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Pervasive Developmental Disorders and Psychoses in Adult Life

DAVID J. CLARKE, CARL S. LITTLEJOHNS, JOHN A. CORBETT and SUSAN JOSEPH

Of five patients with pervasive developmental disorders (PDDs), four developed psychotic illnesses in adult life. The other was treated with antipsychotic medication for many years following a mistaken diagnosis of schizophrenia.

Pervasive developmental disorders (PDDs) are a group of related disorders characterised by qualitative impairments in reciprocal social interactions and in non-verbal and verbal language, and by a restricted, stereotyped, repetitive repertoire of interests and activities. The abnormalities are 'pervasive' in the sense of affecting the individual's functioning in all situations. In most cases development is abnormal from infancy or early childhood. The term was used in DSM–III (American Psychiatric Association, 1980) and has been included in the draft guidelines for ICD–10 (World Health Organization, 1988) to encompass the spectrum, or continuum (Wing, 1988), of autistic disorders. Current classifications are largely untested and in many respects unsatisfactory.

The term 'Asperger's syndrome' has been used to describe a disorder in which children or adults have autistic impairments in social interaction and imaginative activities, but show more appropriate syntactical speech than people with Kanner's syndrome, and may not be so socially aloof (Wing, 1981). Wing (1986), while agreeing that no sharp distinction can be drawn between higher-level autism and Asperger's syndrome, commented:

> "One result of the publicity given to Asperger's work is a small but continuing series of referrals from psychiatrists working in the field of adult mental illness who have recognized the behavior pattern Asperger described in patients who presented diagnostic puzzles or had been called schizophrenic or obsessional."

Tantam (1988) has suggested that the concept of Asperger's syndrome should not be over-extended, and should be reserved for autistic children who use language freely but do not tailor its use to the social context, who wish to be sociable but fail to make relationships with peers, who are conspicuously clumsy, and have engrossing idiosyncratic interests and marked impairments of non-verbal expression. Neither DSM–III nor ICD–9 (World Health Organization, 1978) described this subtype of PDD, although DSM–III described 'schizoid disorder of childhood or adolescence', which had many similarities. The proposed ICD–10 describes five specific subtypes of PDD, one of which ('schizoid disorder of childhood') includes Asperger's syndrome.

In this paper we have used the classification of PDDs adopted in DSM–III–R (American Psychiatric Association, 1987), which describes two subtypes of PDD: autistic disorder, and pervasive developmental disorder not otherwise specified (PDDNOS). DSM–III–R also describes schizoid and schizotypal personality disorders and states that "The diagnosis of Autistic Disorder preempts the diagnosis of these personality disorders. However, these personality disorders preempt the diagnosis of Pervasive Developmental Disorder Not Otherwise Specified". The diagnostic criteria for schizotypal personality disorder, however, include the statement "Occurrence not exclusively during the course of Schizophrenia or a Pervasive Developmental Disorder". Schizophrenia may be diagnosed as a complication of autistic disorder "only in the rare instances in which prominent delusions or hallucinations meeting the criteria for Schizophrenia can be documented. Schizophrenia, however, preempts a diagnosis of Pervasive Developmental Disorder Not Otherwise Specified". This statement presumably refers to the differential diagnosis of disorders occurring in childhood, and does not preclude the diagnosis of schizophrenia occurring later in life in someone with a pre-existing PDDNOS. ICD–10 does not appear to take this hierarchical approach to diagnosis. (See Table I for a list of the relevant diagnostic categories in the two classifications.)

We describe five people with PDDs. Although they had a language disorder, they were able to give some account of their subjective experiences and behaviour. Four developed a psychotic disorder which led to psychiatric referral in early adult life. The fifth was incorrectly diagnosed as having schizophrenia because of his eccentric behaviour and a family history of the illness. In all cases, information concerning the developmental history

TABLE I
Diagnostic categories listed in DSM-III-R and in the proposed ICD-10

DSM-III-R	*Draft ICD-10*
Pervasive developmental disorders (Axis II)	*Pervasive developmental disorders (F84)*
299.00 Autistic disorder (Infantile autism, Kanner's syndrome)	F84.0 Childhood autism
299.80 Pervasive developmental disorder not otherwise specified	F84.1 Atypical autism F84.2 Childhood disintegrative disorder F84.3 Hyperkinetic disorder associated with stereotyped movements F84.4 Schizoid disorder of childhood F84.8 Other F84.9 Unspecified
Personality disorders (Axis II, 11 specific types described in three clusters)	*Abnormalities of adult personality and behaviour (F6, eight specific types described*
301.20 Schizoid personality disorder	F60.1 Schizoid personality disorder
301.22 Schizotypal personality disorder	
301.90 Personality disorder not otherwise specified	F60.8 Other F60.9 Unspecified F61 Mixed and other personality disorder F68 Other disorders of adult personality and behaviour F69 Disorders of adult personality and behaviour, unspecified
DSM-III-R provides a multi-axial diagnostic system, with the following axes	*A multi-axial system of diagnosis is being developed for ICD-10*
Axis I Clinical syndromes and V codes	
Axis II Developmental disorders and personality disorders	
Axis III Physical disorders and conditions	
Axis IV Severity of psychosocial stressors	
Axis V Global assessment of functioning	

was obtained by interviewing relatives or carers and from case notes. In case 4 most of the information used to make the diagnoses was obtained from the patient's relatives.

Case reports

Case 1: PDDNOS (Asperger's syndrome) and delusional disorder (persecutory type)

A is aged 18 years and the elder of two brothers. His mother suffered from hypertension in pregnancy. After 37 weeks he was born with a weight of 2.61 kg. He was nursed in a special-care unit for several days. In early life he was described as placid and slow to feed, failing to smile responsively or make eye contact. A convergent squint was noted at the age of 9 months, and an umbilical hernia was repaired at 12 months. A walked at 14 months, spoke his first words at 16 months, and used sentences around the age of 3. He was continent by the age of 3 years 6 months, and at this age had a single febrile convulsion. He was very anxious on starting school at the age of 4 years 6 months. Orchidopexies were carried out when he was aged 7 and 8 years. When he was aged 8 a test with the Revised Wechsler Intelligence Scale for Children (WISC-R) gave a full-scale IQ of 68 (verbal scale 71, performance scale 71). He was transferred to a special school at the age of 11, where unusual preoccupations and rituals (such as kissing his pencils and books in a set order before starting work) were noted. His educational progress was slow. He was clumsy in performing fine movements, and had a lumbering gait. At the age of 13 he was noted to be isolated at school and to have very poor social relationships with his peers. At the age of 16 he was transferred to a special class in a normal secondary school, where he became increasingly distressed and isolated.

He presented as a psychiatric emergency at the age of 17, in a state of intense anxiety which was secondary to the false belief that his father would be sent to gaol for non-payment of an electricity bill. He also believed, unshakably, that television programmes accusing him of homosexuality were being broadcast and that his grandmother had died, and he also thought that he might have AIDS. His appetite, weight and sleep pattern were unaffected and there was no diurnal variation in symptoms. Initially an organic condition was suspected, but extensive investigation, including blood count, biochemical profile, amino-acid chromatography, chromosome analysis, EEG, and computerised tomography (CT) of the head did not show any abnormality. An Axis I diagnosis of delusional disorder and supplementary diagnoses of Asperger's

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syndrome (meeting DSM-III-R criteria for PDDNOS) and mild mental retardation were made. Treatment with trifluoperazine and propranolol (to control anxiety) resolved the delusional state and he gradually improved. At follow-up 18 months later he was successfully attending a weekly residential school for autistic children, where he had made good progress, although he remained socially isolated, with ritualistic preoccupations and odd ideas, but no delusions. He is currently receiving trifluoperazine (2 mg b.d.) and propranolol (10 mg b.d.).

Case 2: PDDNOS (atypical autism) and psychotic disorder NOS

B is a 44-year-old man. The youngest of three siblings, he was born after a normal pregnancy and delivery. He walked at 18 months, became continent at 3 years 6 months, and at this age also started to talk. He was very withdrawn and anxious and cried excessively in early childhood. He played alone, and would not interact with other children. He attended school between the ages of 5 and 15. While at school he developed circumscribed interests in bus numbers and routes and car registration numbers, which he memorised. He played with toy cars by arranging them in straight lines, and collected key rings and watch straps, which he positioned on his desk in a set order. He worked in a bakery between the ages of 15 and 27, with supervision from his aunt. His aunt then changed jobs, and shortly afterwards B refused to go to work. He developed fears of stairs and heights, and was seen by a psychiatrist, who diagnosed a depressive illness and prescribed amitriptyline, with a good response. Wechsler Adult Intelligence Scale (WAIS) testing showed a full-scale IQ of 44: verbal 50, performance 43. He was referred to the mental handicap service. He had three further episodes of mental illness between the ages of 30 and 33. The first was characterised by the beliefs that a coach driver had paralysed his legs and that an ambulance driver had removed his shirt buttons; the other two were characterised by overactivity, reduced sleep and distractibility, but without persistently elevated, expansive or irritable mood.

He is now 44, and the most recent episode has consisted of 4-week to 6-week cycles of overactivity, overeating, stealing other patients' property and smearing faeces; alternating with 2-week to 3-week periods of withdrawal, mutism and catatonia. Investigations including blood count, biochemical profile, thyroid function tests, serum B12, serum folate and chromosome analysis were within normal limits. A CT scan showed moderate cortical atrophy with prominence of the third and lateral ventricles and slightly widened sulcal margins. A diagnosis of bipolar disorder was considered during the acute phase of B's illness, but the absence of a prominent abnormality of mood has led us to make an Axis I diagnosis of psychotic disorder NOS and additional diagnoses of PDDNOS and moderate mental retardation. B was treated with haloperidol and amitriptyline with little response, but responded well to treatment with electroconvulsive therapy (ECT) and lithium. He attended a pre-discharge rehabilitation unit, but other patients were unable to tolerate some aspects of his behaviour (in particular, repetitive stealing from their lockers), and he has subsequently returned to hospital. At follow-up one year after the most recent psychotic episode, he remains well but continues to be preoccupied with his previous circumscribed interests, especially wrist-watches.

Case 3: PDDNOS (Asperger's syndrome) and schizophrenia (undifferentiated type)

C is a 20-year-old man. An only child, he had a birth weight of 2.92 kg after an uneventful pregnancy and delivery. He walked at 13 months, but did not speak until he was over 4 years old. He was anxious and isolated at school, had no close friends, and was picked on because of his withdrawal and abnormal speech, which was monotonous and poorly enunciated. He also tended to omit part of sentences, and did not use gesture. C performed poorly at school (although he was noted to have good rote memory) and he was transferred to a special school. He spent his evenings writing out exact copies of the same few pages from a school book. He was clumsy in performing fine motor tasks and was preoccupied with wrist-watches, sometimes examining someone's watch, rather than their face, on first meeting them.

At the age of 15, while on holiday with his parents, he became very agitated, and kept saying that "everything has changed". He dangled coat-hangers out of the caravan window "to pick up signals", said that the microphones in a discothèque were telling him to dance, and believed that his watch had developed special powers. He was admitted to an adolescent unit, where a diagnosis of schizophrenia was made. He was treated with oral and depot antipsychotics, and made a slow but complete recovery.

At the age of 19, again while on holiday, he complained of feeling unwell and said that someone was following him, and that the IRA were planting loudspeakers in the caravan to listen to him. He was admitted to hospital. C believed that the telephone sockets in the hospital were observing him, that someone was using electricity to make his arm go hot and cold, and that he was being controlled by peoples' watches. He was on some occasions also overactive and disinhibited, and repeatedly left the ward to urinate over cars parked outside the hospital. Diagnoses of schizophrenia and a pervasive developmental disorder (subsequently classified as PDDNOS) were made, and he was treated with antipsychotics and lithium.

The schizophrenic illness remitted completely after approximately 15 months of treatment, and C was then able to attend adult literacy classes and a psychiatric day hospital, where he managed to achieve a reasonable degree of integration into some of the social activities. After a few months of attendance as a day patient the schizophrenic illness returned, and C was readmitted to hospital.

Case 4: Autistic disorder and major depressive episode

D, a 23-year-old man, lives with his parents and 26-year-old brother. He was born with a weight of 3.8 kg after an induced labour, 24 days after the expected date. He suffered the usual childhood illnesses and at the age of 4 months was admitted to hospital for 48 hours for treatment for an

infection and lymphadenopathy; he has also suffered from eczema from infancy onwards. D started to walk at a much later age than his siblings and did not start to talk until he was 7. His mother thought he was deaf, but audiometry showed his hearing to be normal. He did not laugh or cry during childhood, and disliked being cuddled. He did not smile at people, and would not play or interact with his siblings or other relatives. He often walked out of the room if someone else came in. He played with cars by arranging them in lines, never pretending that they were cars. At the age of 10 he built a model of 'the airport of the future' from Lego bricks; it consisted of a pyramid with a rectangular base and layers of bricks, each layer being inset from that below by one brick in each direction. If routines were varied he lost his temper, and he had to have the same meal on the same day of the week. His mother once had her hair style changed to a much shorter one; until it grew back to the usual length he refused to accept that she was his mother. He did not reverse pronouns when speaking, but used words rather than sentences and often repeated words several times. He attended a special school, and until his recent illness attended an Adult Training Centre daily.

About 6 months before referral D began to behave oddly. He seemed to be miserable and was also irritable, losing his temper much more than usual. He refused to attend the ATC and spent all his time at home, wandering up and down stairs, walking in circles and humming, or staring out of the window. He neglected his appearance and personal hygiene and lost all interest in his war comics and computer games. He asked his mother to burn two sets of the *Encyclopaedia Britannica* because "they are dirty", and repeatedly said that a tree in his neighbour's garden should be cut down. For the first time in his life he began to laugh and cry, for no reason apparent to his relatives. Over the month before referral he had been eating very little and sleeping poorly, often getting up in the night to wander round the house. In the week before he was seen by a psychiatrist he had been smelling any food offered to him, often refusing to eat because "it's junk food".

When seen at home he was dishevelled and agitated. He sat staring in the opposite direction to the interviewer and would only reply to questions by saying "yes", "no", or "don't know". An Axis I diagnosis of major depressive episode and supplementary diagnoses of autistic disorder and mild mental retardation were made. Amitriptyline (150 mg at night), together with chlorpromazine in doses of up to 100 mg q.i.d. were prescribed. Shortly after starting treatment D said he wanted to kill himself, but at his and his family's request he continued to be treated at home. The depressive episode remitted completely after 3 months of treatment.

Case 5: PDDNOS (Asperger's syndrome) mistaken for schizophrenia

E, a 28-year-old man with one younger half-sister, was born after a normal pregnancy and delivery. He was hypotonic and extremely anxious in early childhood. His motor and speech development were slow, but exact details are not known. Psychological testing at age 5 showed an IQ of 74 (Terman–Merrill). He did not talk to, or play with, other children, moaned when he was talked to, and would only talk to adults with his hand in front of his mouth. He attended a special school, where school reports described him as timid and fearful, with abnormal preoccupations concerning trees and electricity pylons. He walked on tiptoe, and had such a peculiar skipping mannerism that his teacher recalled it vividly many years later.

Psychometry at age 11 showed a full-scale IQ of 69 (WISC). He produced detailed and heavily shaded drawings, which often omitted part of the subject. At the age of 13 he was referred to a paediatrician because of motor clumsiness. He had long, thin fingers, but no other specific abnormalities were found. Investigations, including chromosome analysis and amino-acid chromatography, were normal. E was seen by a child psychiatrist, who noted his preoccupation with science fiction, television programmes and space travel, concluded that he was a boy of limited intelligence who had a schizoid personality, and recommended that attention should be focused on his artistic talent, which was considerable.

When E was 14, his mother was admitted to a psychiatric hospital and found to have a paranoid schizophrenic illness. E was transferred to a residential school, where a medical report described him as timid and obsessional, with bizarre mannerisms. At the age of 14 years 6 months he was described as a "withdrawn, non-aggressive type of early schizophrenic" and treated with fluphenazine, which he has continued to take for 13 years. He continued to be preoccupied with space travel and electricity pylons, which he drew in great detail.

His most recent psychiatric contact was at the age of 27. He went to a social services hostel with a plastic milk bottle pinned to his lapel, and said it was his "other head". He was thought to be deluded, but an urgent psychiatric assessment found that E was still preoccupied with science fiction television programmes, including one featuring a character with two heads, whom he was emulating. He was not deluded, and had no other symptoms of psychotic illness. His social responses were abnormal; he stared fixedly at the interviewer for minutes at a time and used no gestures. His speech was monotonous, with a marked articulation defect. He repeated most sentences twice, omitting parts, and talked enthusiastically about science fiction programmes, having few other interests. Identical clocks, posters, and other objects were arranged symmetrically about his flat. These features, and the developmental history, were considered compatible with a diagnosis of PDDNOS, rather than schizophrenia.

Discussion

The relationship between autistic disorders and schizophrenia and other psychotic disorders is a matter of continuing debate. There are similarities to the evolution of the concept of childhood disintegrative disorder, as described in the proposed ICD-10. Children with this condition develop normally before losing previously acquired skills, such as speech and language, and developing a severe behaviour disorder. The condition may be a manifestation of

a neurological condition and may be progressive (as in San Fillipo syndrome) or non-progressive (as in Rett's syndrome) (Corbett, 1987). Patients who appear to have suffered from childhood disintegrative disorder were described by de Sanctis (1906), who used the term 'dementia praecocissima', and who regarded the disorder as a very early manifestation of schizophrenia. Further cases were described by Heller (1930; translated by Hulse (1954)), leading to the eponymous term 'Heller's syndrome'. The description of children with autism by Kanner (1943) paved the way for the subdivision of the severe psychiatric disorders of childhood (childhood psychoses) according to their clinical features and natural history, added insights being provided by epidemiological and genetic studies. Malamud (1959) showed that the term 'Heller's syndrome' tended to be used as a label for a variety of organic brain disorders in patients presenting with psychiatric symptoms in childhood. He suggested that the term should be abandoned because it was imprecise and often confused with childhood schizophrenia. ICD-9 used the term 'disintegrative psychosis', and stated that the disorder may be associated with overt brain disease. Corbett *et al* (1977) described two patients (one with metachromatic leucodystrophy and the other with sudanophilic leucodystrophy) who developed progressive childhood disintegrative disorders. One boy was treated for a non-specific conduct disorder for several years, but at the age of 11 developed a psychotic condition and attacked his mother in response to third-person auditory hallucinations. The concept of childhood disintegrative disorder has therefore evolved from an initial era when it was regarded as an early form of schizophrenia, through a period in which it was distinguished from schizophrenia and from other childhood psychiatric conditions, to the current realisation that it is a useful description for a pattern of behaviour (often found in association with neurological disorders) which is sometimes accompanied in the later stages by symptoms found in psychotic disorders (including schizophrenia).

Similarly, Kanner (1949) initially stated that:

> "Early infantile autism may therefore be looked upon as the earliest possible manifestation of childhood schizophrenia. . . . I do not believe that there is any likelihood that early infantile autism will at any future time have to be separated from the schizophrenias, as was the case with Heller's disease or with many instances of so-called dementia praecocissima of de Sanctis."

The current concept, however, is of autistic and schizophrenic disorders being separate and unrelated (Kolvin *et al*, 1971; Rutter, 1974). This dichotomy has been reflected in some diagnostic criteria, including those of DSM-III. We agree with the statement in DSM-III-R that:

> "Though some early investigators suggested that these disorders were continuous with adult psychoses (e.g., Schizophrenia), substantial research suggests that they are unrelated to the adult psychoses. For that reason, and the difficulties of assessing psychosis in childhood, the term *psychosis* has not been used here to label this group of disorders: Pervasive Developmental Disorders is used because it describes most accurately the core clinical disturbance in which many basic areas of psychological development are affected at the same time and to a severe degree. . . . Other mental disorders, such as Major Depression, may occur during adolescence and adult life. They are most easily recognized in people who have sufficient speech to describe symptoms accurately."

Four of the patients described above developed psychotic illnesses. There have been other reports of people with autistic disorders who developed psychoses in adult life. Darr & Worden (1951) described a 33-year-old woman who had initially presented in 1921 at the age of 4. The clinical features recorded at that time enabled the authors to make a retrospective diagnosis of early infantile autism. As a child she avoided eye contact, was echolalic and averse to playing with other people and was preoccupied with shiny objects. In early adult life she lived according to a set of routines, and would fly into a temper if she was delayed in a theatre queue or if chicken was served without currant jelly. She was interested in music and Spanish, and learned to speak Spanish fluently. She had a few acquaintances, but tended to embarrass them through her repeated social blunders, such as stripping to the waist while on a walk with a group of people of both sexes, subsequently being enraged when her companion insisted that she replace her blouse. At the age of 29 she developed a respiratory infection and became deluded. After saying that her medication was poisoned and that she was urinating cider she was admitted to a psychiatric hospital. She appeared depressed and expressed various other delusions, including the belief that she contained chemical poisons and would explode if a match was struck, killing everyone in the building. At one point in her illness she became almost mute and had a shuffling gait. She was treated with deep coma insulin therapy, ECT and psychotherapy. It is possible that Darr & Worden's patient had Asperger's syndrome (PDDNOS) and that the psychosis was an affective disorder. Reiser & Brown (1964) described 125 children with 'infantile psychosis', nine of whom developed symptoms of psychotic illness in adolescence or adulthood. The diagnosis made by the authors was

schizophrenia: "They showed a variety of features approximating the classical picture of chronic schizophrenic reaction of the paranoid type, with delusions of persecution, ideas of reference, notions of grandeur, and hallucinations". Dahl (1976) found that, of 17 patients initially diagnosed as having 'infantile psychosis', six later had a diagnosis of schizophrenia and three a diagnosis of atypical psychosis. The diagnoses of the clinicians looking after the patients were recorded, and the diagnoses of schizophrenia may be questionable in some cases:

"The six schizophrenic patients were all described as autistic with bouts of temper, sometimes alternating with apathetic periods, hallucinations, and bizarre behaviour, ritualistic with stereotypies. Low intellectual function was described for some of them. Only a few have had delusions, perceptions (*sic*), and bodily hallucinations."

Wolff & Chick (1980), reporting 10-year follow-up of 22 boys with 'schizoid personality', found that nine had current psychiatric symptoms. Two had marked depressive symptoms (suicidal thoughts, hopelessness, poor concentration and early morning waking), one had dramatic mood swings, five had attempted suicide and ten had had suicidal thoughts since the age of 14. One patient (possibly two) had had a schizophrenic illness. Wing (1981) reported a high prevalence of superadded psychiatric illness in her series of 18 patients with Asperger's syndrome aged 16 and over, but cautioned that samples presenting to psychiatrists will necessarily be biased towards individuals with additional psychiatric disorder. Of the 18 patients, four had had an affective illness, four had become increasingly odd and withdrawn, one had an unclassified psychosis with delusions and hallucinations, one had had an episode of catatonic stupor and one an unconfirmed diagnosis of schizophrenia. Two patients had attempted suicide and one had talked of doing so. Petty *et al* (1984) carefully documented three children with infantile autism who developed symptoms of schizophrenia in childhood or adolescence. Symptoms included thought disorder (incoherence, loosening of association, illogicality, poverty of speech) accompanied by blunted or inappropriate affect; thought broadcasting, insertion or withdrawal; delusions of being influenced or controlled; somatic, grandiose, religious, nihilistic, or other bizarre delusions; auditory hallucinations; fusion of reality and internal mentation; and alterations of perception. Komoto *et al* (1984) reported two adolescents who had both infantile autism and an affective disorder (a 13-year-old boy with a bipolar illness and a 13-year-old girl with unipolar depressive episodes). Gillberg (1985) described a young man with Asperger's syndrome and a family history of bipolar (manic–depressive) disorder who had recurrent episodes of lethargy from the age of 8 years onwards, with a marked worsening following puberty. The episodes reached psychotic intensity, with apathy, depression, pervasive loss of interest, negativism and regression of self-help skills lasting between 14 and 17 days. Gillberg diagnosed manic–depressive psychosis and started treatment with lithium. Szatmari *et al* (1986) described a woman with Asperger's syndrome who developed auditory hallucinations (consisting of two voices talking about her or a single voice making disparaging remarks) in early adult life. Tantam (1988) has suggested that there is a particular association between Asperger's syndrome and the subsequent development of affective disorders.

Several authors have suggested a link between certain personality abnormalities and the subsequent development of schizophrenia (Essen-Möller, 1946; Nannarello, 1953) and other psychotic disorders (Langfeldt, 1953).

"Shortly after Kraepelin first announced his concept of dementia praecox in 1896, he indicated that certain types of children seem predisposed to the condition and that in some cases the adult symptomatology could be traced back to early childhood. He noticed from the reports of others as well as from his own observations that some patients with dementia praecox, especially males, had the history of a quiet, shy, docile, retiring disposition in childhood, with no ability to make friendships or to live outside themselves." (Nannarello, 1953)

This 'schizoid' personality type shares some characteristics with the PDDs. Wolff and co-authors have used the term 'schizoid personality' to refer to children with a disorder indistinguishable from that termed 'Asperger's syndrome' by others (Wolff & Barlow, 1979; Wolff & Chick, 1980; Wing, 1981). Similarly, there have been suggestions that disorders resembling PDDs may occur among the relatives of people with schizophrenia. Rutter (1985) noted that personality abnormalities known to be genetically linked with schizophrenia were similar in some respects to Asperger's syndrome. Kerbeshian & Burd (1986) suggested that the criteria defining the personality disorder found unusually frequently in the relatives of people with schizophrenia (Kendler *et al*, 1984) may include people with PDDs.

Although Asperger (1944, 1968, 1979; Van Krevelen & Kuipers, 1962; Van Krevelen, 1971) found that the development of schizophrenia was rare in people with the syndrome later given his name, it is now apparent that people with PDDs may develop psychotic illnesses in adolescence or as adults. Classifications of pervasive developmental disorders need to take account of the possibility of superadded functional psychoses.

DSM-III-R is an improvement on its predecessor in this respect, although in other respects it is unsatisfactory; PDDs are not considered in the section dealing with the differential diagnosis of schizoid and schizotypal personality disorders, and the classification of PDDs does not recognise childhood disintegrative disorders as discrete entities. DSM-III-R employs a hierarchical approach to the diagnosis of PDDs and adult personality disorders, although research has not established whether PDDs, schizoid personality disorder and schizotypal personality disorder are distinct diagnostic entities or extremes in a continuum (with pervasive developmental disorders of childhood at one pole and schizoid personality disorders diagnosed for the first time in adult life at the other). The proposed ICD-10 also has deficiencies, particularly the unclear distinction between adult and childhood schizoid personality disorders. Further research needs to be directed to the clearer definition of these disorders, and to the nature of their relationship with schizophrenia and other psychoses.

Until these relationships have been clarified we suggest that when the predominant clinical features are solely the avoidance of (or indifference to) social relationships and a restricted range of emotional expression, then a diagnosis of schizoid personality disorder should be considered. When abnormalities in social functioning develop in infancy or early childhood, and are accompanied by abnormalities of speech or the use of non-verbal communication (or by an inability to tailor the use of language to the social context), and by a restricted, stereotyped, idiosyncratic repertoire of interests and activities, then the diagnosis of a pervasive developmental disorder should be considered.

The patients described above illustrate an aspect of PDDs which is of particular interest for general psychiatrists; pervasive developmental disorders may be complicated by psychotic illnesses presenting in adulthood, or may be mistaken for them.

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* David J. Clarke, MB ChB, MRCPsych, *Clinical Lecturer, University of Birmingham, Department of Psychiatry, Queen Elizabeth Hospital, Birmingham B15 2TH*; Carl S. Littlejohns, MB ChB, MRCPsych, *formerly Registrar, Monyhull Hospital, Birmingham, now Senior Registrar, North Wales Hospital, Denbigh, Clwyd*; John A. Corbett, MB BS, FRCPsych, MRCP, DPM, DCH, *Professor of Mental Handicap, University of Birmingham, Lea Castle Hospital, Wolverley, Kidderminster DY10 3PP*; Susan Joseph, MB BS, MRCPsych, DPM, *formerly Senior Registrar, Monyhull Hospital, Birmingham, now Consultant Psychiatrist, Tilworth Grange Hospital, Saltshouse Road, Hull*

*Correspondence