Evolution of the Term “Autism”

- In 1980, infantile autism was first included in the third edition of the *Diagnostic and Statistical Manual* (DSM), within the category of Pervasive Developmental Disorders.
- Also occurring at about this time was a growing awareness that Kranner’s autism (also referred to a classic autism) is the most extreme form of a spectrum of autistic disorders.
- Autistic Disorder is the contemporary classification used since the revision of *DSM*’s third edition (APA, 1987).

Diagnostic Classifications

- Autism Spectrum Disorders (ASD)
  - A diagnostic category found in DSM IV-TR.
  - Placed within the subclass of *Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence* know as *Pervasive Developmental Disorders* (PDD).
  - *PDD* includes *Autistic Disorder, Asperger's Disorder, Rett's Disorder*, *Childhood Disintegrative Disorder*, and *PDD Not Otherwise Specified* (PDD-NOS).

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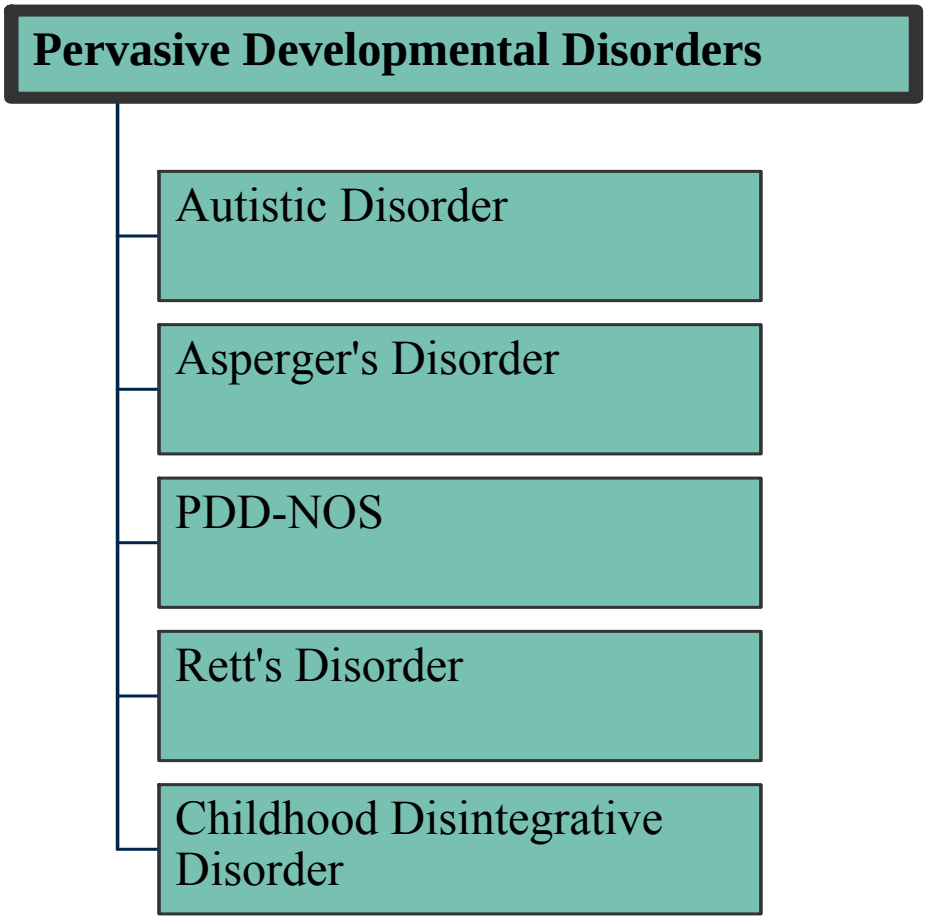
Diagnostic Classifications



In this workshop the terms "Autism," or "Autistic Spectrum Disorders (ASD)" will be used to indicate these PDDs.

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Diagnostic Classifications

- Autistic Disorder
  - Markedly abnormal or impaired development in social interaction and communication and a markedly restricted repertoire of activity and interests.
- Asperger's Disorder
  - Markedly abnormal or impaired development in social interaction and a markedly restricted repertoire of activities and interests (language abilities and cognitive functioning is not affected).
- PDD-NOS
  - Experience difficulty in at least two of the three autistic disorder symptom clusters, but do not meet diagnostic criteria for any other PDD.

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Diagnostic Classifications

- Rett's Disorder
  - Occurs primarily among females and involves a pattern of head growth deceleration, a loss of fine motor skill, and the presence of awkward gait and trunk movement.
- Childhood Disintegrative Disorder
  - Very rare. A distinct pattern of regression following at least two years of normal development.

Diagnostic Classifications

- Video clip from …
  - *On the Spectrum: Children and Autism*
    - © 2003, First Signs, Inc.
    - www.firstsigns.org
    - www.SpecialNeeds.com
      - $49.95
      - Video # 13048
- DSM IV Criteria

Special Education Eligibility: Proposed Regulations

- IDEIA 2004 Autism Classification
  - P.L. 108-446, Individuals with Disabilities Education Improvement Act (IDEIA), 2004
  - Proposed USDOE Regulations for IDEA 2004 [§ 300.8(c)(1)]
    - *Autism means a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a child's education performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotypical movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. (i) Autism does not apply if a child's educational performance is adversely affected primarily because the child has an emotional disturbance, as defined in paragraph (c)(4) of this section. (ii) A child who manifest the characteristics of autism after age three could be identified as having autism if the criteria in paragraph (c)(1)(i) of this section are satisfied.*

Special Education Eligibility

- CA Autism Classification
  - Title 5, CCR 3030(g):
    - *A pupil exhibits **any combination** of the following autistic-like behaviors, **to include but not limited to**: (1) an inability to use oral language for appropriate communication; (2) a history of extreme withdrawal or relating to people inappropriately and continued impairment in social interaction from infancy through early childhood; (3) an obsession to maintain sameness; (4) extreme preoccupation with objects or inappropriate use of objects or both; (5) extreme resistance to controls; (6) displays peculiar motoric mannerisms and motility patterns; (7) self-stimulating, ritualistic behavior.*

Special Education Eligibility

- For special education eligibility purposes distinctions among PDDs may not be relevant.
- While the diagnosis of Autistic Disorder requires differentiating its symptoms from other PDDs, Shriver et al. (1999) suggest that for special education eligibility purposes “the federal definition of ‘autism’ was written sufficiently broad to encompass children who exhibit a range of characteristics” (p. 539) including other PDDs.

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Special Education Eligibility

- However, it is less clear if students with milder forms of ASD are always eligible for special education.
- Adjudicative decision makers almost never use the *DSM IV-TR* criteria exclusively or primarily for determining whether the child is eligible as autistic" (Fogt et al.,2003).
- While *DSM IV-TR* criteria are often considered in hearing/court decisions, *IDEA* is typically acknowledged as the "controlling authority."
- When it comes to special education, it is state and federal education codes and regulations (not *DSM IV-TR*) that drive eligibility decisions.

Legal Information

- For additional information…
- http://www.wrightslaw.com/info/autism.index.htm

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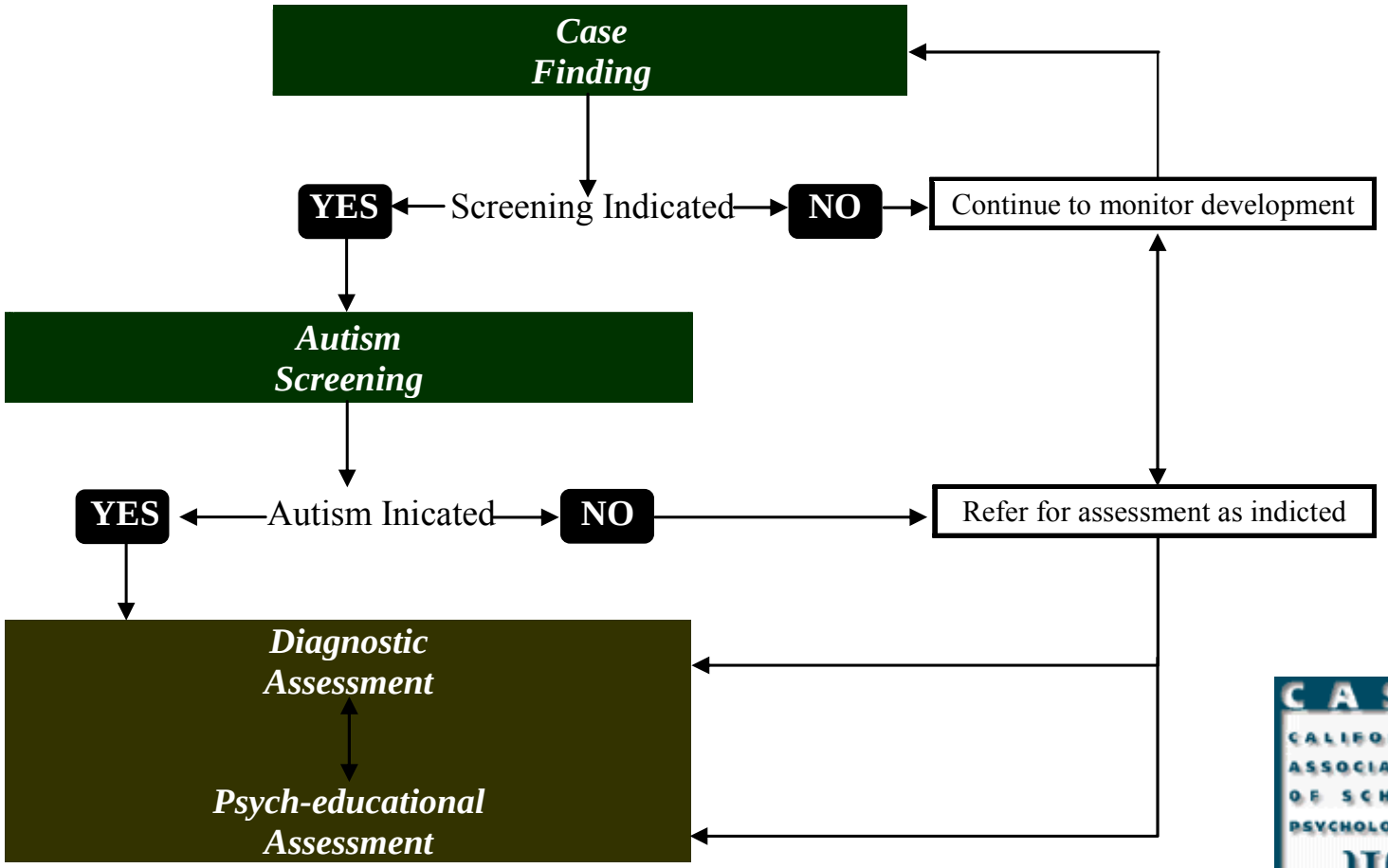
School Psychologist Roles, Responsibilities, and Limitations

- School psychologists need to be more vigilant for symptoms of autism among the students that they serve, and better prepared to assist in the process of identifying these disorders.

Adaptation of Filpek et al.'s (1999) Algorithm for the Process of Diagnosing Autism



School Psychologist Roles, Responsibilities, and Limitations

- Case Finding
  - ***All school psychologists should be expected to participate in case finding*** (i.e., routine developmental surveillance of children in the general population to recognize risk factors and identify warning signs of autism).
    - This would include training general educators to identify the risk factors and warning signs of autism.

School Psychologist Roles, Responsibilities, and Limitations

- Screening
  - ***All school psychologists should be prepared to participate in the behavioral screening of the student who has risk factors and/or displays warning signs of autism*** (i.e., able to conduct screenings to determine the need for diagnostic assessments).
  - ***All school psychologists should be able to distinguish between screening and diagnosis.***

School Psychologist Roles, Responsibilities, and Limitations

- ***Only those school psychologists with appropriate training and supervision should diagnose a specific autism spectrum disorder.***

CDDS Guidelines

1. Qualification to render a diagnosis of autistic spectrum disorder (ASD) under the provision of California state licensure.
2. Documented appropriate and specific supervision and training in ASD as well as experience in the diagnosis of ASD. This would include the following:

Source:
California Department of Developmental Services. (2002). *Autistic spectrum disorders: Best practice guidelines for screening, diagnosis and assessment.* Sacramento, CA: Author.

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CDDS Guidelines

a. Graduate and/or postgraduate studies in a psychology, education and/or child development program with particular emphasis in developmental disabilities, including autism and related neurodevelopmental disorders **AND**

Source:
California Department of Developmental Services. (2002). *Autistic spectrum disorders: Best practice guidelines for screening, diagnosis and assessment.* Sacramento, CA: Author.

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CDDS Guidelines

b. Supervised experience in a graduate training program (e. g. predoctoral, postdoctoral) in a clinic and/or treatment setting serving children with ASD. Specific residency or fellowship training should have specific didactic training and clinical experience in the diagnosis and treatment of ASD. This would necessarily include training in the diagnosis of ASD as well as the administration of measurement tools specific to ASD.

OR

Source:
California Department of Developmental Services. (2002). *Autistic spectrum disorders: Best practice guidelines for screening, diagnosis and assessment.* Sacramento, CA: Author.

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CDDS Guidelines

Documented fellowship in a credentialed medical training program in pediatrics, child neurology or child psychiatry. This would extend beyond the typical four week rotation through developmental/pediatrics in general pediatric training, which encompasses a broad range of developmental difficulties in addition to autism. Specific residency or fellowship training should have specific didactic training and clinical experience in the diagnosis and treatment of ASD.

Source:
California Department of Developmental Services. (2002). *Autistic spectrum disorders: Best practice guidelines for screening, diagnosis and assessment.* Sacramento, CA: Author.

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CDDS Guidelines

3. Clinical experience with the variability within the ASD population as well as extensive knowledge of typical child development.

Source:
California Department of Developmental Services. (2002). *Autistic spectrum disorders: Best practice guidelines for screening, diagnosis and assessment.* Sacramento, CA: Author.

School Psychologist Roles, Responsibilities, and Limitations

- Special Education Eligibility
  - **All school psychologists should be expected to conduct the psycho-educational evaluation that is a part of the diagnostic process and that determines educational needs.**
  - **The ability to conduct such assessments will require school psychologists to be knowledgeable of the accommodations necessary to obtain valid test results when working with the child who has an ASD.**

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Case Finding

- **Looking**
  - for risk factors and warning signs of atypical development.
- **Listening**
  - REALLY LISTENING to parental concerns about atypical development.
- **Questioning**
  - caregivers about the child's development.

Case Finding: Looking **for Risk Factors**

- Known Risk Factors
  - High Risk
    - Having an older sibling with autism.
  - Moderate Risk
    - The diagnosis of tuberous sclerosis, fragile X, or epilepsy.
    - A family history of autism or autistic-like behaviors.

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Case Finding: Looking **for Risk Factors**

- Currently there is no substantive evidence supporting any one non-genetic risk factor for ASD.
- However, given that there are likely different causes of ASD, it is possible that yet to be identified non-heritable risk factors may prove to be important in certain subgroups of individuals with this disorder.
  - There may be an interaction between the presence of specific genetic defects and specific environmental factors.
  - Individuals with a particular genetic predisposition for ASD may have a greater risk of developing this disorder subsequent to exposure to certain non-genetic risk factors.
  - In particular, it has been suggested that prenatal factors such as maternal infection and drug exposure deserve further examination.

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Case Finding: Looking **for Warning Signs**

- Infants and Preschoolers
  - Absolute indications for an autism screening
    - No big smiles or other joyful expressions by 6 months.[b]
    - No back-and-forth sharing of sounds, smiles, or facial expressions by 9 months.[b]
    - No back-and-forth gestures, such as pointing, showing, reaching or waving bye-bye by 12 months.[a,b]
    - No babbling at 12 months.[a, b]
    - No single words at 16 months.[a, b]

Sources: [a]Filipek et al., 1999; [b]Greenspan, 1999; and [c]Ozonoff, 2003.

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Case Finding: Looking **for Warning Signs**

- Infants and Preschoolers
  - Absolute indications for an autism screening
    - No 2-word spontaneous (nonecholalic) phrases by 24 months.[a, b]
    - Failure to attend to human voice by 24 months.[c]
    - Failure to look at face and eyes of others by 24 months.[c]
    - Failure to orient to name by 24 months.[c]
    - Failure to demonstrate interest in other children by 24 months.[c]
    - Failure to imitate by 24 months.[c]
    - Any loss of any language or social skill at any age.[a, b]

Sources: [a]Filipek et al., 1999; [b]Greenspan, 1999; and [c]Ozonoff, 2003.

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Case Finding: Looking for Warning Signs

- **School-Age Children (preschool through upper grades)**
  - **Social/Emotional Concerns**
    - Poor at initiating and/or sustaining activities and friendships with peers
    - Play/free-time is more isolated, rigid and/or repetitive, less interactive
    - Atypical interests and behaviors compared to peers
    - Unaware of social conventions or codes of conduct (e.g., seems unaware of how comments or actions could offend others)
    - Excessive anxiety, fears or depression
    - Atypical emotional expression (emotion, such as distress or affection, is significantly more or less than appears appropriate for the situation)

Citations: Adapted from *Asperger's Syndrome A Guide for Parents and Professionals* (Attwood, 1998), *Diagnostic and Statistical Manual of Mental Disorders, 4th ed*. (APA, 1994), and *The Apserger Syndrome Diagnostic Scale* (Myles, Bock and Simpson, 2000)

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Case Finding: Looking for Warning Signs

- **School-Age Children (preschool through upper grades)**
  - **Communication Concerns**
    - Unusual tone of voice or speech (seems to have an accent or monotone, speech is overly formal)
    - Overly literal interpretation of comments (confused by sarcasm or phrases such as “pull up your socks” or “looks can kill”)
    - Atypical conversations (one-sided, on their focus of interest or on repetitive/unusual topics)
    - Poor nonverbal communication skills (eye contact, gestures, etc.)

Citations: Adapted from *Asperger’s Syndrome A Guide for Parents and Professionals* (Attwood, 1998), *Diagnostic and Statistical Manual of Mental Disorders, 4th ed.* (APA, 1994), and *The Apserger Syndrome Diagnostic Scale* (Myles, Bock and Simpson, 2000)

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Case Finding: Looking for Warning Signs

- **School-Age Children (preschool through upper grades)**
  - **Behavioral Concerns**
    - Excessive fascination/perseveration with a particular topic, interest or object
    - Unduly upset by changes in routines or expectations
    - Tendency to flap or rock when excited or distressed
    - Unusual sensory responses (reactions to sound, touch, textures, pain tolerance, etc.)
    - History of behavioral concerns (inattention, hyperactivity, aggression, anxiety, selective mute)
    - Poor fine and/or gross motor skills or coordination

Citations: Adapted from *Asperger's Syndrome A Guide for Parents and Professionals* (Attwood, 1998), *Diagnostic and Statistical Manual of Mental Disorders, 4th ed.* (APA, 1994), and *The Apserger Syndrome Diagnostic Scale* (Myles, Bock and Simpson, 2000)

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Case Finding: **Looking** for atypical development

- Developmental Screening
  - Ages and Stages Questionnaire
    - Paul H. Brookes, Publishers
  - Child Development Inventories
    - Behavior Science Systems
  - Parents' Evaluations of Developmental Status
    - Ellsworth & Vandermeer Press, Ltd.

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Case Finding: **Looking** for atypical development

- Staff Development
  - School psychologist efforts to educate teachers about the risk factors and warning signs of ASD would also be consistent with Child Find regulations [see 17 CCR 52040(b)(7)]. Giving teachers the information they need to look for ASD (such as is presented in this workshop) will facilitate case finding efforts.

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Case Finding: Listening **to caregivers**

- Referring Concerns That Signal the Need for Autism Screening
  - Communication Concerns
    - Does not respond to his/her name
    - Cannot tell me what s/he wants
    - Does not follow directions
    - Appears deaf at times
    - Seems to hear sometimes but not others
    - Does not point or wave bye-bye

Source: Filipek, P. A. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental disorders, 29*, 439-484.

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Case Finding: Listening **to caregivers**

- Referring Concerns That Signal the Need for Autism Screening
  - Social Concerns
    - Does not smile socially
    - Seems to prefer to play alone
    - Is very independent
    - Has poor eye contact
    - Is in his/her own world
    - Tunes us out
    - Is not interested in other children

Source: Filipek, P. A. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental disorders, 29*, 439-484.

Case Finding: Listening **to caregivers**

- Referring Concerns That Signal the Need for Autism Screening
  - Behavioral concerns
    - Tantrums
    - Is hyperactive or uncooperative/oppositional
    - Doesn't know how to play with toys
    - Does the same thing over and over
    - Toe walks

Source: Filipek, P. A. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental disorders, 29*, 439-484.

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Case Finding: Listening **to caregivers**

- Referring Concerns That Signal the Need for Autism Screening
  - Behavioral concerns (continued)
    - Has unusual attachments to toys (e.g., always is holding a certain object)
    - Lines things up
    - Is oversensitive to certain textures or sounds
    - Has odd finger and/or body movement patterns

Source: Filipek, P. A. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental disorders, 29*, 439-484.

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Case Finding: Questioning **caregivers**

- Asking about socialization that probe for issues that would signal the need for an autism screening.
  - "Does s/he …" or "Is there …"
    - cuddle like other children?
    - look at you when you are talking or playing?
    - smile in response to a smile from others?
    - engage in reciprocal, back-and-forth play?
    - play simple imitation games, such as pat-a-cake or peek-a-boo?
    - show interest in other children?

Source: Filipek, P. A. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental disorders, 29*, 439-484.

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Case Finding: Questioning **caregivers**

- Asking about communication that probe for issues that would signal the need for an autism screening.
  - "Does s/he …" or "Is there …"
    - point with his/hr finger?
    - gesture? Nod yes and no?
    - direct your attention by holding up objects for you to see?
    - anything odd about his/her speech?
    - show things to people?

Source: Filipek, P. A. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental disorders, 29*, 439-484.

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Case Finding: Questioning **caregivers**

- Asking about communication that probe for issues that would signal the need for an autism screening (continued).
  - "Does s/he …" or "Is there …"
    - lead an adult by the hand?
    - give inconsistent response to his/her name? … to commands?
    - use rote, repetitive, or echolalic speech?
    - memorize strings of words or scripts?

Source: Filipek, P. A. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental disorders, 29*, 439-484.

Case Finding: Questioning **caregivers**

- Asking about behavior that probe for issues that would signal the need for an autism screening.
  - "Does s/he …" or "Is there …"
    - have repetitive, stereotyped, or odd motor behavior?
    - have preoccupations or a narrow range of interests?
    - attend more to parts of objects (e.g., the wheels of a toy car)?
    - have limited or absent pretend play?
    - imitate other people's actions?
    - play with toys in the same exact way each time?
    - strongly attached to a specific unusual object(s)?

Source: Filipek, P. A. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental disorders, 29*, 439-484.

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Case Finding

- Video clip from …
  - *On the Spectrum: Children and Autism*
    - © 2003, First Signs, Inc.
    - www.firstsigns.org
    - www.SpecialNeeds.com
      - $49.95
      - Video # 13048
- Age Specific Milestones

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- Assessment: Causes, Diagnosis, Psycho-educational Evaluation

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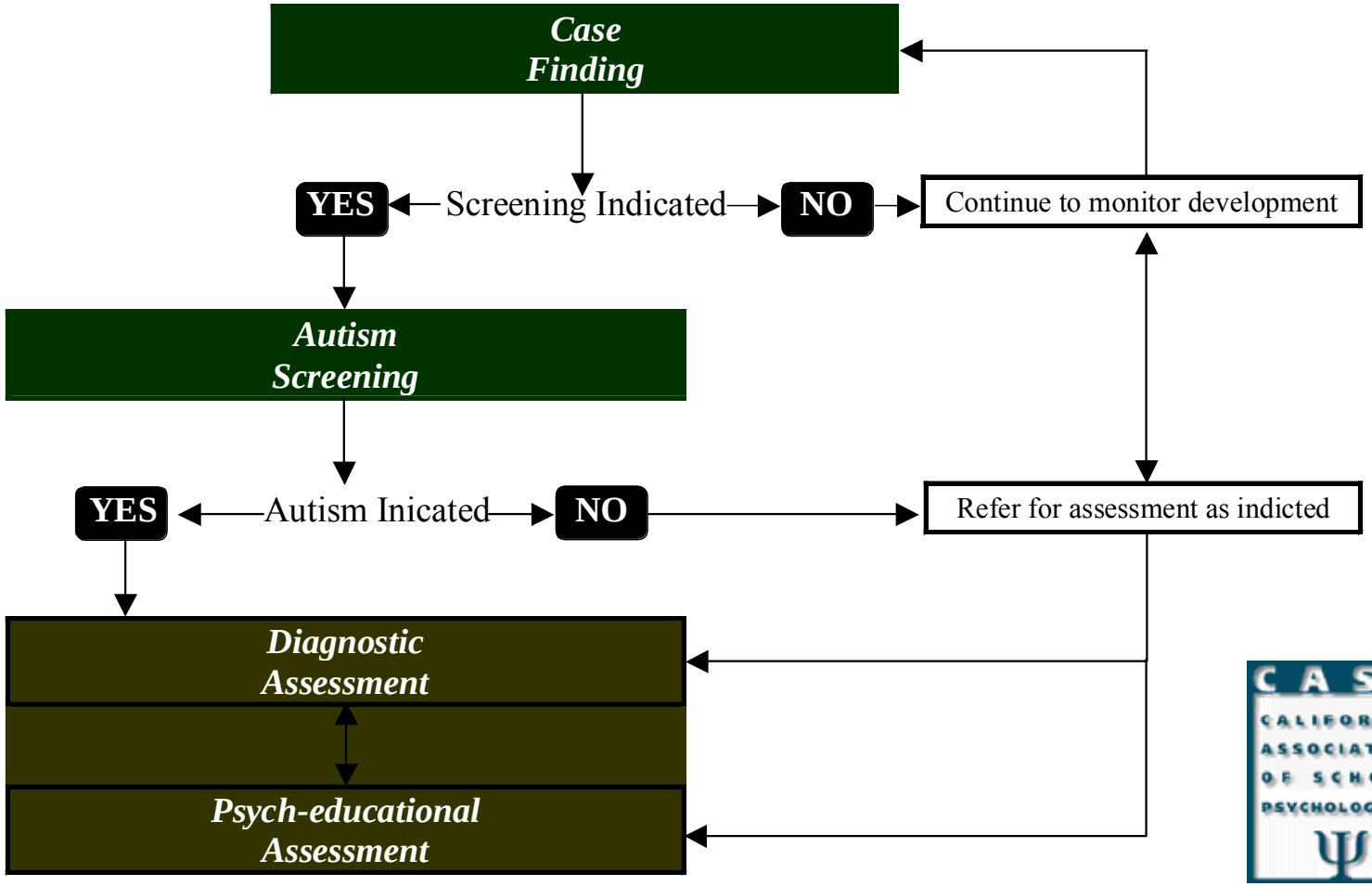
Adaptation of Filpek et al.'s (1999) Algorithm for the Process of Diagnosing Autism



Screening and Referral

- Screening is designed to help determine the need for additional diagnostic assessments.
- Screening should include medical testing, audiological evaluation, and behavioral assessment.

Medical (Lead Screening)

- From research suggesting that individuals with ASD have higher blood lead concentrations, and the hypothesis that lead poisoning may contribute to the onset or acceleration of the development of autistic symptoms, lead screening is recommended for all children referred for an autism screening.
- Such would be especially critical if there are reports of the student displaying pica and/or those who live in environments with an increased risk for lead exposure.
- School psychologists are not expected to conduct this type of testing, however, it is important for them to know about the lead screening's role in ASD screening.

Audiological

- To the extent that hearing loss explains autistic-like behaviors, referrals should be made.
- To the extent that there are other warning signs of an ASD that are not explained by a hearing loss (i.e., social and behavioral concerns), additional evaluation should take place.
- It is important to keep in mind that autism can co-occur with hearing loss.
- While a hearing loss would argue against the need for additional ASD evaluations, educators working with the student should continue to be vigilant for indicators of autism and make additional diagnostic referrals as indicated.
- School psychologists are not expected to conduct this type of testing, however, it is important for them to know about the audiological assessment's role in ASD screening.

Behavioral Screening for ASD

- School psychologists are exceptionally well qualified to conduct the behavioral screening of students suspected to have an ASD.
- Several screening tools are available
- Initially, most of these tools focused on the identification of ASD among infants and preschoolers.
- Recently screening tools useful for the identification of school aged children who have high functioning autism or Asperger's Disorder have been developed.

Behavioral Screening of Infants and Preschoolers

- *CHecklist for Autism in Toddlers* (CHAT)
  - Baron-Cohen, S., Allen, J., & Gillberg, C. (1992). Can autism be detected at 18 months? The needle, the haystack, and the CHAT. *British Journal of Psychiatry, 161,* 839-43.
  - Baron-Cohen, S., Cox, A., Baird, G., Swettenham. J., Nightingale, N., Morgan, K., Drew, A., & Charman, T. (1996). Psychological markers in the detection of autism in infancy in a large population. *British Journal of Psychiatry, 168,* 158-163.

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Behavioral Screening of Infants and Preschoolers

- *CHecklist for Autism in Toddlers* (CHAT)
  - Baird, G., Charman, T., Baron-Cohen, S., Cox, A., Swettenham, J., Wheelwright, S., & Drew, A. (2000). A screening instrument for autism at 18 months of age: A 6-year follow-up study. *Journal of the American Academy of Child and Adolescent Psychiatry, 39,* 694-702.
  - Baron-Cohen, S., Wheelwright, S., Cox, A., Baird, G., Charman, T., Swettenham, J., Drew, A., Coehring, P. (2000). Early identification of autism by the CHecklist for Autism in Toddlers (CHAT). *Journal of the Royal Society of Medicine, 93,* 521-525.

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Behavioral Screening of Infants and Preschoolers

- *CHecklist for Autism in Toddlers* (CHAT)
  - Designed to identify risk of autism among 18-month-olds
  - Takes 5 to 10 minutes to administer,
  - Consists of 9 questions asked of the parent and 5 items that are completed by the screener's direct observation of the child.
  - 5 items are considered to be "key items." These key items, assess joint attention and pretend play.
  - If a child fails all five of these items they are considered to be at high risk for developing autism.

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CHecklist for Autism in Toddlers

CHAT SECTION A: History: Ask parent…	
1. Does your child enjoy being swung, bounced on your knee, etc.?	YES NO
2. Does your child take an interest in other children?	YES NO
3. Does your child like climbing on things, such as up stairs?	YES NO
4. Does your child enjoy playing peek-a-boo/hide-and-seak?	YES NO
5. Does your child ever PRETEND, for example to make a cup of tea using a toy cup and teapot, or pretend other things?	YES **NO**
6. Does your child ever use his/her index finger to point to ASK for something?	YES NO
7. Does your child ever use his/her index finger to point to indicate INTEREST in something?	YES **NO**
8. Can your child play properly with small toys (e.g., cars or bricks) without just mouthing, fiddling or dropping them?	YES NO
9. Does your child ever bring objects over to you (parent) to SHOW your something?	YES NO

From Baron-Cohen et al (1996, p. 159).

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CHecklist for Autism in Toddlers

CHAT Section B: general practitioner or health visitor observation	
i. During the appointment, has the child made eye contact with your?	YES NO
ii. Get child's attention, then point across the room at an interesting object and say *'Oh look! There's a [name of toy]'*. Watch child's face. Does the child look across to see what you are point at?	YES **NO***
iii. Get the child's attention, then give child a miniature toy cup and teapot and say *'Can you make a cup of tea?'* Does the child pretend to pour out tea, drink it, etc.?	YES **NO†**
iv. Say to the child *'Where is the light?'*, or *'Show me the light'*. Does the child POINT with his/her index finger at the light?	YES **NO‡**
v. Can the child build a tower of bricks? (if so how many?) (No. of bricks:……)	YES NO

* To record Yes on this item, ensure the child has not simply looked at your hand, but has actually looked at the object you are point at.

† If you can elicit an example of pretending in some other game, score a Yes on this item.

‡ Repeat this with '*Where's the teddy?*' or some other unreachable object, if child does not understand the word light. To record Yes on this item, the child must have looked up at your face around the time of pointing.

Scoring:
- ☐ High risk for Autism: Fails A5, A7, Bii, Biii, and Biv
- ☐ Medium risk for autism group: Fails A7, Biv (but not in maximum risk group)
- ☐ Low risk for autism group (not in other two risk groups)

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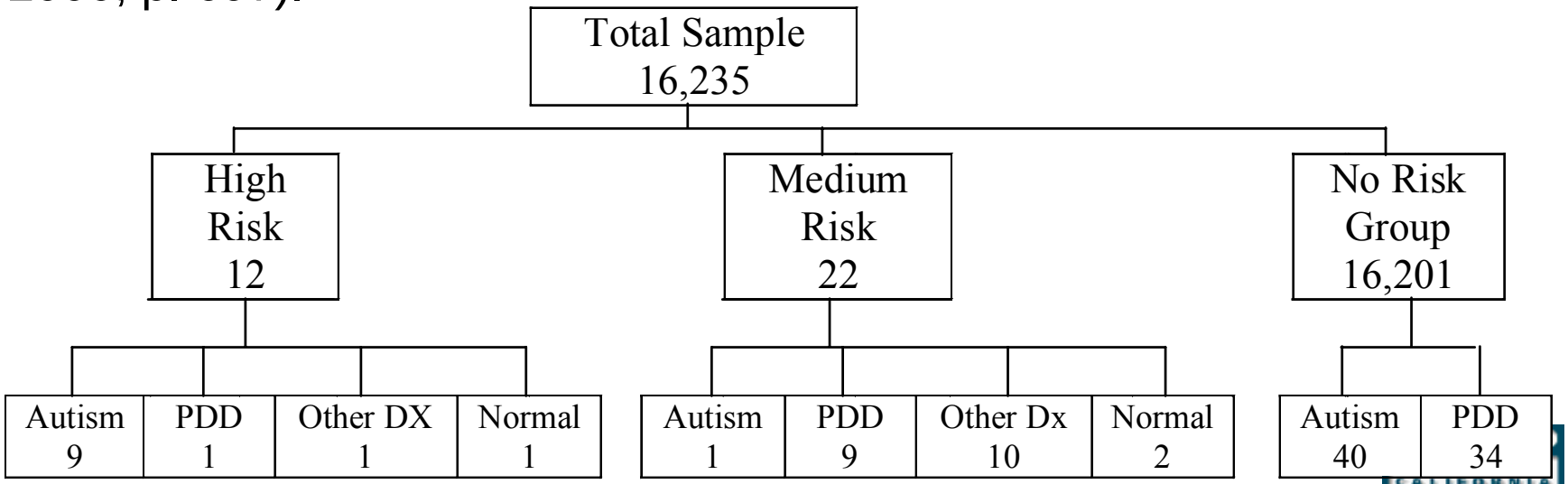
CHecklist for Autism in Toddlers

6-year follow-up of a community sample screened with the 2 stage *CHAT* reveals extremely low false positive rate. However, higher functioning (high IQ) children are missed by this screening (Baird et al., 2000, p. 697).



CHecklist for Autism in Toddlers

http://www.autisticsociety.org/article136.html

Behavioral Screening of Infants and Preschoolers

- *Modified Checklist for Autism in Toddlers* (M-CHAT)
  - Robins, D. L., Fein, D., Barton, M. L., & Green, J. A. (2001). The modified checklist for autism in toddlers: An initial study investigating the early detection of autism and pervasive developmental disorders. *Journal of Autism and Developmental Disorders, 31,* 131-144.

Behavioral Screening of Infants and Preschoolers

- *Modified Checklist for Autism in Toddlers* (M-CHAT)
  - Designed to screen for autism at 24 months of age.
  - More sensitive to the broader autism spectrum.
  - Uses the 9 items from the original CHAT as its basis.
  - Adds 14 additional items (23-item total).
  - Unlike the *CHAT*, however, the *M-CHAT* does not require the screener to directly observe the child.
  - Makes use of a Yes/No format questionnaire.
  - Yes/No answers are converted to pass/fail responses by the screener.
  - A child fails the checklist when 2 or more of 6 critical items are failed **or** when any three items are failed.

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Behavioral Screening of Infants and Preschoolers

- *Modified Checklist for Autism in Toddlers* (M-CHAT)
  - The *M-CHAT* was used to screen 1,293 18- to 30-month-old children. 58 were referred for a diagnostic/developmental evaluation. 39 were diagnosed with an autism spectrum disorder (Robins et al., 2001).
  - Will result in false positives.
  - Data regarding false negative is not currently available, but follow-up research to obtain such is currently underway.

Modified Checklist for Autism in Toddlers

Modified Checklist for Autism in Toddlers (M-CHAT)

Please fill out the following about how your child **usually** is. Please try to answer every question. If the behavior is rare (e.g., you've seen it once or twice), please answer as if the child does not do it.

1.	Does your child enjoy being swung, bounced on your knee, etc.?	Yes	No
2.	**Does your child take an interest in other children?**	Yes	**No**
3.	Does your child like climbing on things, such as up stairs?	Yes	No
4.	Does your child enjoy playing peek-a-boo/hide-and-seek?	Yes	No
5.	Does your child ever pretend, for example, to talk on the phone or take care of		No
6.	Does your child ever use his/her index finger to point, to ask for something?		No
7.	**Does your child ever use his/her index finger to point, to indicate interest in**		**No**
8.	Can your child play properly with small toys (e.g. cars or bricks) without just		No
9.	**Does your child ever bring objects over to you (parent) to show you something?**		**No**
10.	Does your child look you in the eye for more than a second or two?	Yes	No
11.	Does your child ever seem oversensitive to noise? (e.g., plugging ears)	Yes	No

Robins et al. (2001, p. 142)

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Modified Checklist for Autism in Toddlers

Modified Checklist for Autism in Toddlers (M-CHAT)

Please fill out the following about how your child **usually** is. Please try to answer every question. If the behavior is rare (e.g., you've seen it once or twice), please answer as if the child does not do it.

13.	**Does your child imitate you? (e.g., you make a face-will your child imitate it?)**		**No**
14	**Does your child respond to his/her name when you call?**	Yes	**No**
15.	**If you point at a toy across the room, does your child look at it?**	Yes	**No**
16.	Does your child walk?	Yes	No
17.	Does your child look at things you are looking at?	Yes	No
18.	Does your child make unusual finger movements near his/her face?	Yes	No
19.	Does your child try to attract your attention to his/her own activity?	Yes	No
20.	Have you ever wondered if your child is deaf?	Yes	No
21.	Does your child understand what people say?	Yes	No
22.	Does your child sometimes stare at nothing or wander with no purpose?		No
23.	Does your child look at your face to check your reaction when faced with		No

Robins et al. (2001, p. 142)

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Modified Checklist for Autism in Toddlers

M-CHAT Scoring Instructions

A child fails the checklist when 2 or more critical items are failed OR when any three items are failed. Yes/no answers convert to pass/fail responses. Below are listed the failed responses for each item on the M-CHAT. Bold capitalized items are CRITICAL items.

Not all children who fail the checklist will meet criteria for a diagnosis on the autism spectrum. However, children who fail the checklist should be evaluated in more depth by the physician or referred for a developmental evaluation with a specialist.

1. No	6. No	11. Yes	16. No	21. No
2. NO	**7. NO**	12. No	17. No	22. Yes
3. No	8. No	**13. NO**	18. Yes	23. No
4. No	**9. NO**	**14. NO**	19. No	
5. No	10. No	**15. NO**	20. Yes	

Robins et al. (2001)

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Modified Checklist for Autism in Toddlers

http://www.firstsigns.org/downloads/m-chat.PDF

Behavioral Screening of Infants and Preschoolers

- *Checklist of Autism in Toddlers* (CHAT-23)
  - Wong, V., Hui, L. S., Lee, W. C., Leung, L. J., Ho, P. P., Lau, W. C., Fung, C. W., & Chung, B. (2004). A modified screening tool for autism (Checklist of Autism in Toddlers [CHAT-23]) for Chinese children. *Pediatrics, 114,* 166-176.

CHAT-23

- Combines elements of the *M-CHAT* (the 23 items) and the *CHAT* (Part B's direct observations) to form a two stage evaluation.
  - Children who's caregiver ratings on the 23 item questionnaire (Stage 1) are positive for ASD are then screened with the CHAT's Part B (Stage 2)
- In the *CHAT-23* the "Yes/No" format of the *M-CHAT* is replaced with a graded response format.
- Answering "seldom" or "never" to any two of seven key questions (Items 2, 5, 7, 9, 13, 15, and 23) or any six of all 23 questions was defined as positive for ASD on Part A.
- For Part B, failure (or positive for ASD) was defined as not passing at least two of the first four items (1, 2, 3, and 4).

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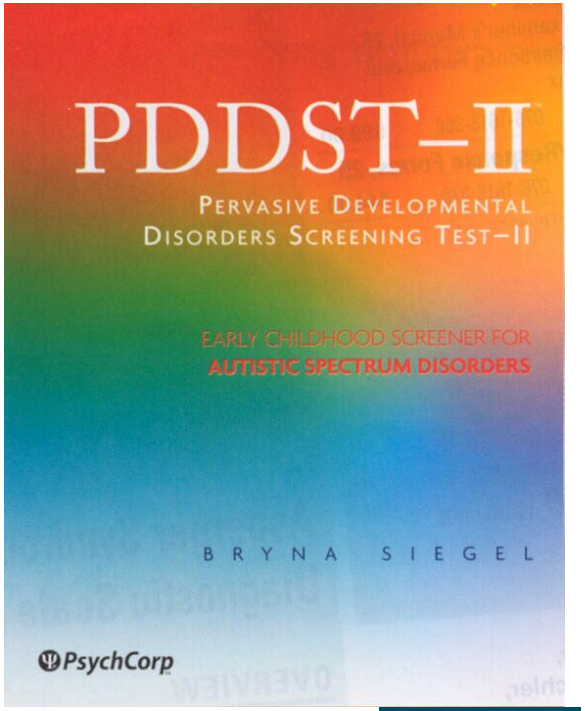
CHAT-23

- To study the CHAT-23, 87 children with autism or PDD (group 1), and 68 normally developing children and 80 children with developmental delays other than autism (group 2) were studied.
- Results revealed that failing two or more of the seven key items correctly identified 93 percent of the children with autism (group 1), and failing any 6 of all 23 identified 84% of the children in this group.
- On Part B failing any two of the first four items correctly identified 74 percent of the children with ASD.

Behavioral Screening of Infants and Preschoolers

- *Pervasive Developmental Disorders Screening Test - II* (PDDST-II)



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Behavioral Screening of Infants and Preschoolers

- *Pervasive Developmental Disorders Screening Test - II* (PDDST-II)
  - Has three stages
    - The *PDDST-II: Stage I* designed to help determine if a given child should be evaluated for an ASD.
  - Designed to be completed by parents
  - Should take no more than 5 minutes.
  - Odd numbered items are the critical questions used for autism screening.
  - If three or more of the odd numbered items are checked as being “YES, Usually True,” then the result is considered a positive finding for possible ASD and a diagnostic evaluation indicted.

Behavioral Screening of Infants and Preschoolers

- *Pervasive Developmental Disorders Screening Test - II* (PDDST-II)
  - The odd numbered critical questions are ordered by age in order from highest predictive validity.
    - This means the more odd numbered items scored positive, and the more odd numbered items scored positive on the upper half of each section, the more strongly positive the screen.
  - Even numbered items significantly differentiate ASD-referred children from those with mild developmental disorders.
    - These items are also are ordered by age in order from highest to lowest predictive validity.

Behavioral Screening of Infants and Preschoolers

Measure	Sensitivity	Specificity
CHAT: Stage 1	.35	.98
CHAT: Stage 2	.21	.99
M-CHAT: 2/6	.95	.99
M-CHAT: 3/23	.97	.95
CHAT-23: Part A, 2/7	.93	.77
CHAT-23: Part A, 6/23	.84	.85
CHAT-23, Part B	.74	.92
PDD-II: Stage 1	.89	.84

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Behavioral Screening of School Age Children

- *Autism Spectrum Screening Questionnaire* (ASSQ)
  - Ehlers, S., Gillberg, G., & Wing, L. (1999). A screening questionnaire for Asperger syndrome and other high functioning autism spectrum disorders in school age children. *Journal of Autism and Developmental Disorders, 29,* 129-141.

Behavioral Screening of School Age Children

- *Autism Spectrum Screening Questionnaire* (ASSQ)
  - The 27 items rated on a 3-point scale.
  - Total score range from 0 to 54.
  - Items address social interaction, communication, restricted/repetitive behavior, and motor clumsiness and other associated symptoms.
  - The initial *ASSQ* study included 1,401 7- to 16-year-olds.
    - Sample mean was 0.7 (*SD* 2.6).
    - Asperger mean was 26.2 (*SD* 10.3).
  - A validation study with a clinical group (*n* = 110) suggests the *ASSQ* to be "a reliable and valid parent and teacher screening instrument of high-functioning autism spectrum disorders in a clinical setting" (Ehlers, Gillber, & Wing, 1999, p. 139).

Behavioral Screening of School Age Children

- *Autism Spectrum Screening Questionnaire* (ASSQ)
  - Two separate sets of cutoff scores are suggested.
    - Parents, **13**; Teachers, **11**: = socially impaired children
      - Low risk of false negatives (especially for milder cases of ASD).
      - High rate of false positives (23% for parents and 42% for teachers).
      - Not unusual for children with other disorders (e.g., disruptive behavior disorders) to obtain *ASSQ* scores at this level.
      - Used to suggest that a referral for an ASD diagnostic assessment, while not immediately indicated, should not be ruled out.
    - Parents, **19**; Teachers, **22**: = immediate ASD diagnostic referral.
      - False positive rate for parents and teachers of 10% and 9 % respectively.
      - The chances are low that the student who attains this level of ASSQ cutoff scores will not have an ASD.
      - Increases the risk of false negatives.

Autism Spectrum Screening Questionnaire

Different parent and teacher ASSQ cutoff scores with true positive rate (% of children with an ASD who were rated at a given score), false positive rate (% of children without an ASD who were rated at a given score), and the likelihood ratio a given score predicting and ASD.

Cutoff Score	True Positive Rate (%)	False Positive Rate (%)	Likelihood Ratio
Parent			
7	95	44	2.2
13	91	23	3.8
15	76	19	3.9
16	71	16	4.5
17	67	13	5.3
19	62	10	5.5
20	48	8	6.1
22	42	3	12.6
Teacher			
9	95	45	2.1
11	90	42	2.2
12	85	37	2.3
15	75	27	2.8
22	70	9	7.5
24	65	7	9.3

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Behavioral Screening of School Age Children

- *Childhood Asperger Syndrome Test* (CAST)
  - Scott, F. A., Baron-Cohen, S., Bolton, P., & Brayne, C. (2002). The CAST (Childhood Asperger Syndrome Test). *Autism, 6,* 9-31.
    - A screening for mainstream primary grade (ages 4 through 11 years) children.
    - Has 37 items, with 31 key items contributing to the child's total score.
    - The 6 control items assess general development.
    - With a total possible score of 31, a cut off score of 15 "NO" responses was found to correctly identify 87.5 (7 out of 8) of the cases of autistic spectrum disorders.
    - Rate of false positives is 36.4%.
    - Rate of false negatives is not available

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Childhood Asperger Syndrome Test

Childhood Asperger Syndrome Test (CAST)

1. Does s/he join in playing games with other children easily?	YES	NO
2. Does s/he come up to you spontaneously for a chat?	YES	NO
3. Was s/he speaking by 2 years old?	YES	NO
4. Does s/he enjoy sports?	YES	NO
5. Is it important to him/her to fit in with the peer group?	YES	NO
6. Does s/he appear to notice unusual details that others miss?	YES	NO
7. Does s/he tend to take things literally?	YES	NO
8. When s/he was 3 years old, did s/her spend a lot of time pretending (e.g. play-acting begin a superhero, or holding a teddyÕs tea parties)?	YES	NO
9. Does s/he like to do things over and over again, in the same way all the time?	YES	NO
10. Does s/he find it easy to interact with other children?	YES	NO
11. Can s/he keep a two-way conversation going?	YES	NO
12. Can s/he read appropriately for his/her age?	YES	NO
13. Does s/he mostly have the same interest as his/her peers?	YES	NO
14. Does s/he have an interest, which takes up so much time that s/he does little else?	YES	NO
15. Does s/he have friends, rather than just acquaintances?	YES	NO
16. Does s/he often bring you things s/he is interested in to show you?	YES	NO

From Scott et al. (2002, p. 27)

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Childhood Asperger Syndrome Test

17. Does s/he enjoy joking around?	YES	NO
18. Does s/he have difficulty understanding the rules for polite behavior?	YES	NO
19. Does s/he appear to have an unusual memory for details?	YES	NO
20. Is his/her voice unusual (e.g., overly adult, flat, or very monotonous)?	YES	NO
21. Are people important to him/her?	YES	NO
22. Can s/he dress him/herself?	YES	NO
23. Is s/he good at turn-taking in conversation?	YES	NO
24. Does s/he play imaginatively with other children, and engage in role-play?	YES	NO
25. Does s/he often do or say things that are tactless or socially inappropriate?	YES	NO
26. Can s/he count to 50 without leaving out any numbers?	YES	NO
27. Does s/he make normal eye-contact?	YES	NO
28. Does s/he have any unusual and repetitive movements?	YES	NO
29. Is his/her social behaviour very one-sided and always on his/her own terms?	YES	NO
30. Does s/he sometimes say ÕyouÕ or Õs/heÕ when s/he means ÕIÕ?	YES	NO
31. Does s/he prefer imaginative activities such as play-acting or story-telling, rather than numbers or lists of facts?	YES	NO
32. Does s/he sometimes lose the listener because of not explaining what s/he is talking about?	YES	NO
33. Can s/he ride a bicycle (even if with stabilizers)?	YES	NO
34. Does s/he try to impose routines on him/herself, or on others, in such a way that is causes problems?	YES	NO
35. Does s/he care how s/he is perceived by the rest of the group?	YES	NO
36. Does s/he often turn the conversations to his/her favorite subject rather than following what the other person wants to talk about?	YES	NO
37. Does s/he have odd or unusual phrases?	YES	NO

From Scott et al. (2002, pp. 27-28)

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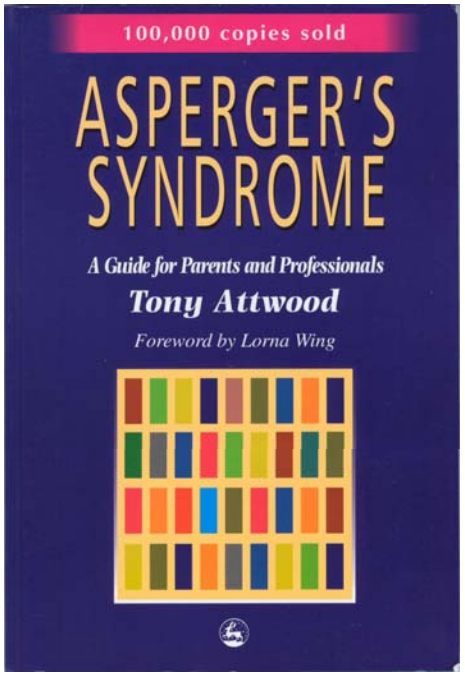
Childhood Asperger Syndrome Test

http://www.autismresearchcentre.com/tests/cast_test.asp

Behavioral Screening of School Age Children

- *Australian Scale for Asperger's Syndrome* (A.S.A.S.)
  - Garnett & Attwood (1998)
  - Parent/Teacher rating scale
  - 24 questions, 1-6 scale
  - 10 behavioral characteristics, yes/no
    - If most questions are 2 to 6
    - If a majority of questions are yes
    - Then diagnostic referral is indicated



Australian Scale for Asperger's Syndrome (ASAS)

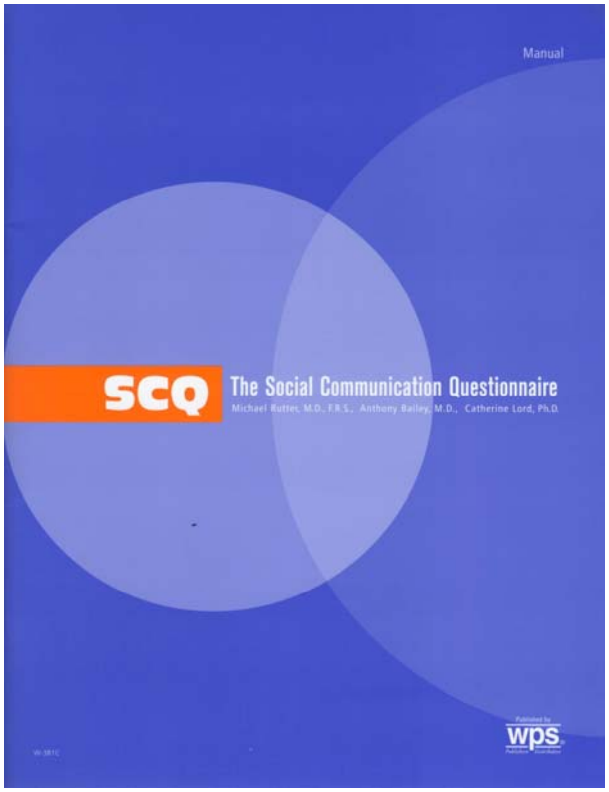
http://www.mind-steps.com/assessments/assessment.htm

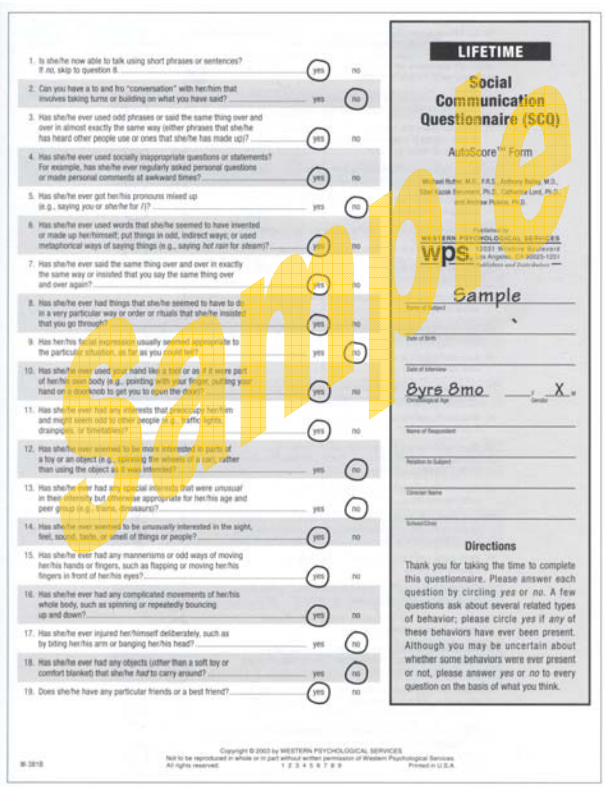
Behavioral Screening of School Age Children

- *Social Communication Questionnaire* (SCQ)
  - Berument, S. K., Rutter, M., Lord, C., Pickles, A., & Bailey, A. (1999). Autism screening questionnaire: Diagnostic Validity. *British Journal of Psychiatry, 175,* 444-451.
  - Rutter, M., LeCouteur, A., & Lord, C. (2003). *Social Communication Questionnaire*. Los Angeles, CA: Western Psychological Services.

Behavioral Screening of School Age Children

- *Social Communication Questionnaire* (SCQ)





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Behavioral Screening of School Age Children

- *Social Communication Questionnaire* (SCQ)
  - Two forms of the *SCQ*: a *Lifetime* and a *Current* form.
    - ***Current*** ask questions about the child's behavior in the past 3-months, and is suggested to provide data helpful in understanding a child's "everyday living experiences and evaluating treatment and educational plans"
    - ***Lifetime*** ask questions about the child's entire developmental history and provides data useful in determining if there is need for a diagnostic assessment.
  - Consists of 40 Yes/No questions asked of the parent.
  - The first item of this questionnaire documents the child's ability to speak and is used to determine which items will be used in calculating the total score.

Behavioral Screening of School Age Children

- *Social Communication Questionnaire* (SCQ)
  - An “AutoScore” protocol converts the parents’ Yes/No responses to scores of 1 or 0.
  - The mean *SCQ* score of children with autism was 24.2, whereas the general population mean was 5.2.
  - The threshold reflecting the need for diagnostic assessment is 15.
  - A slightly lower threshold might be appropriate if other risk factors (e.g., the child being screened is the sibling of a person with ASD) are present.

Behavioral Screening of School Age Children

- *Social Communication Questionnaire* (SCQ)
  - While it is not particularly effective at distinguishing among the various ASDs, it has been found to have good discriminative validity between autism and other disorders including non-autistic mild or moderate mental retardation.
  - The *SCQ* authors acknowledge that more data is needed to determine the frequency of false negatives (Rutter et al., 2003).
  - This *SCQ* is available from Western Psychological Services.

Presentation Outline

- Introduction: Reasons for Increased Vigilance
- Diagnostic Classifications and Special Education Eligibility
- School Psychologist Roles, Responsibilities, and Limitations
- Case Finding
- Screening and Referral
- Assessment: Causes, Diagnosis, Psycho-educational Evaluation

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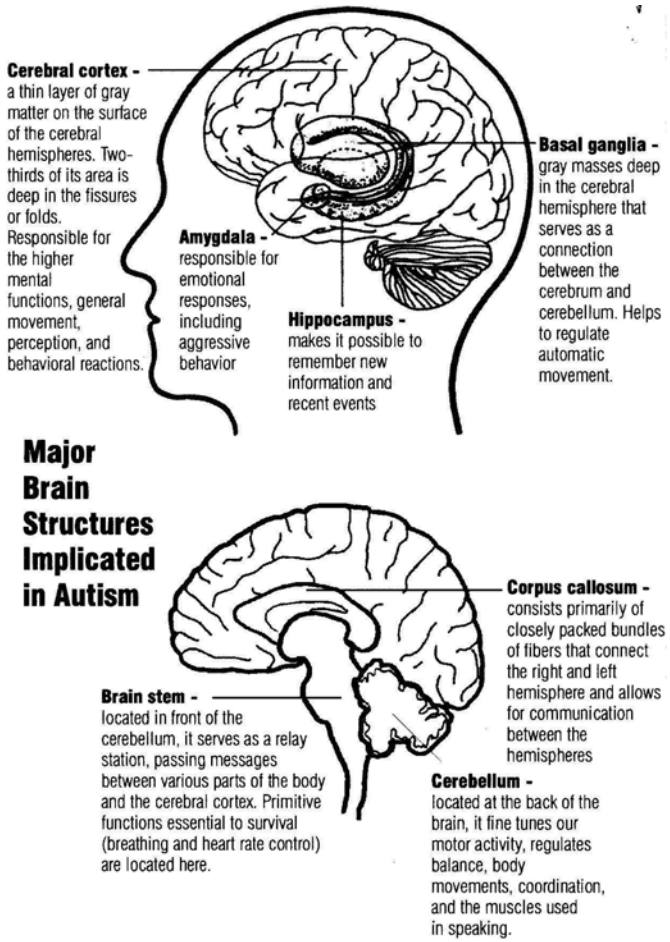
Causes of Autism

- While Kanner initially suggested ASD to have a biological basis, most early efforts to identify the causes of autism focused on inadequate nurturance by emotionally cold and indifferent parents.
- Today it is now accepted that the behavioral manifestations of autism are a consequence of abnormal brain development, structure, and function.

Causes of Autism



Strock, M. (2004). *Autism spectrum disorders (Pervasive developmental disorders).* [NIH Publication No. NIH-04-5511] Bethesda, MD: National Institute of Mental Health, National Institutes of Health, U.S. Department of Health and Human Services. Retrieved 12-19-04 from www.nimh.nih.gov/publicat/autism.cfm

Causes of Autism

- While it is clear that autism has an organic etiology, the underlying causes of these neurological differences, and exactly how they manifest themselves, is much more controversial.
- The etiology of autism is complex and multifaceted; likely resulting from the interaction of genetic, neurological, and environmental factors.
- It has been suggested that some combination of…
  1. genetic predisposition(s) and
  2. gene by environmental interaction(s)
  3. result in the brain abnormalities, which in turn are the causes of the range of behaviors we currently refer to as autism spectrum behaviors.

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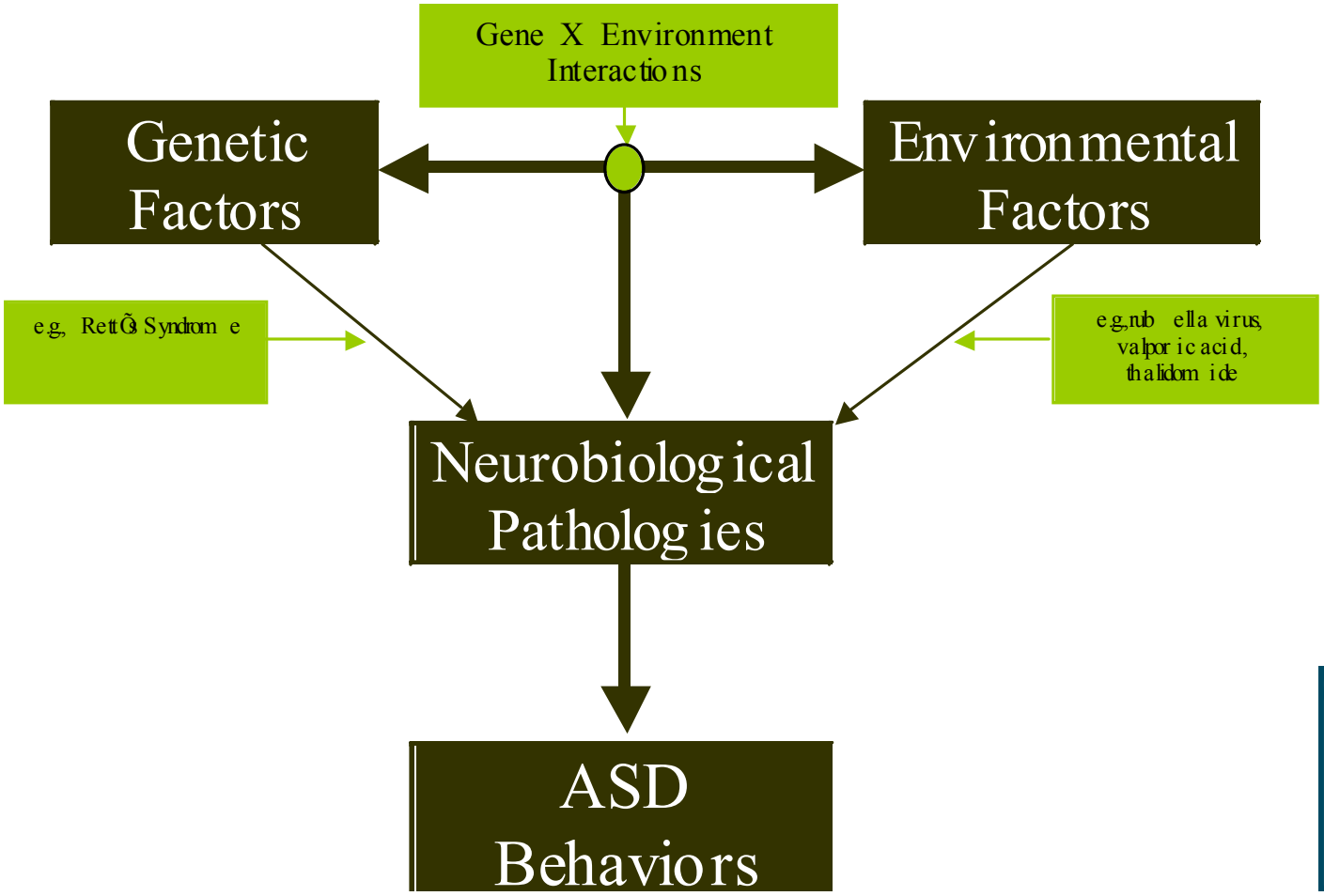
Causes of Autism



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Causes of Autism

- **Genetics**
  - ASD runs in families
    - Identical Twins (60 to 90 percent concordance)
    - Siblings (3 to 6% increased risk)
  - However, with the exception of Rett's Syndrome, there is no conclusive evidence that ASD is associated with a specific genetic deficit.
  - Thus, multiple genetic factors likely cause most cases of autism.
  - The variability of ASD manifestations among even identical twins argues strongly that simple models of inheritance do not account for this spectrum of disorders.

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Causes of Autism

- Environment
  - To the extent the environment does have a role in causing autism, it has been suggested that it does so by interacting with certain genes. In other words, a certain gene or gene combinations may generate a susceptibility to autism that is in turn triggered by a certain environmental factor or factors.
  - Environmental factors currently being considered include obstetric suboptimality, prenatal, and postnatal factors.

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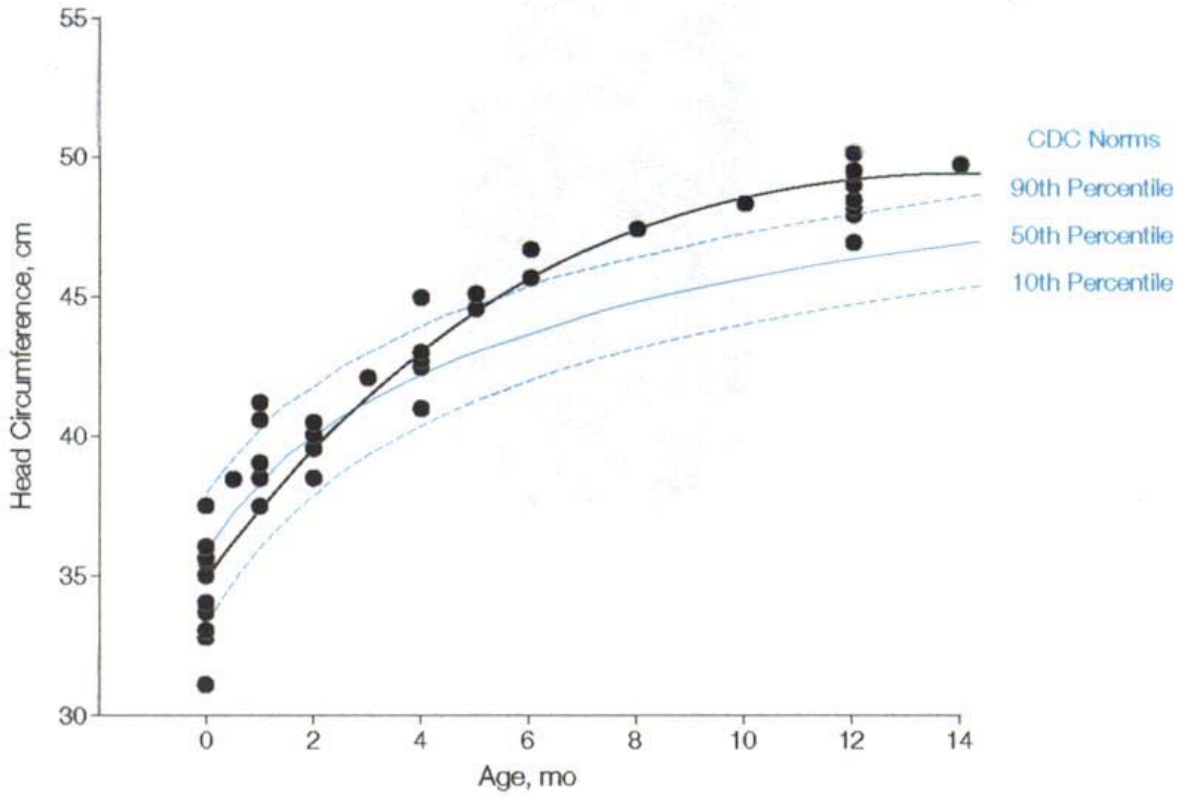
Causes of Autism

- Neurobiology
  - Brain Size
    - Rapid and excessive increase in head circumference during the first year
    - MRI data suggests brain size discriminates ASD children from typically developing peers
    - More rapid growth/larger brain size is associated with more severe ASD.

Causes of Autism



Courchesne, E., Carper, R., & Akshoomoff, N. (2003). Evidence of brain overgrowth in the first year of life in autism, *JAMA, 290,* 337-334.

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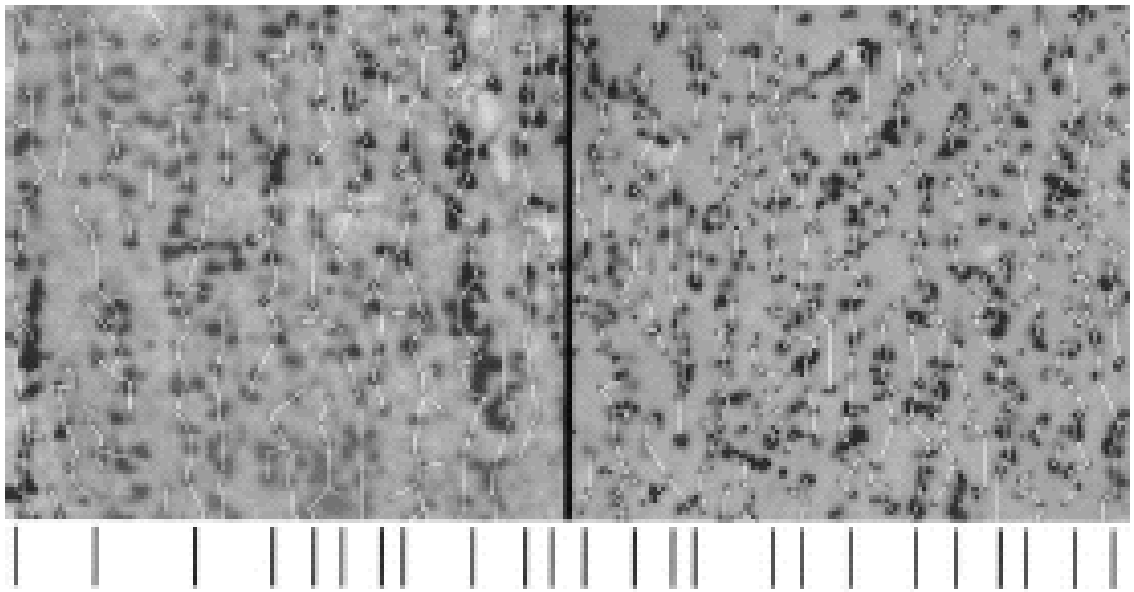
Causes of Autism

- Neurobiology
  - Brain Structure
    - Postmortem and MRI research that has documented most major brain structures are affected. These areas include the hippocampus and amygdala, cerebellum, cerebral cortex, limbic system, corpus callosum, basal ganglia, and brain stem.
    - Individuals with autism differed from normally developing people in the size, number, and arrangement of minicolumns in the prefrontal cortex and in the temporal lobe.
    - Minicolumns are considered to be the basic anatomical and physiological unit of the brain; it takes in, processes, and then responds to stimuli. They have been compared minicolumns to information processing computer chips.

Causes of Autism



Casanova, M. F., Buxhoeveden, D. P., Switala, A. E., & Roy, E. (2002). Minicolumnar pathology in autism. *Neurology, 58,* 428-432.

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Causes of Autism

- Neurobiology
  - Brain Chemistry
    - Abnormal serotonin levels.
    - Serotonin is involved in the formation of new neurons in the brain (“neurogenesis”), and is thought to be important in the regulation of neuronal differentiation, synaptogenesis, and neuronal migration during development.
    - Supporting the hypothesis that abnormal serotonin metabolism is common among individuals with ASD, is the finding that depletion of tryptonphan (a precursor of serotonin) in the diet worsens the behavior of a substantial percentage children of children with ASD.

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Autistic Disorder Diagnostic Criteria

A. A total of six (or more) items for (1), (2), and (3), with at least two from (1), and one each for (2) and (3):

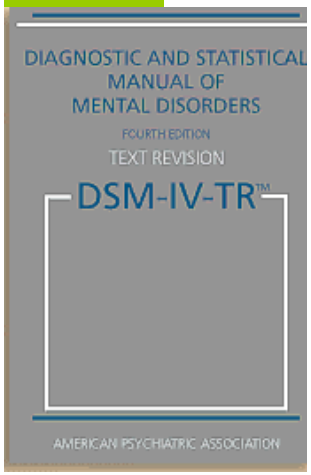
(1) qualitative impairment in social interaction, as manifested by at least two of the following:

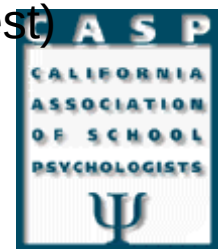
a) marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction

b) failure to develop peer relationships appropriate to developmental level

c) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by lack of showing, bringing, or pointing out objects of interest)

d) lack of social or emotional reciprocity





Autistic Disorder Diagnostic Criteria

A. A total of six (or more) items for (1), (2), and (3), with at least two from (1), and one each for (2) and (3):

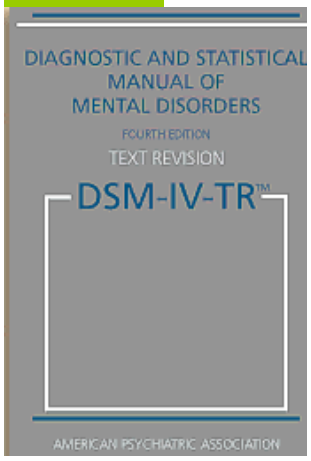
(2) qualitative impairments in communication as manifested by at least one of the following:

a) delay in, or total lack of, the development of spoken language (not accompanied by an attempt top compensate through alternative modes of communication such as gesture or mime)

b) in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others

c) stereotyped and repetitive use of language or idiosyncratic language

d) lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level



Autistic Disorder Diagnostic Criteria

A. A total of six (or more) items for (1), (2), and (3), with at least two from (1), and one each for (2) and (3):

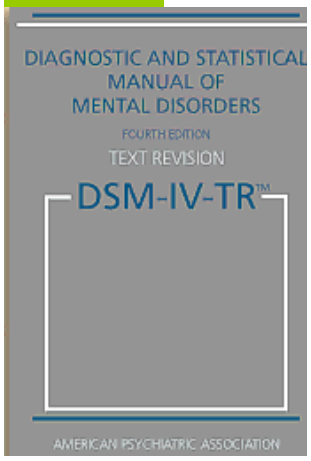
(3) restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:

a) encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus

b) apparently inflexible adherence to specific, nonfunctional routines or rituals

c) stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)

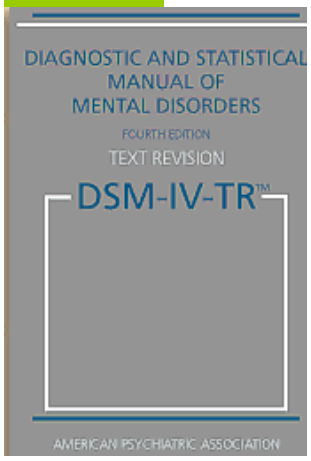
d) persistent preoccupation with parts of objects



Autistic Disorder Diagnostic Criteria

B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.

C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder.



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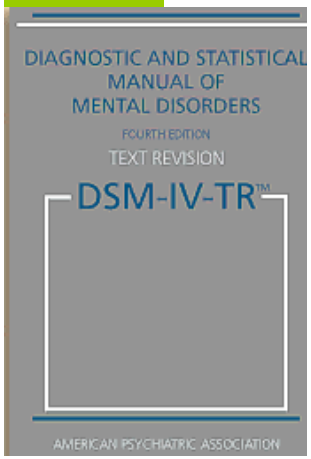
Other ASDs

- Asperger's Disorder
  - The criteria for Asperger's Disorder are essentially the same as Autistic Disorder with the exception that there are no criteria for a qualitative impairment in communication.
  - In fact Asperger's criteria require "… no clinically significant general delay in language (e.g., single words used by 2 years, communicative phrases used by 3 years").



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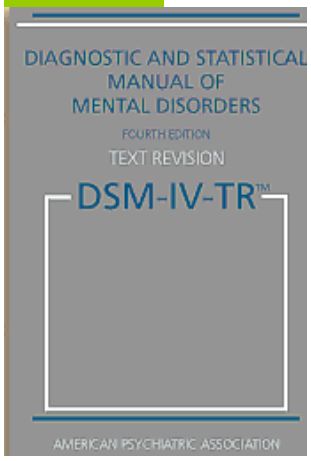
Other ASDs

- Childhood Disintegrative Disorder (CDD)
  - Criteria are essentially the same as Autistic Disorder.
  - Difference include that in CDD there has been …

    (a) "Apparently normal development for at least the first 2 years after birth as manifested by the presence of age-appropriate verbal and nonverbal communication, social relationships, play, and adaptive behavior;" and that there is

    (b) "Clinically significant loss of previously acquired skills (before age 10 years) in at least two of the following areas:

    1. expressive or receptive language;
    2. social skills or adaptive behavior;
    3. bowel or bladder control;
    4. play;
    5. motor-skills."



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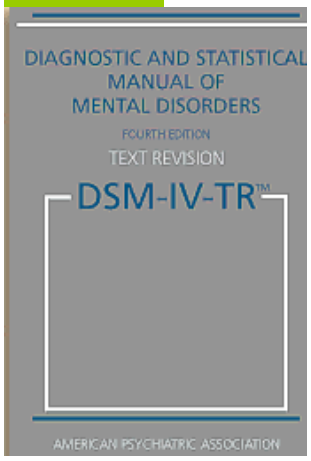
Other ASDs

- Rett's Disorder
  - Both Autistic Disorder and Rett's Disorder criteria include delays in language development and social engagement (although social difficulties many not be as pervasive).
  - Unlike Autistic Disorder, Rett's also includes
    (a) head growth deceleration,
    (b) loss of fine motor skill,
    (c) poorly coordinated gross motor skill, and
    (d) severe psychomotor retardation.



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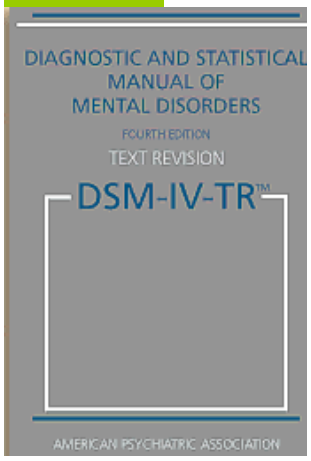
Symptom Onset

- Autistic Disorder is before the age of three years.
  - Before three years, their must be “delays or abnormal functioning” in at least one of the following areas: (a) social interaction, (b) social communicative language, and/or (c) symbolic or imaginative play.
- Asperger’s Disorder may be somewhat later.
- Childhood Disintegrative Disorder is before the age of 10 years.
  - Preceded by at least two years of normal development.
- Rett’s Disorder is before the age of 4 years.
  - Although symptoms are usually seen by the second year of life.



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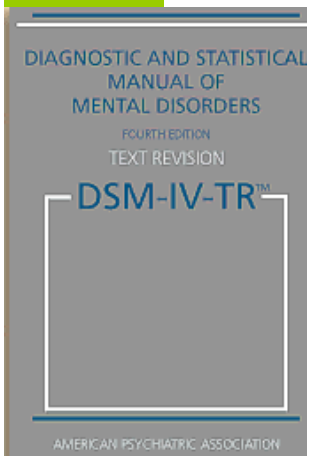
Developmental Course

- Autistic Disorder:
  - Parents may report having been worried about the child's lack of interest in social interaction since or shortly after birth.
  - In a few cases the child initially developed normally before symptom onset.
    - However, such periods of normal development must not extend past age three.
  - Duration of Autistic Disorder is typically life long, with only a small percentage being able to live and work independently and about 1/3 being able to achieve a partial degree of independence.
    - Even among the highest functioning adults symptoms typically continue to cause challenges.



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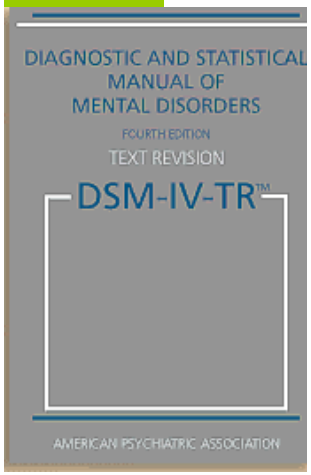
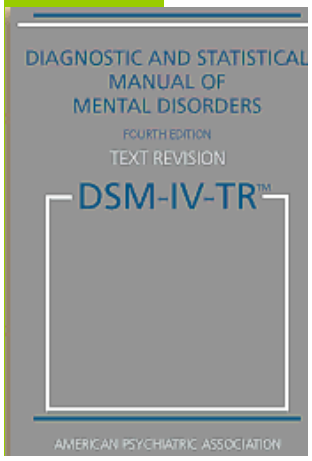
Developmental Course

- Asperger's Disorder:
  - Motor delays or clumsiness may be some of the first symptoms noted during the preschool years.
  - Difficulties in social interactions, and symptoms associated with unique and unusually circumscribed interests, become apparent at school entry.
  - Duration is typically lifelong with difficulties empathizing and modulating social interactions displayed in adulthood.
- Rett's and Childhood Disintegrative Disorders:
  - Lifelong conditions.
  - Rett's pattern of developmental regression is generally persistent and progressive. Some interest in social interaction may be noted during later childhood and adolescence.
  - The loss of skills associated with Childhood Disintegrative Disorder plateau after which some limited improvement may occur.



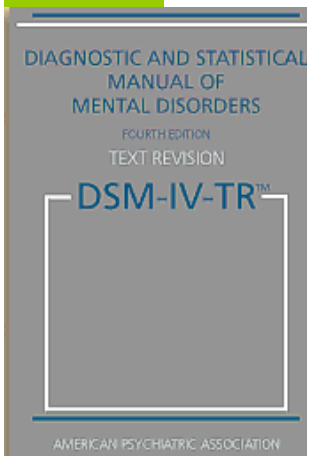
Associated Features

- Asperger's Disorder is the only ASD not typically associated with some degree of mental retardation.
- Autistic Disorder is associated with moderate mental retardation. Other associated features include:
  - unusual sensory sensitivities
  - abnormal eating or sleeping habits
  - unusual fearfulness of harmless object or lack of fear for real dangers
  - self-injurious behaviors
- Childhood Disintegrative Disorder is associated with severe mental retardation.
- Rett's Disorder is associated with severe to profound mental retardation.



Age Specific Features

- Chronological age and developmental level influence the expression of Autistic Disorder.
  - Thus, assessment must be developmentally sensitive.
    - For example, infants may fail to cuddle; show indifference or aversion to affection or physical contact; demonstrate a lack of eye contact, facial responsiveness, or socially directed smiles; and a failure to respond to their parents' voices.
    - On the other hand, among young children, adults may be treated as interchangeable or alternatively the child may cling to a specific person.



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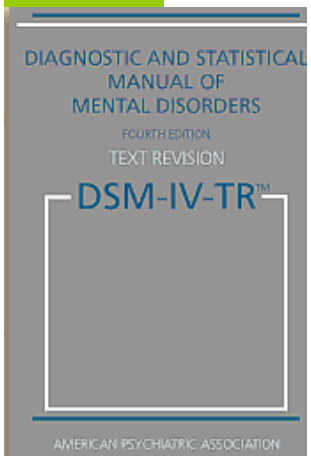
Gender Related Features

- With the exception of Rett's Disorder, which occurs primarily among females, all other ASDs appear to be more common among males than females.
  - The rate is four to five times higher in males than in females.



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Differential Diagnosis

Rett's Disorder	• Affects primarily girls • Head growth deceleration • Loss of fine motor skill • Awkward gait and trunk movement • Mutations in the MECP2 gene
Childhood Disintegrative Disorder	• Regression following at least two years of normal development
Asperger's Disorder	• Expressive/Receptive language not delayed • Normal intelligence • Later symptom onset

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Differential Diagnosis

Schizophrenia	• Years of normal/near normal development • Symptoms of hallucinations/delusions
Selective Mutism	• Normal language in certain situations or settings • No restricted patterns of behavior
Language Disorder	• No severe impairment of social interactions • No restricted patterns of behavior

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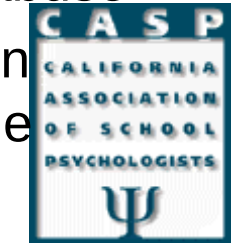
Differential Diagnosis

ADHD	• Distractible inattention related to external (not internal) stimuli • Deterioration in attention and vigilance over time
Mental Retardation	• Relative to developmental level, social interactions are not severely impaired • No restricted patterns of behavior
OCD	• Normal language/communication skills • Normal social skills
Reactive Attachment Disorder	• History of severe neglect and/or abuse • Social deficits dramatically remit in response to environmental change



Developmental and Health History

- Prenatal and perinatal risk factors
  - Greater maternal age
  - Maternal infections
    - Measles, Mumps, & Rubella
    - Influenza
    - Cytomegalovirus
    - Herpes, Syphilis, HIV
  - Drug exposure
  - Obstetric suboptimality

Developmental and Health History

- Postnatal risk factors
  - Infection
    - Case studies have documented sudden onset of ASD symptoms in older children after herpes encephalitis.
    - Infections that can result in secondary hydrocephalus, such as meningitis, have also been implicated in the etiology of ASD.
    - Common viral illnesses in the first 18 months of life (e.g., mumps, chickenpox, fever of unknown origin, and ear infection) have been associated with ASD.
  - Chemical exposure?
  - MMR?

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Developmental and Health History

- Developmental Milestones
  - Language development
    - Concerns about a hearing loss
  - Social development
    - Atypical play
    - Lack of social interest
  - Regression

Developmental and Health History

- Medical History
  - Vision and hearing
  - Chronic ear infections (and tube placement)
  - Immune dysfunction (e.g., frequent infections)
  - Autoimmune disorders (e.g., thyroid problems, arthritis, rashes)
  - Allergy history (e.g., to foods or environmental triggers)
  - Gastrointestinal symptoms (e.g., diarrhea, constipation, bloating, abdominal pain)

Developmental and Health History

- Diagnostic History
  - ASD is sometimes observed in association other neurological or general medical conditions.
    - Mental Retardation (up to 80%)
    - Epilepsy (3-30%)
      - May develop in adolescence
      - EEG abnormalities common even in the absence of seizures
    - Genetic Disorders
      - 10-20% of ASD have a neurodevelopmental genetic syndrome
        - Tuberous Sclerosis (found in 2-4% of children with ASD)
        - Fragile X Syndrome (found in 2-8% of children with ASD)

Developmental and Health History

- Family History
  - Epilepsy
  - Mental Retardation
  - Genetic Conditions
    - Tuberous Sclerosis Complex
    - Fragile X Syndrome
    - Schizophrenia
    - Anxiety
    - Depression
    - Bipolar disorder
  - Other genetic condition or chromosomal abnormality

Diagnostic Assessments

- Indirect Assessment
  - Interviews and Questionnaires/Rating Scales
    - Easy to obtain
    - Reflect behavior across settings
    - Subject to interviewee/rater bias
- Direct Assessment
  - Behavioral Observations
    - More difficult to obtain
    - Reflect behavior within limited settings
    - Not subject to interviewee/rater bias

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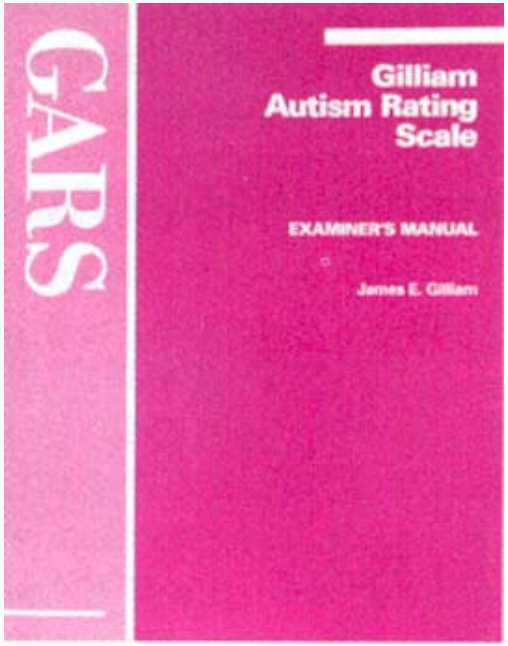
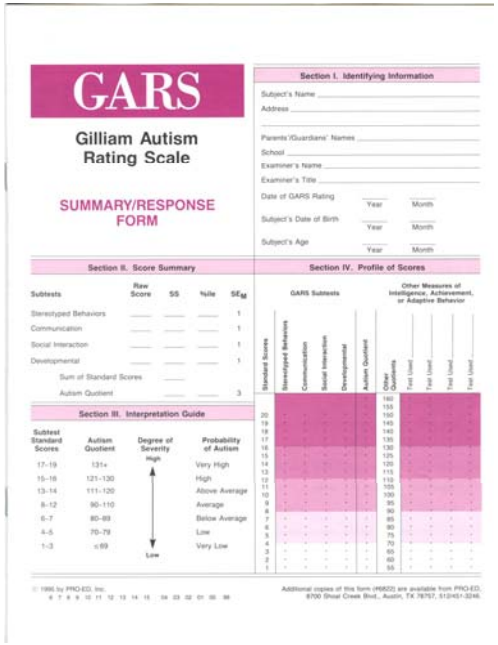
Indirect Assessment: Rating Scales

- The *Gilliam Autism Rating Scale* (GARS)
  - Gilliam, J. E. (1995). *Gilliam autism rating scale.* Austin, TX: Pro-Ed.





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Indirect Assessment: Rating Scales

- The *Gilliam Autism Rating Scale* (GARS)
  - Normative group, 1092 children, adolescents, and young adults reported by parent or teacher to be a person with autism.
  - Age range 3 to 22.
  - Designed for use by parents, teachers, and professionals
  - 56 items, 4 scales.
  - Social Interaction, Communication, and Stereotyped Behavior scales assesses current behavior.
  - Developmental Disturbances scale assesses maladaptive behavior history.
  - Behaviors are rated on a 4-point scale (“Never Observed” to “Frequently Observed”).

Indirect Assessment: Rating Scales

- The *Gilliam Autism Rating Scale* (GARS)
  - Yields an Autism Quotient (AQ)
  - AQs are classified on an ordinal scale ranging from “Very Low” to “Very High” probability of autism. A score of 90 or above specifies that the child is “probably autistic.”

Indirect Assessment: Rating Scales

- The *Gilliam Autism Rating Scale* (GARS)
  - South, M., Williams, B. J., McMahon, W. M. Owlye, T., Filipek, P. A., Shernoff, E., Corsello, C. C., Lainhart, J. E., Landa, R., & Ozonoff, S. (2002). Utility of the Gilliam autism rating scale in research and clinical populations. *Journal of Autism and Developmental Disorders, 32,* 593-599.
    - Among a sample of 119 children with "strict DSM-IV diagnoses of autism," the "GARS consistently underestimated the likelihood that autistic children in this sample would be classified as having autism.
    - The South et al. (2002) sample mean (90.10) was significantly below the GARS mean (100).

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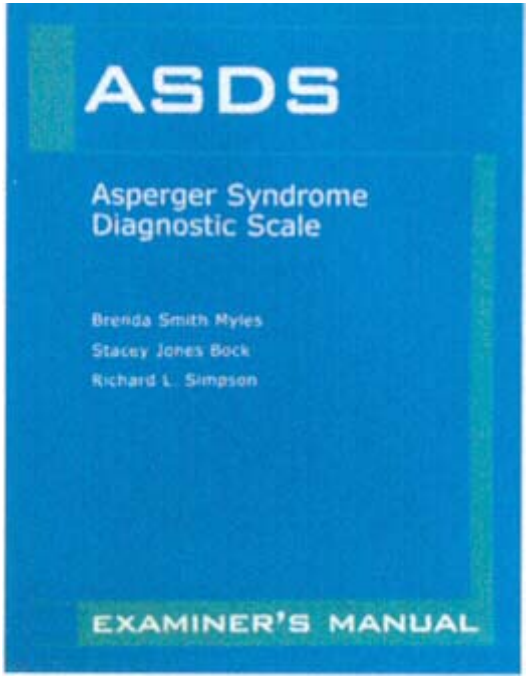
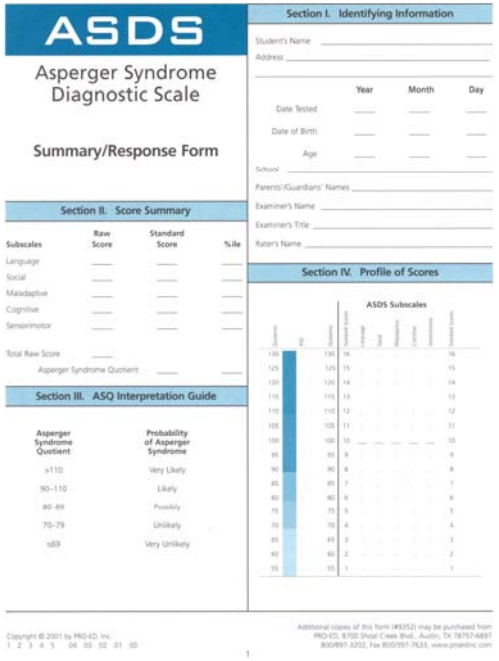
Indirect Assessment: Rating Scales

- The *Asperger Syndrome Diagnostic Scale* (ASDS)





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Indirect Assessment: Rating Scales

- The *Asperger Syndrome Diagnostic Scale* (ASDS)
  - Age range 5-18.
  - 50 yes/no items.
  - 10 to 15 minutes.
  - Normed on 227 persons with Asperger Syndrome, autism, learning disabilities, behavior disorders and ADHD.
  - ASQs are classified on an ordinal scale ranging from “Very Low” to “Very High” probability of autism. A score of 90 or above specifies that the child is “Likely” to “Very Likely” to have Asperger’s Disorder.

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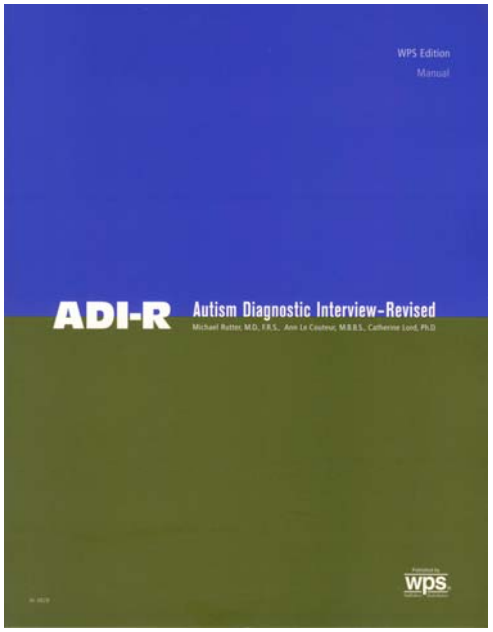
Indirect Assessment: Interview

- The *Autism Diagnostic Interview-Revised* (ADI-R)
  - Rutter, M., Le Couteur, A., & Lord, C. (2003). *Autism diagnostic interview-revised (ADI-R).* Los Angeles, CA: Western Psychological Services.



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Indirect Assessment: Interview

- The *Autism Diagnostic Interview-Revised* (ADI-R)
  - Semi-structured interview
  - Designed to elicit the information needed to diagnose autism.
  - Primary focus is on the three core domains of autism (i.e., language/communication; reciprocal social interactions; and restricted, repetitive, and stereotyped behaviors and interests).
  - Requires a trained interviewer and caregiver familiar with both the developmental history and the current behavior of the child.
  - The individual being assessed must have a developmental level of at least two years.

Indirect Assessment: Interview

- The *Autism Diagnostic Interview-Revised* (ADI-R)
  - The 93 items that comprise this measure takes approximately 90 to 150 minutes to administer.
  - Solid psychometric properties.
    - Works very well for differentiation of ASD from nonautistic developmental disorders in clinically referred groups, provided that the mental age is above 2 years.
    - False positives very rare,
    - Reported to work well for the identification of Asperger's Disorder.
      - However, it may not do so as well among children under 4 years of age.
  - According to Klinger and Renner (2000): "The diagnostic interview that yields the most reliable and valid diagnosis of autism is the *ADI–R*" (p. 481).

Direct Assessments: ADOS

- The *Autism Diagnostic Observation Schedule* (ADOS)
  - Lord, C., Rutter, M., Di Lavore, P. C., & Risis, S. (). *Austims diagnostic observation schedule.* Los Angeles, CA: Western Psychological Services.

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Direct Assessments: ADOS

- A standardized, semi-structured, interactive play assessment of social behavior.
  - Uses “planned social occasions” to facilitate observation of the social, communication, and play or imaginative use of material behaviors related to the diagnosis of ASD.
- Consists of four modules.
  - Module 1 for individuals who are preverbal or who speak in single words.
  - Module 2 for those who speak in phrases.
  - Module 3 for children and adolescents with fluent speech.
  - Module 4 for adolescents and adults with fluent speech.

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Direct Assessments: ADOS

- Administration requires 30 to 45 minutes.
- Because its primary goal is accurate diagnosis, the authors suggest that it may not be a good measure of treatment effectiveness or developmental growth (especially in the later modules).
- Psychometric data indicates substantial interrater and test-retest reliability for individual items, and excellent interrater reliability within domains and internal consistency.
- Mean test scores were found to consistently differentiate ASD and non-ASD groups.

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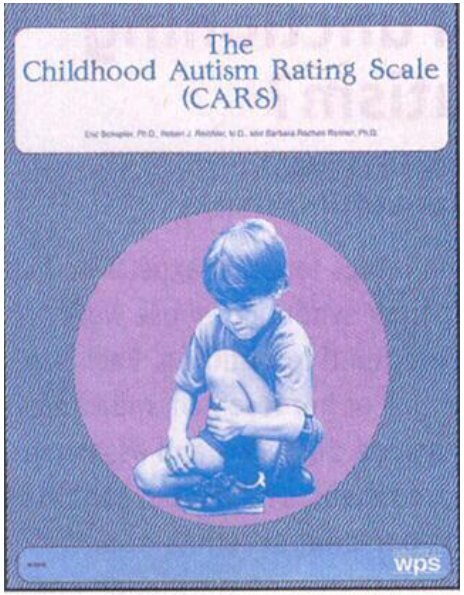
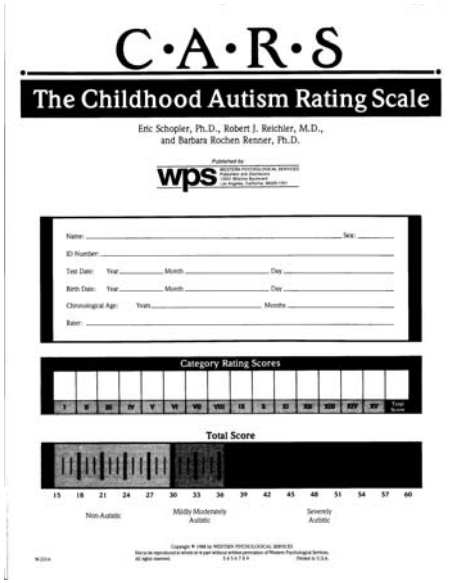
Direct Assessments: CARS

- The *Childhood Autism Rating Scale* (CARS)
  - Schopler, E., Reichler, R., & Rochen-Renner, G. (1988). *The Childhood Autism Rating Scale (CARS*). Los Angeles, CA: Western Psychological Services.





Direct Assessments: CARS

- 15-item structured observation tool.
- Items scored on a 4-point scale ranging from 1 (normal) to 4 (severely abnormal).
- In making these ratings the evaluator is asked to compare the child being assessed to others of the same developmental level.
  - Thus, an understanding of developmental expectations for the 15 *CARS* items is essential.
- The summary rating is used to determine a total score and the severity of autistic behaviors
  - Non-autistic, 15 to 29
  - Mildly-moderately autistic 30-37
  - Severely autistic, 37

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Direct Assessments: CARS

- Data can also be obtained from parent interviews and student record reviews.
- When initially developed it attempted to include diagnostic criteria from a variety of classification systems and it offers no weighting of the 15 scales.
- This may have created some problems for its current use
- Currently includes items that are no longer considered essential for the diagnosis of autism (e.g., taste, smell, and touch response) and may imply to some users of this tool that they are essential to diagnosis (when in fact they are not).
- Psychometrically, the *CARS* has been described as "acceptable," "good," and as a "well-constructed rating scale."

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Purposes of Psycho-educational Assessment

- Develop goals and objectives (which are similar to those developed for other children with special needs).
  - To make progress in social and cognitive proficiencies, verbal and nonverbal communication abilities, and adaptive skills.
  - To minimize behavioral problems.
  - To generalize competencies across multiple environments.

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Testing Accommodations

- The core deficits of autism can significantly impact test performance.
  - Impairments in communication may make it difficult to respond to verbal test items and/or generate difficulty understanding the directions that accompany nonverbal tests.
  - Impairments in social relations may result in difficulty establishing the necessary joint attention.
- Examiners must constantly assess the degree to which tests being used reflect symptoms of autism and not the specific targeted abilities (e.g., intelligence, achievement, psychological processes).

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Testing Accommodations

- It is important to acknowledge that the autistic population is very heterogeneous.
- There is no one set of accommodations that will work for every student with autism.
- It is important to consider each student as an individual and to select specific accommodations to meet specific individual student needs.

Testing Accommodations

- Prepare the student for the testing experience.
- Place the testing session in the student's daily schedule.
- Minimize distractions.
- Make use of pre-established physical structures and work systems.
- Make use of powerful external rewards.
- Carefully pre-select task difficulty.
- Modify test administration and allow nonstandard responses.

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Powerful Testing Reinforcers

- Bubbles
- Tickles
- Vibrating toys (Bumble Ball, Squiggle Writer)
- Tape
- Spinning Toys (Top)
- Light-up things (flashlight)
- Anything Tomas the Tank Engine
- Slinky
- Mini-fan
- Squishy toys (stress ball, Koosh)
- Noisy toys (speak-n-say)
- Gross Motor Stimulators (spinning or rocking office chair)
- Mirror

From Vanessa Gatewood

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Behavioral Observations

- Students with ASD are a very heterogeneous group, and in addition to the core features of ASD, it is not unusual for them to display a range of behavioral symptoms including hyperactivity short attention span impulsivity, aggressiveness, self-injurious behavior, and (particularly in young children) temper tantrums.
- Observation of the student with ASD in typical environments will also facilitate the evaluation of test taking behavior.
- Observation of test taking behavior may also help to document the core features of autism.

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Choice of Assessment Instruments

- Child's level of verbal abilities.
- Ability to respond to complex instructions and social expectations.
- Ability to work rapidly.
- Ability to cope with transitions during test activities.

- In general, children with autism will often perform best when assessed with tests that require less social engagement and verbal mediation.

Cognitive Functioning

- Assessment of cognitive function is essential given that, with the exception of Asperger's Disorder, a significant percentage (as high as 80 percent) of students with ASD will also be mentally retarded.
- Severity of mental retardation can also provide some guidance regarding differential diagnosis among ASDs.
- IQ is associated with adaptive functioning, the ability to learn and acquire new skills, and long-term prognosis.
  - Thus, level of cognitive functioning has implications for determining how restrictive the educational environment will need to be.

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Cognitive Functioning

- A powerful predictor of ASD symptom severity.
- However, given that children with ASD are ideally first evaluated when they are very young, it is important to acknowledge that it is not until age 5 that childhood IQ correlates highly with adult IQ.
  - Thus, it is important to treat the IQ scores of the very young child with caution when offering a prognosis, and when making placement and program planning decisions.
  - However, for school aged children it is clear that the appropriate IQ test is an "…excellent predictor of a student's later adjustment and functioning in real life" (Frith, 1989, p. 84).

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Cognitive Functioning

- Regardless of the overall level of cognitive functioning, it is not unusual for the student being tested to display an uneven profile of cognitive abilities.
- Thus, rather that simply providing an overall global intelligence test score, it is essential to identify these cognitive strengths and weaknesses.
- At the same time, however, it is important to avoid the temptation to generalize from isolated or “splinter” skills when forming an overall impression of cognitive functioning, given that such skills may significantly overestimate typical abilities.

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Cognitive Functioning

- Selection of specific tests is important to obtaining a valid assessment of cognitive functioning (and not the challenges that are characteristic of ASD).
- The *Wechsler* and *Stanford-Binet* scales are appropriate for the individual with spoken language.

Cognitive Functioning

- On the other hand, for students who have more severe language delays measures that minimize verbal demands are recommended (e.g., the *Leiter International Performance Scale – Revised, Raven Coloured Progressive Matrices*)

Functional/Adaptive Behavior

- Given that diagnosing mental retardation requires examination of both IQ and adaptive behavior, it is also important to administer measures of adaptive behavior when assessing students with ASD.
- Other uses of adaptive behavior scales when assessing students with ASD are:
  a) Obtain measure of child's typical functioning in familiar environments, e.g. home and/or school.
  b) Target areas for skills acquisition.
  c) Identifying strengths and weaknesses for educational planning and intervention
  d) Documenting intervention efficacy
  e) Monitoring progress over time.

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Functional/Adaptive Behavior

- Profiles of students with ASD are unique.
  - Individuals with only mental retardation typically display flat profiles across adaptive behavior domains
  - Students with ASD might be expected to display relative strengths in daily living skills, relative weaknesses in socialization skills, and intermediate scores on measures of communication abilities.
- To facilitate the use of the *Vineland Adaptive Behavior Scales* in the assessment of individuals with ASD, Carter et al. (1998) have provided special norms for groups of individuals with autism

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Functional/Adaptive Behavior

- Other tools with subtests for assessing functional/adaptive behaviors:
  - Brigance Inventory of Early Development.
  - Early Learning Accomplishment Profiles.
  - Scales of Independent Behavior-Revised.
  - AAMD Adaptive Behavior Scale.
  - Learning Accomplishments Profile.
  - Developmental Play Assessment Instrument.

Social Functioning

- Tools that provide an overview of social functioning (i.e., social needs and current repertoire)
  - Vineland Adaptive Behavior Scales.
  - Scales of Independent Behavior-Revised.
- More specific information may be obtained from:
  - Preschool curriculum assessments that contain social subscales.
  - Battelle Developmental Inventory.
  - Learning Accomplishment Profile.
  - Michigan Scales.
  - Assessment, Evaluation, and Programming System.

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Language Functioning

- *Peabody Picture Vocabulary Test – Third Edition*
- *Expressive One-Word Picture Vocabulary Test*
  - When interpreting the results of such measures, it is important to keep in mind that these tests may overestimate language abilities as they do not require sentence production or comprehension, nor do they assess social language or pragmatics.
  - Also, in many higher functioning students with ASD receptive language may be lower than expressive language.

Psychological Processes

- Helps to further identify learning strengths and weakness.
- Depending upon age and developmental level, traditional measures of such processes may be appropriate.
- It would not be surprising to find relatively strong rote, mechanical, and visual-spatial processes; and deficient higher-order conceptual processes, such as abstract reasoning.
- While IQ test profiles should never be used for diagnostic purposes, it would not be surprising to find the student with Autistic Disorder to perform better on non-verbal (visual/spatial) tasks than tasks that require verbal comprehension and expression.
  - The student with Asperger's Disorder may display the exact opposite profile.

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Academic Achievement

- Assessment of academic functioning will often reveal a profile of strengths and weaknesses.
  - It is not unusual for students with ASD be hyperverbal/hyperlexic, while at the same time having poor comprehension and difficulties with abstract language. For others, calculation skills may be well developed, while mathematical concepts are delayed.
- For students functioning at or below the preschool range and with a chronological age of 6 months to 7 years, the *Psychoeducational Profile – Revised* may be an appropriate choice.
- For older, higher functioning students, the *Woodcock-Johnson Tests of Achievement* and the *Wechsler Individual Achievement Test* would be appropriate tools.

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Emotional Functioning

- 65% present with symptoms of an additional psychiatric disorder such as AD/HD, oppositional defiant disorder, obsessive-compulsive disorder and other anxiety disorders, tics disorders, affective disorders, and psychotic disorders.
- Given these possibilities, it will also be important for the school psychologist to evaluate the student's emotional/behavioral status.
- Traditional measures such as the *Behavioral Assessment System for Children* would be appropriate as a general purpose screening tool, while more specific measures such as *The Children's Depression Inventory* and the *Revised Children's Manifest Anxiety Scale* would be appropriate for assessing more specific presenting concerns.

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Concluding Comments

- The increasing incidence of ASDs, combined with the importance of early identification create the need for school psychologists to become better prepared to identify these disorders.
- With appropriate intervention there is hope that the students will be able to achieve significant degrees of independence. These interventions, however, can only be provided if the student with ASD is identified.
- It is hoped that this paper has provided information that will assist school psychologists in the important identification tasks

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