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## Diagnosis and Classification

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By the time Sammy Wilson was 11 years old, his parents had filled two loose-leaf notebooks with reports from evaluation centers, therapists, and doctors. While the various professionals had been kind, thorough, and skilled in their evaluations, each one had used a different diagnosis or label, and Sammy's parents remained confused about what his problem really was. As a young child, he had been considered somewhat "oppositional" and "defiant." Later, the possibility of Attention Deficit/Hyperactivity Disorder was raised. In school, he received special education resource help in written language under the label of Learning Disability, but Mr. and Mrs. Wilson's other son had a learning disability also, and it was clear to them that Sammy was different. He didn't have any real friends, and he spent most of his free time looking at catalogues of laboratory equipment. Recently they had read an article about autism, but while parts of the description sounded like Sammy, the Wilsons couldn't believe that such a serious diagnosis could apply to Sammy, who had just been recommended for a summer honors program in science. He seemed far too capable to have a disability, yet something was clearly wrong. It was very frustrating not to have a name or an explanation for his difficulties.

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### INTRODUCTION

Diagnosis in psychiatry and psychology is very different from diagnosis in internal medicine or pediatrics. As Szatmari (2000) has pointed

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out, a person does not “have” autism in the same way he might “have” strep throat. Medical diagnoses can generally be confirmed by specific laboratory tests with tightly defined values for normal, borderline, and abnormal findings (such as blood sugar level, blood pressure, lung function, etc.). But in developmental and behavioral disorders, diagnosis refers to global patterns of functioning, which are much more difficult to define and measure, and which may vary along several dimensions, including over time (particularly in childhood) and in different situations (such as the quiet home of an only child vs. a large, noisy school cafeteria). The more multi-faceted the disorder, the more difficult it is to develop precise diagnostic criteria. As Lorna Wing eloquently wrote, “Recognizing patterns within this bewildering complexity is akin to classifying clouds” (1998, p. 11).

Within the autism spectrum, more capable or higher functioning people with Asperger Syndrome (AS) or autism are among the most difficult to diagnose. Although they might show the same difficulties as more handicapped people with autism in the triad of impairments (social interaction, communication, and restricted patterns of behavior; Wing & Gould, 1979), these deficits are usually more subtle and can be difficult to identify. For example, higher functioning people with autism or AS might engage in social behavior but it might not be as reciprocal as one sees in normally developing people, or their ability to make friends might be more limited. Language skills can be well developed but there might be a problem with turn-taking in conversations. Also, people with AS/HFA often have pedantic speech, using awkward phrases and big words. Their narrow interests are sometimes harder to identify than the repetitive, self-stimulatory behaviors often observed in more impaired people with autism. Narrow interests might include preoccupation with thoughts or facts such as numerical combinations, birthdays, train schedules, a time in history, cash registers, or dinosaurs.

As we have seen, Leo Kanner and Hans Asperger took on the task of describing these behaviors, writing papers labeling the pattern of “autism” among children they worked with. Over the past 50 years, other professionals in the field also wrote descriptive papers, shared observations at conferences, and met to develop consensus statements regarding diagnostic criteria. The two major diagnostic systems

currently in use are the ICD-10 (International Classification of Diseases – Tenth Edition; World Health Organization, 1993) and the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition; American Psychiatric Association, 1994). The ICD-10, as its name implies, has been developed and used internationally to categorize both medical and psychiatric/developmental disorders, while the DSM-IV was developed in the United States and is more narrowly focused on psychiatric and related conditions. In terms of autism and AS, the ICD-10 and DSM-IV definitions are closely coordinated. Since the DSM-IV is more widely used for clinical purposes in this country, we will focus on its criteria and description of autism and AS.

The section of the DSM-IV concerned with autism spectrum disorders contains specific criteria in each of three areas of impairment: social interactions, verbal and nonverbal communication, and unusual behavior and interests. Each of these three areas contains four criteria, for a total of twelve. The social and behavior/interests criteria for autism and AS are identical, while there are no criteria related to impaired communication in AS; in fact, some elements of communication development are required to be normal. For a diagnosis of autism, at least six of the twelve criteria must be met (at least two in the social area and at least one each in the communication and behavior/interest areas). For a diagnosis of Asperger Syndrome, at least two social criteria and at least one of the behavior/interests criteria must be met. Following are the areas of overlap in DSM-IV between autism and Asperger Syndrome.

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#### **COMMON ELEMENTS IN DSM-IV CRITERIA FOR ASPERGER SYNDROME AND AUTISM**

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##### **Qualitative Impairment in Reciprocal Social Interaction**

Note that “impairment” does not mean that the skill or behavior is totally absent, but that it is limited or unusual in some way, compared to typical people. Also, the specific manifestations of AS might be more subtle or require more cognitive skills than behaviors characteristic of autism that meet the same criteria.

The first aspect of the social criterion is “marked impairment in the use of multiple nonverbal behavior such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction.” Examples of behaviors meeting this criterion would be either avoiding eye contact or staring too intently at another person’s face, having a flat facial expression or constantly smiling, or limited use of typical gestures such as head nodding, pointing, or shrugging the shoulders.

The second element of the social criterion is “failure to develop peer relationships appropriate to one’s developmental level.” This lack of friends can occur for several reasons. Some children with autism/AS are simply not interested in having friends, apparently finding social relationships too confusing or unpredictable. Others might want friends but not understand how to go about establishing these relationships. For example, at younger ages they might hug, pinch, or push other children in an attempt to establish social contact. Older, higher-functioning youngsters might attempt to talk with peers, but choose topics that are not interesting to the other person. Some people with AS/HFA, especially during adolescence, become depressed by their inability to establish friendships. Other individuals might naively believe that all of the members of their class are their friends. Virtually all people with autism/AS have difficulty comprehending fully what it means to be someone’s friend.

It is important to remember that the definition of this social deficit involves peer relationships relative to the individual’s developmental level. So, for example, a person with severe mental retardation and a mental age of 2–3 years who participates in parallel play next to another child is exhibiting friendship skills at an appropriate developmental level. However, a 10-year-old with intact intellectual skills who participates in parallel play but is unable to name a single best friend is not at an appropriate developmental level.

“A lack of spontaneous seeking to share enjoyment, interests, or achievements with other people” is a third aspect of this social criterion. A child with autism/AS, might, for example, become very excited when he hears certain TV commercials, sees favorite objects, or reaches an advanced level on a computer game, yet not try to call anyone’s attention to these experiences. Normally developing children are typically very motivated to seek attention and show objects of

interest to their parents and others, in order to share their pleasure. The absence of these behaviors, often called “joint attention”, is one of the earliest symptoms of autism.

The final element in the social area is “lack of social or emotional reciprocity.” This means that people with autism/AS have difficulty with the give and take of social and feeling-oriented interactions with other people. While many people with autism and AS are interested in some type of social interaction, they generally have trouble monitoring and maintaining these interactions. That is, it is difficult for them to focus simultaneously on what they are thinking, what they want to say next, and how the other person is reacting and thinking. As a result, they appear socially insensitive or even uninterested. For example, a child with autism or AS might not understand the social excitement of a classmate who is describing a wonderful weekend, and so might fail to respond, or change the topic, or walk away abruptly. Other individuals may monopolize conversations talking about their special interests, without realizing that listeners are bored or in a hurry and without soliciting their input, thus appearing odd, self-absorbed, or boring.

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### **Restricted Repetitive and Stereotyped Patterns of Behavior, Interests, and Activities**

This diagnostic criterion involves clearly unusual behavior, rather than impaired or limited skills. For both autism and AS, at least one of the following four elements of the criterion is required for DSM-IV diagnosis.

First among these is “encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus.” In lower-functioning autism, examples of this symptom are playing exclusively with one object, often an unusual object (such as string, sticks, rubber glove, or pantyhose), or playing with toys in an unusual way (such as lining up or spinning all objects). Among older, higher-functioning people with autism or AS, this symptom is often seen as learning vast amounts of information about highly restricted topics, such as weather maps, highways, zip codes, sports statistics, etc.

The second element of this criterion is “apparently inflexible adherence to specific, nonfunctional routines or rituals.” For example, children with autism might tantrum unless specific bedroom routines are followed in precise order, sit only in a particular place in the car, or demand that their food be served in a particular way (such as eating a sandwich only if it is cut diagonally). A child with autism might also become agitated if a parent deviates from an expected driving route or the mailman knocks at the side door rather than ringing the front doorbell. Even high functioning adults can become agitated in unpredictable situations or when their routines are changed or their expectations are not met.

“Stereotyped and repetitive motor mannerisms” is the third symptom of this criterion. Behaviors such as body rocking, hand flapping, spinning, and head banging are most commonly seen among younger and lower functioning children. Even higher functioning adults, however, might flap their hands or hop excitedly when something exciting or important is happening.

A final manifestation of this criterion in this group is “persistent preoccupation with parts of objects.” This is among the most frequently observed characteristics of autism. Children with autism might smell their toys, spin the wheels of their truck, slam doors repeatedly, or be obsessed by small visual details, such as strings on clothing, dirt on window panes, slightly open drawers. Higher-functioning individuals might over-focus on thinking about certain small elements of their world, such as mathematical calculations or the makes of cars driven by everyone they know. This preoccupation with parts of objects and details sometimes interferes with the person’s ability to understand the larger meaning of the various aspects of the environment.

## **PRIMARY DIFFERENCE IN DSM-IV CRITERIA FOR ASPERGER SYNDROME AND AUTISM**

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As we have described, identical criteria of social deficits and restricted interests are used to diagnose both autism and AS. Autism involves a third diagnostic criterion, “Qualitative Impairments in Communication.” This criterion has four elements, at least one of which must be present

for the diagnosis of autism. These four elements are (1) delays in or total lack of the development of language; (2) impairment in initiation of language or sustaining conversations with others; (3) stereotypic, repetitive use of language; and (4) lack of spontaneous, make-believe play.

In contrast, for AS the criterion of impaired communication is not present. On the contrary, a diagnostic criterion for AS according to DSM-IV is that “there is no clinically significant general delay in language,” defined as developing single words by the age of two years and using phrases for communication by the age of three years.

Based on the historical perspective presented in Chapter 1, it is immediately clear that the DSM-IV criteria represent marked changes and omissions from the concept of AS that evolved from Hans Asperger’s work. The most important difference involves the issue of communication and language.

Asperger (1944) himself noted pragmatic language deficits in his students. He saw his students as having problems using language in typical ways, which he described as a fundamental disturbance in the expressive language characteristics that are necessary for social interaction. He also noted oddities in their language, describing his children as speaking like “little adults” in a pedantic manner using a large vocabulary. Van Krevelen (1971) also highlighted the one-sidedness and lack of reciprocity in the communication of children with AS. Similarly, as described in Chapter 1, Wing discussed various atypical features of the language and communication of children with AS.

More recently, Twachtman-Cullen (1998) has described the following difficulties with the DSM-IV criteria for AS: First, the DSM-IV definition uses the term “clinically significant general delay in language” which is open to different interpretations. Second, the milestone of single words at age two years, used as an example of normal language development, actually represents a significant expressive language delay. Third, use of “communicative phrases” at age three years involves not just saying a sequence of words but also communication, meaning the appropriate use of language for social purposes, which is very frequently not normal in youngsters with AS, even if they speak in phrases or sentences.

Another difficulty with the DSM-IV criterion of delayed language development is that it is becoming clear that empirical support is lacking for this as a differentiating factor between autism and AS.

A study (Szatmari et al., 1995) did find that 4–6 year old autistic children with delayed/deviant language had more social impairments and atypical behaviors than those with normal language development. However, a series of studies by Eisenmajer, Prior, and colleagues (1996, 1998) with high functioning individuals on the autism spectrum found that a history of early language delay did not predict eventual severity of autistic symptomatology; that is, by age 11 years there were no differences in autistic symptomatology between individuals with or without early language delay as defined by DSM-IV. Also, when the statistical technique of “cluster analysis” was used to identify subgroups of high-functioning autistic children, early language development variables were not useful in differentiating the groups. Similarly, Miller and Ozonoff (2000) reported that in a carefully diagnosed sample of youngsters with either HFA or AS, the history of normal early language development was not specific to AS, since it was also reported in 42% of the children with HFA.

Many research findings indicate that some aspects of the language of people with AS, such as the development of vocabulary and sentence structure, are indeed eventually fairly normal. However, there are often problems with other elements of communication, such as speech patterns (such as talking too quickly or too loud), using inappropriately pedantic speech or awkward phrases, misunderstanding idioms, humor, sarcasm, and other non-literal meanings of spoken language, talking too much and disregarding cues from the conversational partner, and having difficulty maintaining a conversation (Klin et al., 2000; Landa, 2000; Minshew et al., 1995).

In summary, the DSM-IV diagnostic criterion of unimpaired communication in AS is inconsistent with the clinical and research literature. Further, this section of DSM-IV sets out inaccurate developmental milestones and confounds language and communication.

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## ADDITIONAL ASPECTS OF AS IN DSM-IV

Three additional elements are included in DSM-IV for the diagnosis of AS:

- A. “There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help



skills, adaptive behavior (other than in social interaction), and curiosity about the environment in childhood.” This contrasts sharply with the criterion for autism of delays in social interaction, social language use, or symbolic/imaginative play before age 3 years.

Volkmar and Klin (1998) have pointed out that the wording of this criterion for AS is potentially misleading, since it can be interpreted as meaning that there are no significant adaptive behavior deficits and delays throughout the lifespan, while in fact such impairments are often seen in later years with AS. The equivalent criterion in ICD-10 is more clearly worded, indicating that only significant delays in adaptive behavior skills during the period of early development (to age 3 years) would exclude a diagnosis of AS.

B. “Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia.” The effect of this criterion is that if the individual meets criteria for autism, then autism would be diagnosed instead of AS.

Since we have seen that the social and behavioral descriptions of autism and AS are identical, this means that the decision between a diagnosis of autism or AS comes down to early developmental factors. By DSM-IV definition, early development in AS is essentially normal in the areas of language/communication, cognitive, adaptive and curiosity, while in autism, at least in terms of the latter three factors, it is not. (The DSM-IV does not have specific criteria regarding early language development milestones in autism.)

There are several potential problems with relying on information about early history to make the differential diagnosis. First, different aspects of developmental progress can be inconsistent: for example, first words spoken on time but phrase speech delayed; normal cognitive development but delayed adaptive/self-help skills (such as toilet training or eating with a fork). Second, retrospective information about developmental history is sometimes not available, and sometimes not very reliable. Third, as mentioned previously, criteria involving the phrase “clinically significant delay” are open to various interpretations. Ironically, Landa (2000) has pointed out, as more developmental screening

and early intervention programs are developed, more standardized test scores are available for young children, often documenting delays or disorders that might otherwise have been overlooked until after the criterion age of 3 years. Fourth, as we have seen, the “normal language/communication” criterion is confusing. In spite of these various issues, based on current criteria it appears that any indication of delay prior to age 3 years should result in a diagnosis of autism rather than AS.

C. “The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning.” This means that slightly eccentric interests and awkward social skills that do not result in “significant impairment” would not lead to a diagnosis of AS. Again, this criterion involves subjective judgment about what constitutes “clinically significant” impairment.

Poor motor skills and motor planning difficulties are not formal criteria for AS in DSM-IV, although they are described in the narrative portion that accompanies the official list of symptoms. Asperger himself considered that his children were markedly clumsy, and some researchers think that poor motor skills are an important distinguishing feature between autism and AS. Many studies have confirmed that youngsters diagnosed with AS scored below average or more poorly than control groups on measures of motor development. However, while the clinical lore related to autistic children is that they are very agile and well-coordinated, a number of recent studies have found that motor delays and poor coordination are also very common in autistic children and adults (Ghaziuddin et al., 1994; Manjiviona & Prior, 1995; Miller & Ozonoff, 2000; Minshew et al., 1997; Rapin, 1996). There is no conclusive evidence that motor skill development differentiates autism from AS (Ozonoff & Griffith, 2000).

## **CURRENT PERSPECTIVES ON THE RELATIONSHIP OF AUTISM AND AS**

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In 1981, Lorna Wing introduced Asperger’s work to the English-speaking world by describing his ideas then adding her own perspectives. In

1991, Uta Frith, another prominent researcher and clinician in the field, translated Asperger's paper into English and published it along with papers from other major scholars. And so for the past 10–20 years, English-speaking researchers and other professionals have lined up on different sides of the question, "Is there a meaningful difference between AS and HFA?" A fair number of them originally thought the answer was "yes," but have since changed their opinions. Interestingly, two psychologists have analyzed the descriptions of the four children Asperger described, and made the case that all of them would be diagnosed with autism rather than AS according to DSM-IV criteria (Miller & Ozonoff, 1997).

A recent study (Eisenmajer et al., 1996) compared the diagnoses used by community professionals (child psychiatrists, psychologists, and pediatricians) in Australia and England against early and current symptoms in a group of high functioning individuals. It was clear that many professionals had disregarded the official diagnostic criteria in the ICD-10 and DSM-IV, since 43% of the individuals diagnosed with AS had a history of delayed language onset, and 89% of them had a history of language disorder. It appeared that the professionals used the diagnosis of AS for individuals (1) with some social interests and (2) better (although not normal) current verbal skills. While these might be reasonable variables on which to differentiate various forms or degrees of autism, as we have seen they are not the variables on which the DSM-IV or ICD-10 rely.

Some of the major research groups looking at AS are those of Gillberg in Sweden, Szatmari in Canada, Ozonoff in Utah, Wing in England, and Volkmar, Klin, and Sparrow in Connecticut. Each of these groups has compared large numbers of individuals diagnosed with AS or autism. Unfortunately, until recently each research group has used a slightly different definition of AS, either because the work was done prior to DSM-IV/ICD-10, or because they disagreed with one or more elements of those diagnostic systems. As a result, it is not at all clear that the different researchers were studying the same phenomenon.

This is a particular problem when the question being studied was "Is AS meaningfully different from HFA?" It seems likely that some of the subjects described as having AS might easily have been diagnosed by someone else with HFA and vice versa. This would make

differences between the two groups impossible to interpret, and would also mean that studies finding no differences between the diagnoses might be inaccurate.

At the present time, there is no professional consensus as to whether differences between AS and HFA are significant enough to justify the use of two diagnostic labels. The arguments for separate diagnoses are as follows:

- 1 | People with AS have less atypical language and communication than people with HFA.
- 2 | People with AS have more social interest and less unusual social behavior than people with HFA.
- 3 | People with AS generally have Verbal IQs that are markedly higher than their Performance IQs, while the opposite pattern is true of people with HFA.
- 4 | People with AS are more likely to have significant motor clumsiness and delayed development of motor skills than people with HFA.

The arguments against separate diagnoses are as follows:

- 1 | Autism varies in severity and is associated with varying levels of intelligence. What is called AS is mild autism with average to above-average intelligence, associated with less impairment in all areas of functioning.
- 2 | The differences seen between groups in research studies are tainted by methodological limitations, including inconsistent or evolving diagnostic criteria and possible circularity (that is, for example, groups were divided based on early language delay, then found to differ on current language skills).
- 3 | The pattern of Verbal vs. Performance IQ is not specific to either group (see discussion of IQ test results in Chapter 3).
- 4 | Research indicates significant levels of motor coordination difficulties in both groups.

Several recent studies and reviews of the neuropsychological research comparing AS and HFA (Manjiviona & Prior, 1999; Miller &

Ozonoff, 2000; Ozonoff & Griffith, 2000) have concluded that convincing empirical support in neuropsychology for the two separate diagnoses has not so far been established. Schopler (1994) has used the term “premature popularization” to describe the rapid and broad adoption of the concept of AS. However, this does not mean that the distinction will not and should not eventually be made. Ozonoff and Griffith (2000) state that “it would be as premature to rule out the validity of AS as it would be to treat it as an entity clearly distinguishable from classic autism” (p. 88).

In spite of the limited evidence for two separate disorders, many parents and professionals appear to be more comfortable with a diagnosis of AS than one of HFA. Wing (1986) noted that parents and professionals were more receptive if a clinician diagnosed a child with “an interesting condition called Asperger’s Syndrome” rather than a form of autism. She suggested waiting to make the connection between AS and autism until later in treatment so that parents could have time to adjust to having a relatively palatable diagnosis, while eventually getting services and support from agencies serving the autistic population. Gillberg (1989) concurred, emphasizing that parents have no preconceived notions about the diagnosis of AS.

The wish to see AS as a separate disorder from autism is understandable, given many parents’ view of autism as the worst possible diagnosis, connoting extreme impairment, social isolation, and bizarre behavior. There are other ways, however, to soften the blow of a diagnosis besides withholding the link to autism (Shea, 1984, 1993). Providing a picture to parents that is not totally complete in its information creates a number of other difficulties. Also, because AS is not yet widely known among the general public, it is much harder to obtain special education, vocational support services, and other forms of assistance that are directed toward people with recognized disabilities.

Perhaps as part of the desire to portray AS as a separate disorder from autism, some professionals and parents continue to return to the original papers of Kanner and Asperger, looking for details that would indicate that the two disorders are fundamentally different. However, it is not reasonable to expect that the initial descriptions and thoughts of early workers in the field of autism would be complete and accurate according to current research-based knowledge. Continuing to examine

in minute detail the seminal articles of Kanner and Asperger is probably not a productive activity (Klin et al., 2000). What is important for our clients and their families today is what we now know, rather than what was thought in the early 1940s, brilliant and astute though that early thinking was.

## **DIAGNOSIS OF RELATED DISORDERS**

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Deciding between the diagnosis of HFA and AS is only one of several diagnostic dilemmas. Not only do AS and HFA overlap with one another, they also share symptoms with numerous other behavioral, psychiatric, and developmental disorders. In this section we will review the most common of the overlapping conditions.

The disorders most often considered along with AS/HFA include Obsessive–Compulsive Disorder, Nonverbal Learning Disability, Schizoid Personality Disorder, Semantic–Pragmatic Language Disorders, and Pervasive Developmental Disorder–Not Otherwise Specified.

### **Obsessive–Compulsive Disorder (OCD)**

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Obsessive–Compulsive disorder is characterized by repetitive thoughts and/or behaviors. A distinction is made between obsessions, which are “recurrent and persistent thoughts, impulses, or images” that are worrisome (DSM-IV, p. 422), and compulsions, which are non-functional repetitive behaviors or mental acts that are performed to reduce the anxiety from the obsession. An example of an obsession might be an ongoing concern about bacterial infections, resulting in the compulsion of continuous hand washing and cleaning. Compulsive behaviors can also take the form of a driven desire to behave according to rigid rules, such as always entering a room by the same door or always tapping the plate with a fork before each bite of food.

People with AS/HFA often display ritualistic, stereotypic, repetitive behaviors like those that characterize people with OCD. There are several points to consider in distinguishing Obsessive–Compulsive behaviors from AS/HFA.

First, the narrow interests associated with AS are not the same as the obsessive thoughts in OCD. Individuals with AS usually show an intense preoccupation with topics that they think and talk about repetitively. However, engagement in these interests tends to reduce their anxiety; in contrast, the obsessive thoughts in OCD cause anxiety. Also, the content of the repetitive thoughts in OCD is more likely to involve themes of aggression, contamination, sex, religion, bodily concerns, or symmetry; these topics are much less common in AS (Baron-Cohen & Wheelwright, 1999; McDougle et al., 1995). Further, most individuals with OCD recognize that their compulsive behaviors are unreasonable, while this level of insight is not characteristic of AS. Developmental histories can also be helpful in making these discriminations. People with OCD usually do not have a preschool or early childhood onset of their preoccupations and, in fact, usually have typical early developmental histories. Early developmental or social problems are much more often seen in AS or HFA, as is the co-existence of Tourette's Syndrome or epilepsy.

It is possible, however, for individuals to have both AS and OCD.

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### **Semantic–Pragmatic Disorder**

Semantic–Pragmatic Disorder (Bishop, 2000) is a developmental language disorder characterized by near-normal grammar, vocabulary and speech production, but impaired use of language in content and comprehension (that is, semantics) and function that is, pragmatic deficits). Children with this disorder have difficulty initiating and sustaining conversations, staying on topic, and using words in context, as do children with AS/HFA.

Children with Semantic–Pragmatic Disorder usually have delayed language milestones (Szatmari, 1998). Based on DSM-IV this differentiates them from children with AS, although we have already seen that the lack of language delays as a diagnostic criterion for AS is problematic.

A recent study (Gagnon et al., 1997) suggests that most children with this disorder also fit criteria for an autism spectrum disorder. Therefore, these authors question the value of Semantic–Pragmatic

Disorder as a separate diagnostic label. Some have argued that children going to language or communication clinics are likely to be given this label, particularly in the United Kingdom, while few other places use this diagnosis with any frequency.

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## Schizoid Personality Disorder

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This disorder is characterized by “a pervasive pattern of detachment from social relationships and a restricted range of expression of emotions in interpersonal settings” (DSM-IV, p. 638). Thus, lack of empathy, limited social skills and friendships, social aloofness or apparent insensitivity, and single-mindedness are characteristics shared by people with AS and Schizoid Personality Disorder. Wolff (1998, 2000) and others have noted that central characteristics of Asperger Disorder are very similar to those observed in Schizoid Personality Disorder and argue that the two disorders should be classified together.

However, in the Schizoid Personality group, deficits in social interactions are often less severe than in AS/HFA and frequently are not apparent until later school years or early adulthood, instead of in preschool and early school years. Communication deviations are subtle and have a less profound effect on relationships in this group than is usually seen in children with AS/HFA. Imagination and fantasy are evident in this group, compared to the concreteness and severe creativity deficits seen in AS/HFA. Also, individuals with Schizoid Personality Disorder do not have the intense special interests of people with AS/HFA, and in fact rarely express strong interest or pleasure. Schizoid Personality Disorder appears to have a genetic link to schizophrenia, while AS/HFA does not. Schizoid children have increased rates of other psychiatric disorders as well. However, chances for occupational success and independent living are much greater in Schizoid Personality Disorder than in AS/HFA.

In spite of these differences, Wolff (1998) still argues that Schizoid Personality Disorder might be part of the autism spectrum. She urges more research and finer discriminations to help determine the precise overlaps and boundaries between the two conditions. Because children with Schizoid Personality Disorder are, in general, less handicapped, their symptoms are more subtle than those we



typically observe in AS/HFA and therefore more difficult to diagnose. Parents or environmental factors are more likely to be blamed for Schizoid Personality Disorder because the organic nature of this disability is less clear. Many intervention approaches that are effective with AS/HFA can also be used with this group, but they require an understanding of the differences between these groups and a recognition that those with Schizoid Personality Disorders are often more socially skilled and independent, even though they still require assistance and support in these areas.

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### **Nonverbal Learning Disability (NLD)**

Byron Rourke has popularized the concept of NLD (Rourke, 1989, 1995; Rourke & Tsatsanis, 2000). Based on his own research and earlier observations about individuals who have difficulty comprehending social information in their environments, he has proposed a model of right hemisphere dysfunction that results in a distinct neuropsychological profile and behavior.

According to Rourke, individuals with this disorder have intact auditory perception and rote verbal learning. Deficits include tactile perception (usually more marked on the left side of the body), visual perception, concept formation, and nonverbal problem-solving, particularly in novel situations. Intonation and inflection of speech and pragmatic language are additional difficulties. Academic deficits tend to be in mechanical arithmetic, mathematical reasoning, and reading comprehension, while abilities to decode and spell words are intact. Academic subject areas such as history or science can also be impaired because of reading comprehension and nonverbal problem-solving deficits. Other functional difficulties characterizing these individuals are poor social perception and judgment, which result in poor interaction skills. There can be a marked increase in social withdrawal and isolation as they grow older because of unsuccessful interpersonal experiences, and the group is at significant risk for depression and anxiety.

It can be seen that the social and pragmatic language deficits described in NLD are consistent with descriptions of AS. Klin et al. (1995) indicated that while many individuals with AS fit the

profile of NLD, the reverse is not necessarily the case, since NLD is associated with a number of different conditions, both developmental and acquired (Rourke & Tsatsanis, 2000).

There are, however, differences between Rourke's description of NLD and the current understanding of AS. Rourke reports that children with NLD have noticeably delayed early language milestones (Rourke, 1995), while at least by current definition this is not true of individuals with AS (APA, 1994). Rourke describes significant visual-motor and visual-perceptual deficits as a defining feature of children with NLD, while Lincoln et al. (1998) and Manjivionia and Prior (1999) report that this is not a consistent, much less universal finding among subjects with AS. Also, Rourke describes "progressive deterioration" of "socialemotional adaptation" in NLD (1995, p. 24), while many authors who write about AS indicate that these factors improve over time (Fein et al., 1999; Lord & Ventner, 1992). Finally, Rourke indicates that NLD is associated with poor mechanical arithmetic skills, while the work of Minshew and colleagues (1997) indicates that these skills are generally well-developed in adults with HFA. (Since Minshew et al. did not study individuals diagnosed with AS, this may represent a distinguishing factor between HFA and AS/NLD, or it may represent a difference between AS/HFA and NLD.)

Overall, the concept of NLD may be a helpful model for analyzing the social and pragmatic difficulties associated with AS, but it does not appear to represent the same disorder.

### **Pervasive Developmental Disorder–Not Otherwise Specified (PDD-NOS)**

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In the DSM-IV, autism and AS are included in the category of Pervasive Developmental Disorder (PDD). This broad category also includes a "Not Otherwise Specified" diagnosis for situations in which there are prominent symptoms of autism or AS but full diagnostic criteria are not met, or when there is insufficient information to establish one of these more specific diagnoses.

Thus, a diagnosis of PDD-NOS can indicate that a person has some, but not all of the symptoms of autism or AS. Unfortunately, the diagnosis of PDD-NOS does not convey which symptoms are present and to what extent. Specifically, according to the DSM-IV, any one of

the three categories of symptoms that characterize autism (that is, social deficits, communication deficits, and unusual behaviors/interests) can form the basis for a diagnosis of PDD-NOS. Ironically, this very broad definition is due to a minor wording change in the final draft of the DSM-IV (Volkmar, 1997). Rather than requiring social impairment “and” communication or behavioral abnormalities, the final version used the word “or.” The effect of this is to enable a PDD-NOS diagnosis to be used quite loosely, including for persons with adequate social skills and interests, which is potentially very confusing for a disorder closely related to autism. This problem has been rectified in the “text revision” version of DSM-IV.

Further confusing the diagnostic picture, some clinicians have used the label of PDD-NOS instead of autism because it is seen as more palatable or more appropriate when children are very young. Other clinicians use PDD-NOS as synonymous with AS. Some clinicians even argue that PDD-NOS is the most appropriate diagnostic label for all impairments in reciprocal social interactions and the capacity to develop empathy, even among those who might otherwise be diagnosed with a conduct disorder or anti-social personality.

Although it is sometimes confusing, nonspecific, or misused, the PDD-NOS diagnostic category is, nevertheless, important because it enables clinicians to offer a diagnosis to those clients in need of services, but who do not fit neatly into the more specific categories that have been developed.

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## SUMMARY AND CONCLUSION

The DSM-IV diagnostic criteria for autism and AS overlap to a significant degree. The main differentiating features involve early developmental patterns, but for a variety of reasons this may not provide an adequate foundation for differential diagnosis. It is well-accepted that the characteristics of autism vary significantly in different individuals, ranging from extreme aloofness, lack of language, and limited nonverbal and adaptive skills (Wing, 2000) to awkward sociability, above-average intelligence and verbal fluency, and adequate vocational and community living skills. The terms HFA and AS are generally used to describe the upper end of this continuum, but professionals disagree whether these terms are interchangeable.