

Clinical Characteristics of Mild Autism in Adults

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Clinical descriptions of 14 adults with mild autism are presented. Structured questionnaires, extensive medical and social histories, and mental status examinations were conducted independently by several clinicians who concurred with the diagnoses of autism. These 14 patients demonstrate (1) that mild forms of autism can remain undiagnosed into adulthood; (2) that developmental histories and patients' reports

may not provide evidence of developmental delays and characteristic symptoms during childhood despite their presence at adult mental status examination; (3) that mild previously undetected autism should be considered in the differential diagnoses of perplexing adult patients.

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A GLANCE AT the history of medicine reveals that the most serious forms of major diseases are usually described first. These "classic cases" form the templates by which diagnosticians initially evaluated their patients; so it has been with autism. Kanner's¹ classic cases provided templates for the National Society for Autistic Children (NSAC),² DSM-III, and DSM-III-R definitions of autism. Because they were based on severe cases, they included the onset of observable symptoms before age 30 months (NSAC and DSM-III) and during early childhood (DSM-III-R) as a diagnostic criteria. This ensured, by definition, that only cases with symptoms severe enough to be noted during infancy or early childhood would be diagnosed.

The diagnostic dilemma posed by patients with only a few, mild- or late-appearing symptoms is exemplified by the current resurgence of interest in Asperger's syndrome and siblings of autistic patients who are labeled as having cognitive/social dysfunction, severe social dysfunction and isolation, cognitive dysfunction, and pervasive developmental disability NOS (PDD-NOS, DSM).³⁻¹⁸ Whether these patients have mild autism or a separate disease is being studied throughout the world. Pending the discovery of a biomedical marker to resolve the issue, Asperger's syndrome will be included in DSM-IV and the 10th edition of the International Classification of Diseases.

We first identified adults with mild autism while observing parents of our previously diagnosed patients during home visits. They fit the classic definition of "subclinical" (i.e., symptoms present but too mild to have warranted medical attention). A second source was parents of our autistic patients who thought their spouses also suffered from autism. They are very rare in our experience; indeed, the 14

autistic parents reported herein are the only cases we have documented to date. They represent less than 0.5% of all the parents of the several thousand autistic patients we have worked with over the past three decades.

In this report, we present clinical vignettes to serve as templates for diagnosis. It is of particular clinical significance that in some of the cases early-childhood developmental delays were not reported to have occurred, despite the fact that pathognomonic symptoms of autism were observed during their current mental status examinations.

METHODS

To establish diagnostic guidelines for mild autism in these adults, we surveyed certain relevant literature,³⁻²⁰ from which we compiled a list of criteria by eliminating overlapping items. (See Table 1 for categories, items, and descriptions.) A structured questionnaire, extensive medical and social histories, and mental status examinations were obtained on each patient by at least two clinicians. Although each established their diagnoses independently, they were not blind to the other's opinions. In each case, they agreed unequivocally that the parents they examined had severe social, cognitive, and sensory motor symptoms indicative of autism according to DSM-III and DSM-III-R, with the exception of onset before age 30 months (DSM-III) or during early childhood (DSM-III-R). Their psychiatric examinations (history, interview, and mental status examination) revealed no other diagnosable psychiatric diseases. Our eventual identification of these autistic parents was quite predictable from the historical perspective referred to in the opening sentence.

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Table 1. Composite List of Criteria for Asperger's Syndrome and Mild Autism

	Lifetime Occurrence in 14 Parents (+ present, - absent, 0 unknown)													
	Patient No.													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I. Sensory motor symptoms														
1. Repetitive, stereotyped behaviors	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2. Attached to, manipulates objects	+	+	+	+	+	+	+	+	+	+	+	+	+	-
3. Preoccupied with parts of objects	+	-	+	+	+	-	+	0	+	+	-	-	-	-
4. Clumsy or stereotyped movements	-	+	+	+	+	+	+	-	-	+	+	0	-	0
5. Poor gait, posture, bad at motor games, drawing, writing	-	+	-	+	+	+	+	-	-	+	-	-	-	+
6. Resistance to changes, needs routines	+	+	+	+	+	+	+	+	+	+	+	+	+	+
II. Language, communication, speech symptoms														
1. No delay in development	0	0	0	-	+	+	0	+	0	0	0	0	0	0
2. Impaired conversation	+	+	+	+	+	+	+	+	+	+	+	+	+	+
3. Pedantic, lengthy speech	+	+	+	+	+	+	+	+	+	+	+	+	+	+
4. Stereotyped, repetitive speech	+	+	+	+	+	+	+	+	+	+	+	-	+	+
5. Aprosodic speech	+	+	+	+	+	+	+	+	+	+	+	-	+	+
6. Pronoun reversal, word invention	-	+	-	+	+	+	0	-	-	-	-	-	0	-
7. Impaired nonverbal communication	+	+	+	0	+	+	0	-	+	+	+	+	0	+
8. Excellent rote memory	+	+	+	+	+	+	+	+	-	+	+	+	+	-
9. Special skills	+	+	+	+	+	+	+	+	-	+	+	0	+	-
10. Special interests	+	+	+	+	+	+	+	+	+	+	+	+	+	+
11. Specific learning problems	-	+	+	+	+	-	+	-	0	+	+	+	+	+
12. Poor academically, due to perseveration	-	+	+	-	+	-	+	-	+	+	+	0	+	+
13. Understands only simple humor	+	+	+	+	+	+	+	+	0	+	+	+	+	+
14. No or impaired imitation	-	-	+	-	+	-	-	-	0	-	+	-	-	+
15. No or decreased imagination	+	+	+	+	+	+	+	+	+	-	+	+	+	+
III. Social relatedness symptoms														
1. Peculiar, naive interaction, bullied	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2. No empathy, socially insensitive	+	+	+	+	+	+	+	+	+	+	+	+	+	+
3. No or abnormal seeking comfort	+	+	+	0	+	-	0	+	0	+	+	+	0	+
4. Loner, solitary, can't share feelings	+	+	+	+	+	+	+	+	+	+	+	+	+	+
5. Absent or impaired dating and sexual relationships	+	+	+	+	+	+	+	+	+	+	+	+	+	+
6. Can't sustain employment at level of education	+	+	+	-	+	-	-	-	+	-	+	+	+	+

CASE REPORTS

Detailed symptomatic data on the 14 patients are presented in Table 1.

Patient No. 1

This patient was a white male born in 1917 in England. He was the father of one autistic son (born 1952, IQ 70), one autistic daughter (born 1958, IQ 45), and five nonautistic children, two sons and three daughters. He had a law degree, but he had been fired from several legal positions because of social ineptitude and inability to understand legal principles. He translated legal documents for more than 20 years from French to English. His spouse's comments were as follows: "I knew he was odd, a loner, but brilliant; he always needed strict routines. When we met I courted him. Living with him is like living alone. He never had friends or a social life. He has no sexual problems, but his interest is low. He was known to be a shy, odd child who was picked on, but protected by college acquaintances. He was always ritualistic about clothes, and kept the same

schedules of eating and dressing year after year. He attends to our children in an aloof manner. He is closest to our autistic son with whom he lived when our son was a teenager and he and I were separated. He is perfectly multilingual but very literal." At the time of the mental status exam he was tall and gaunt. He had an awkward gait, but good coordination. His affect was shallow and unchanging, with a vacuous smile maintained throughout the interview. He appeared socially awkward, had no sense of humor, was eager to please, and was well oriented. He stared off into space while conversing in a monotone. He attended to his son in a mechanical, stilted way and showed no curiosity about our visit or the venipuncture for research. He was uninterested in his wife's or children's whereabouts or their health.

Patient No. 2

This patient was a white male born in 1937 in Utah, the father of five autistic children (daughter born 1957, IQ 25; son born 1964, IQ 23; son born 1966, IQ 27; daughter born

1968, IQ 25; son born 1971, deceased 1987, IQ 35) and one nonautistic son. He had a high school education and 1 year of trade school. He was a clerk in a tool room for a railroad, working the midnight to 8 AM shift for more than 15 years. His income was always marginal, and he periodically required welfare assistance. His spouse was uncooperative, disheveled, withdrawn, and reported by a welfare worker to be borderline mentally retarded and depressed. At the time of the mental status examination, he was disheveled and obese, maintained a constant vacuous smile, had a flat affect, was socially inappropriate, had no sense of humor, and had an excellent rote memory. He spoke to his autistic children in Dutch and English. He knew three other languages and was learning Russian "just because I like languages." He was completely unaware of the social implications of his children's disabilities and was falsely accused of molesting his autistic daughter. He attended only to concrete issues.

Patient No. 3

This patient was a white male born in 1926 in Idaho, the father of one autistic son (born 1957, IQ 67), one autistic daughter (born 1973, IQ 74), one nonautistic daughter, and two nonautistic sons. He had a high school education, but he was fired from many jobs due to perseverative conversations about religion, pipe organs, etc. His spouse commented that "He was always a loner, socially awkward, and inappropriate from early school years. He never held a job for long, as he talked about his special interests to everyone all the time. He memorized three bibles, organ stops for numerous organs throughout the country, and hundreds of useless historical facts. He always had rituals and elaborate routines, and never understood other peoples' feelings. He hand-flapped and lined up objects throughout all of his adult life. Regarding sex, he learned what he had to do and did it. He had a low sex drive, but no unusual behaviors or interests. He has definite autism. Our marriage was arranged by our families. He's kindly but distant from our children." At the time of the mental status examination he was obese and clean, but had an old style of dress. He kept a cheerful attitude throughout, even when discussing problems. He believed he had autism like his two children. He hand-flapped and perseverated on nonrelevant information when not directed. He was aware of being unable to tell about others' feelings. He died in 1989 of an apparent heart attack.

Patient No. 4

This patient was a white male born in 1945 in Massachusetts, a father of one autistic son (born 1984, IQ 87) and one nonautistic son. He had a Ph.D. in Arts and Letters. His spouse commented that "He was fat and awkward, always picked on and isolated when young. Now he only has professional acquaintances. He got "A" grades in classes that fitted his preoccupations, but did poorly in math and chemistry. He has an excellent rote memory, is multilingual (eight languages), but has little empathy and is not sensitive to others' feelings. He tunes out. He never does anything part way. He is obsessive and has some mannerisms. He has many characteristics of our autistic son. I am convinced he has autism. He speaks Latin at home." At the time of the mental status examination, his appearance and dress were

average. He gave very direct and specific answers. He showed no insight, but said that he "understands" his autistic son and believes he shares some characteristics. He denied any need for friends and relied on his wife to run the household, pay bills, etc. His affect was unvarying while discussing problems, and his thoughts were very concrete.

Patient No. 5

This patient was a white male born in 1934 in Oregon, the father of one autistic son (born 1973, IQ 20), one autistic daughter (born 1972, IQ 21), and one nonautistic daughter. He had a Bachelor of Arts degree and 1 year of graduate accounting, but he lost several accounting jobs because he could not handle complex concepts or schedule changes or form professional relationships. He worked as a mold polisher for 23 years at the same factory. His spouse commented that "I knew he was odd from the start. Now I'm convinced he has autism just like the children, no doubt about it. He's been socially inept since childhood, and was labeled retarded until age 9 years when baby talk ended and he began school. He had failing grades until the 4th grade, and then he got A's and B's. He never had a friend. We met at a church social; I initiated and pursued the relationship. He never showed empathy. He has hand-flapped and bitten himself throughout his adulthood. He shows decreased response to pain. He walks in the woods by himself as his only relaxation. He perseverates and 'knows everything' about knives, guns, and his garden, which he visits several times a day. Sex was 'mechanical' and initiated by me. We have had no sexual relations for the past 10 years." At the time of the mental status examination, he was disheveled and awkward, and had stilted mannerisms. He had an atonal voice and flat affect. He perseverated on his interests unless redirected. He paced and hand-flapped intermittently, repeated words and phrases, and was unable to discuss his family or his children's problems. He had no insight.

Patient No. 6

This patient was a white male born in 1957 in Massachusetts, the father of two autistic sons. He had a Bachelor of Arts degree and had taken masters'-level courses in electrical engineering, but he could not "get things together to complete his degree." He performed reliability checks on electronic equipment. His spouse and mother reported that "He had delayed onset of speech, echolalia, peculiar mannerisms, and preoccupation with spinning objects and soft textures. He was socially isolated when a child, which led to psychiatric treatment from age 4 to 7. He was always bullied and aloof in school and never had a friend. He did well by memorizing. He has always been clumsy, uncoordinated, and had a poor gait since childhood. We met at a singles party, and I had *deja vu*—I knew I should marry him. I take care for him, as he is socially withdrawn and preoccupied with his special interests in computers and engineering. Math is his best subject. He always likes to stare at spinning things and watch television with our autistic child. We are convinced for years that he has autism." At the time of the mental status examination, he was appropriately dressed, socially awkward, and obviously uncomfortable, and he talked in a monotone about his habits, rituals, and peculiar interests. He related that he has measured frequencies that

make him feel calm when he stares at a strobe light. He was concerned but not empathetic about his son, showed a constant shallow inappropriate smile, and had an unchanging affect throughout the interview. He believed he shared some of his son's problems, but had no insight into his personality or his son's problems. He acknowledged his dependency on his wife to manage their social and family life. He denied having sexual problems, but stated that it does not interest him.

Patient No. 7

This patient was a white male born in 1947 in California, the father of two autistic sons (born 1976, IQ 113; born 1981, IQ 70). He had a Bachelor of Arts degree and 5 years of graduate engineering, but he did not write a thesis to obtain his Ph.D. He was a computer programmer. His spouse commented that "His parents told me that as a child he was always a loner, had mannerisms, and always spoke in a long, boring way. He never socially tuned in, and needed routines. He has no imagination, did well in math, can play and read music, but cannot write it. He never had empathy and cannot complete tasks at home or at work because he becomes preoccupied with details. He shows no creativity in his programming work. He was always clumsy and not interested in sports or physical activity. I manage all the family affairs and tell him what to do. Our sex life is mechanical and infrequent. He knows he has autism like his sons." At the time of the mental status examination, he was appropriately dressed and socially awkward, spoke in long, atonal, pedantic phrases, and showed no empathy or understanding of his children's problems, but knows that he is like them and believes that he has autism. He denies sexual problems. He walked on his toes, paced, hummed constantly, hand-flapped, and repeated phrases.

Patient No. 8

This patient was a white female born in 1952 in California, the wife of patient no. 7. She had a Bachelor of Arts degree and 1 year of laboratory technician school. She was a laboratory technologist in a toxicology laboratory. Her spouse's comments were not available, but her self-description was as follows: "I have autism, my husband does, too. I'm more like my older son; my husband is more like my younger son. When young, I knew I was odd and socially different. I was taken to various psychologists during childhood, but never given a diagnosis. They all concluded the same—I'm brilliant but odd. I was bullied at school and had no friends. I had an excellent memory; I memorized all of 'Goldilocks' when I was only 3 years old. I got A's in school. I even joined Mensa, and my IQ is over 150. I was socially out of tune and withdrawn, but got better after my teen years. I still tune out, hand-flap, jump on a trampoline for 2 to 3 hours per day, body-rock, and toe-walk. However, I don't need to spin anymore. I share social-relating, motor, and sensory symptoms with both my sons. I knew my husband was odd from the start, and I take care of him. I feel my high IQ has saved me." At the mental status examination, she was appropriately dressed, very talkative, and knowledgeable about autism and symptoms in herself,

her two sons, and her husband. Her affect was unchanging, and she denied having any sexual problems.

Patient No. 9

This patient was a white male born in 1944 in Utah, the father of one autistic son (born 1972, IQ 68); he was divorced, but then remarried. He had a high school diploma and 4 years of trade school. He had spray-painted fenders of cars for more than 20 years. His spouse commented that "I knew he was peculiar and had to be taken care of when we married. I was told he was very shy and quiet as a child and had no friends, and he remains socially isolated as an adult. After painting cars all day, he goes down to his basement workshop and paints HO miniature trains. He is never involved with his son or our family life. We have no sexual problems, but his urge is low. He is very withdrawn and nonsocial; he is a serious concern, like an autistic himself." At the mental status examination, he was shabbily dressed, socially awkward, and uncomfortable. His affect was shallow and unchanging. He was aware that he was different, needing routines and not wanting to have friends. He said, "I think about my work. I'm introverted. My wife is the social one. I avoid the family." He acknowledged tuning out others and not having feelings for others.

Patient No. 10

This patient was a white male born in 1935 in Utah, the father of two autistic sons (born 1973, IQ 101; born 1981, IQ 66) and three nonautistic children, two daughters and one son. He had a Masters' degree in library science, and his job entailed cataloguing books in a library. His spouse commented that "He walked at 24 months, was isolated and bullied in grade school. He was called petunia head, and he thought it was a favorable sign of attention. He has hand-flapped, snapped his fingers, and stared at wheels of toy trains throughout his adulthood. He is clumsy and uncoordinated, so he never played sports. He had no friends in school or college. He has perfect recall for maps and numbers, keeps population figures in his head, and composes perseverative music. His interest in sex is minimal. It took him a long time to learn what to do, and he is mechanical. He is distant and insensitive to his children, and he lacks empathy. He cannot handle any changes in his daily routines. I knew he was different, but I was 29 and felt he was 'my best chance' because he was stable. I take care of him. He speaks four languages and reads and writes three others. He spends most of his time at home making elaborate, miniature amusement parks with multilingual signs." At the mental status examination, he was appropriately dressed and socially uncomfortable, and he gave concrete, lengthy, and pedantic answers. He perseverated on his interests. His affect was flat and unchanging. He showed no insight or empathy for his children.

Patient No. 11

This patient was a white male born in 1949 in Utah, the father of one autistic daughter (born 1982, IQ 55) and five nonautistic children, two daughters and three sons. He had Associate of Arts degrees in electronics and accounting. He intermittently worked as a computer technician over the

past 10 years, but recently was fired because he “rocked all the time.” He tried to work as a salesman. His spouse commented that “He’s been known to body-rock hours per day since childhood and repeated 4th grade three times due to daydreaming. He’s in his own world, has no friends, is not good at sports, and always needs routines. He proposed immediately after we met even though I didn’t even know his name. He compulsively masturbated through adolescence and young adulthood, and learned to have mechanical intercourse because he told me he wanted to do it just right. I manage our household, plan everything in advance and have to tell him, even if I go out for an hour, or otherwise he falls apart. He never had any friends. He can play any musical instrument, is skilled with computers, speaks English and French, and memorizes religious information. All his clothes must coordinate, and he has to dress in a certain order.” At the mental status examination, he was appropriately dressed, stilted in manner, very concrete, and stated that he has a mild form of autism. He said, “When I was small they thought I was autistic. I never had friends. I had difficulty putting my thoughts into words. I couldn’t do math.” During the interview he stared blankly and body-rocked. His affect was pleasant but unchanging, and he gave lengthy answers about his particular interests.

Patient No. 12

This patient was a white female born in 1947 in Utah, the mother of one autistic son (born 1968, IQ 83), three autistic daughters (born 1970, IQ 105; born 1976, IQ 36; born 1978, IQ 89), and one normal daughter. Her education consisted of high school plus 1 year of community college. She performed occasional unskilled work, was usually on welfare, and needed others to care for her children. Her husband was thought to have committed suicide by a drug overdose. She said of herself that she was obsessive and unable to manage her household, money, and child-rearing responsibilities. She had always had a good rote memory, but said she could not read gestures or other peoples’ faces and had always spoken in a long, rambling manner. She said she had many habits such as rubbing velvet. She never had a friend or social life. She became preoccupied with useless information such as repetitively reading genealogy records instead of attending to her children, cleaning, or cooking. At the mental status examination, she was disheveled and dirty. Her house was unkempt, with unsupervised children running with no shoes on among broken glass while she read genealogy records and answered questions. She was interviewed another time at a bus stop and diner because she had gotten preoccupied with putting on makeup on the way to the clinic and called to ask us if we could meet her. She gave lengthy answers and perseverated on her interests. She was loud and socially inappropriate. She did not know the whereabouts of or show any concern for her daughter, who was in placement in a foster home.

Patient No. 13

This patient was a white male born in 1929 in Utah, the father of two autistic sons (born 1961, IQ 137; born 1970, IQ 80) and five nonautistic children. He could not graduate from high school, despite an IQ of 121, due to persevera-

tions and social ineptitude. He intermittently worked as a salesman and dance teacher, but was usually on welfare. His spouse commented that “He has the same problems as our two autistic sons; he repeats activities and phrases, speaks in monologues—like lecturing. He wrote and practiced compulsively his sales talks, which he delivered by rote, since he has no spontaneous conversation skills. He had been socially isolated since childhood, is unable to relate, copies and echoes feelings, and was always bullied in school, where he could not do well despite his high IQ. He is oblivious to his social and work problems. He has a normal sex drive, but performs with no feelings—he uses me as an object.” At the mental status examination, he was appropriately dressed and socially awkward, had an atonal voice and limited conversation, paced the room, gave only concrete answers, and had no insight, and his affect was flat and unchanging.

Patient No. 14

This patient was a white female born in 1940 in Utah, the mother of one autistic son (born 1968, IQ 91) and two nonautistic half-siblings. In her self-report she stated, “I was never told I was late talking or developing physically. I sat with girls in school, and they smiled at me. We didn’t do anything together—did that make us friends? I borrowed a smile from my imaginary friend. Never to this day do I understand what people are about. I thought going to Vietnam was going on vacation. I learned to read mechanically. I have to read a story or book by learning person, place, and thing. I learn only by pictures. My sister told me I can’t process information and give it the same meaning other people do. A psychology instructor in 1988 said I had autism because my tests showed I know all details but I can’t connect information and make sense of it. I like to think about my breathing. I like to spin around and go backwards. I like to feel and bite smooth things (e.g., egg shells). When I was young I flapped my hands, was fascinated by staring at lights, was sensitive to sounds, pain, and cold sometimes—sometimes not. I still like to stare at fans. I never dated, but went to school with a man who chose me. I was scared to say no to marriage. We had no real sex life. He divorced me, said I was strange. Then I met my autistic son’s father. He chose me, but I have not married him because I am afraid he’d find out I’m strange. I found out with him why other people like sex. I graduated high school, but I never worked; I was always on welfare. I never had friends or socialized. I am now going to school. I need to arrive 2 hours early to be sure I can sit at the same desk. If not, I get lost, disoriented, and have to go home. I need tutors for every subject. They use pictures to help me. My (autistic) son and I are so much alike, we’re not so grounded. We don’t process like other people. He has autism. I know I have what he has (do you have autism?), but I don’t know if I have autism. I think my sister’s son has autism. He can’t learn what things mean.” At the time of the mental status examination, she was well groomed, obviously socially awkward, and uncomfortable. She gave lengthy, concrete, and perseverative answers. She was tearful and fearful until reassured that she was being cooperative. She had no insight into the nature of autism, but was aware of her symptoms and social problems. She appeared of average intelligence, but had restricted interests and a narrow range of information.

DISCUSSION

These autistic parents demonstrate the diagnostic difficulties posed by patients with mild and late-appearing symptoms. The age of onset (first clinical appearance) clearly depends not just on severity, but also on the sensitivity of those with whom the patient lives. Thus, mild cases may not come to clinical attention until adolescence or adulthood. Also, definitions requiring the presence of a minimum number or mix of symptoms can preclude the identification of mild adult cases. For example, early sensory motor symptoms can abate, developmental spurts can compensate for delays, and cognitive and social defects may become less handicapping with age.^{11,19,20} Table 2 summarizes descriptions of various clinical forms of autism and emphasizes how severity and age influence the clinical picture.

One major limitation of our diagnostic assessments is the fact that Fragile-x testing was unavailable. Fragile-x, of course, could have accounted for mental retardation in some of the patients. However, it could not account for the autism per se, which is diagnosed independently of Fragile-x on clinical grounds.

A second limitation is the fact that the clinicians were not blind to each others' opinions before seeing each parent. This was due to the fact that these parents represent only a small fraction (<1% to 2%) of all the parents of autistic patients that we have dealt with over the past three decades. Never the less, given this limitation, each clinician unequivocally diagnosed the parents he or she saw as having mild autism by history and clinical examination.

A third factor that could have confounded our diagnoses is that each of the parents had an autistic child. This could conceivably produce social withdrawal and other symptoms indicative of autism in some of the parents. This is most unlikely, since the autistic parents studied all had histories of abnormal development and behavior before the birth of their autistic children.

Fourth, it could be that a nonautistic parent's report of their autistic spouse was biased by behaviors seen in their autistic child. This is unlikely because of the same reason cited previously; namely, that they were aware of their

autistic spouses' unusual behaviors before they became apparent in their autistic children.

Finally, the issue of differential diagnoses must be considered, since other psychiatric illnesses may have been present and could have accounted for the symptoms that we took as indicative of autism. However, our extensive evaluations failed to reveal the presence of any specific psychiatric diseases. Specifically, none met DSM-III-R criteria for schizophrenia or for mood, anxiety, somatoform, adjustment, or personality disorders. Rather, in each case, their life course was characterized by consistent social isolation, idiosyncratic interests, and in most cases, peculiar mannerisms (Table 1). None had insight or awareness of their social difficulties or complained that their peculiarities were ego-alien.

The 14 adults described above have a total of 54 children. Twenty-seven (50%) are autistic, 23 are nonautistic full siblings, and four are nonautistic half-siblings. Each of the 27 autistic children had been completely evaluated as part of the UCLA Registry for Genetic Studies in Autism or the UCLA-University of Utah Epidemiologic Survey of Utah²¹ by previously published methods. They differ as a group in some interesting respects from the total Utah Epidemiologic Survey population. Their mean IQ (64) is higher than the mean IQ (43) of the 26 subjects (11%) in the Utah survey who had rare diseases known to affect the CNS.²² Also, their mean IQ is higher than the mean IQ (58) of the entire 233 patients in the survey. Finally, the sex ratio of these 27 subjects (1.89) is lower than the ratio of 3.75 found in the entire Utah sample.

Diagnosing possible autism in adults, as well as in children, has implications for changing research strategies. Improving ascertainment may strengthen the hypothesis that there is a familial form of autism.^{15,22-25} Genetic counseling, which is now limited to telling parents that the sibling risk estimate is 2% to 4% and that the overall recurrence risk estimate is 8%,²⁶ will also most likely be increased.

In conclusion, we hope that the clinical material presented herein will be helpful to psychiatrists working with adults who have perplexing disorders that do not fit our usual diagnostic criteria.

Table 2. Clinical Expression of Autism: Severe to Subclinical Forms

	Severe (IQ < 50)	Moderate (IQ 50-60)	Mild (IQ > 70)	Subclinical (IQ > 80)
Developmental course	Onset usually reported during first year, developmental spurts, plateaus until adulthood.	Onset usually reported during 12 to 24 months, developmental spurts, plateaus until adulthood.	Onset usually reported up to school years, developmental spurts and plateaus until adulthood.	Onset reported in school years or adolescence, may just be considered "odd," "a loner," "peculiar."
Sensory motor symptoms	Motility disturbances/stereotypes, over/under reactions to sensory inputs, resistance to change, lifelong.	Same as severe. Motility symptoms wax and wane, needs routines, lifelong.	Same as moderate. Symptoms may abate further or disappear, needs routines, lifelong.	Attached to/manipulates objects/parts of objects when young. Repetitive activities, needs routines, may be clumsy.
Social relatedness symptoms	Eye contact not used, aloof, uses others as objects, no appropriate affect, lifelong.	Intermittent eye contact, aloof/overattached to caretaker, obvious social deficits, lifelong.	Lacks friends, lacks empathy. Relates awkwardly and inappropriately, misses social cues, lifelong.	Lacks friends, lacks empathy, misses social cues, awkward reciprocal interaction. May appear normal or considered "odd."
Cognitive, language, speech symptoms	Mute or loses speech at 19 to 20 months. Echolalia, single words/phrases. Pronoun misuse. Uses others as extension of self, signs, lifelong.	Single words, echolalia, speech problems, pronoun reversal. Concrete functional speech. No symbolic use, isolated cognitive skills, lifelong.	Echolalia plus usable speech. Special skills, interests. Perseverative, concrete thinking, impaired symbolic use.	No general delay or retardation. Speech may be pedantic, lengthy, aprosodic word invention. Good rote memory, impaired symbolic use. Decreased imagination/creativity.
Level of social functioning	Lifelong constant professional supervision required.	Lifelong supervision at home or community-based group home required.	Usually requires lifelong minimal community-based supervision. No close friends or sexual partners. None reported to have married.	Socially awkward, bullied at school. Can live independently. Absent/impaired dating. May marry but dependent on spouse. Performs sex mechanically, have children.
Educational occupational level	Lifelong, structured, behaviorally based, individual educational program.	Same as severe, but mainstreaming possible. May acquire reading, writing, math skills.	Educational needs same as moderate. May complete higher education. Special interests rather than educational level determine occupation. Capable of supervised or independent employment.	May complete higher education. Relies on memory/special cognitive skills, independent employment, not creative, repetitive or technical work is best.
Medical follow-up required	Assess for concurrent diseases and seizures. Short-term tranquilizers for behavior control. Fenfluramine decreases motor symptoms in some.	Same as severe. Girls have more severe course.	May require psychiatric treatment in teen and adulthood for social adjustment, depression & psychotic reactions. One suicide reported.	Same as mild.

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