Schizophrenia in Children: A Review of European Research

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Abstract

European literature on childhood schizophrenia is divergent and vast. The topic itself is controversial and complex. The article reviews selected European literature on childhood schizophrenia and presents the most important trends of research from the literature. Extensive work has been devoted in tracing and defining the boundaries of childhood schizophrenia from infantile psychosis, autism, organic psychoses, and borderline states, and of mapping out the condition. The factor of development as an important variable when studying diagnostic criteria and the course of the condition was singled out by many researchers. The evidence from the research on etiological factors was also reviewed, and most authors seem to agree on a nature-nurture interaction model. The different treatment modalities and approaches are also presented and discussed. Finally, a proposal is made for comparative studies to be carried out that will cover course and followup.

The term "schizophrenia" as originally used by Bleuler is not a clearly defined concept. Classification and diagnosis of adult schizophrenia has always been a controversial issue, and different countries have established varying principles for its recognition at different times. In childhood schizophrenia, the situation has been even more complex. The European literature on the subject is divergent and vast, and the task of integrating it has been both exciting and rather arduous. Collecting the bibliography was particularly difficult, and in some cases it was either impossible to obtain the literature or to have it translated from so many different languages. The present article is therefore a review of selected literature and an attempt to present and integrate the major issues of European research on the subject of childhood schizophrenia. The aim has been to present, from the numerous articles available, the most representative rather than to attempt a critical review of the studies. References to the non-European literature are made when indicated. Research on the biochemical and neurophysiological factors in the etiology of childhood schizophrenia has not been included because it represents an extensive area in itself.

Typology and Classification

Historically, research in this area has consisted of an attempt (1) to describe a variety of clinical syndromes of childhood psychoses and (2) to distinguish autism from them. This, in turn, has been followed by attempts to provide a system of classification for childhood psychosis and to work more specifically to develop diagnostic criteria for childhood schizophrenia.

It was de Sanctis (1908) who first described a group of children with abnormalities such as developmental regression, grimacing, and negativism, and applied the term "dementia praecocissima" to them. He distinguished these children from the mentally subnormal and attempted to relate their conditions: to the entity of dementia praecox in adults as described by Kraepelin. This was followed by a number of publications both in Europe and the United States in which various
clinical syndromes were described and assigned different names coming under the category of childhood schizophrenia. Some examples are early infantile autism (Kanner 1943), symbiotic psychosis (Mahler 1952), and catatonic psychosis of idiocy (Earl 1936). So it appears that childhood schizophrenia has been used as an umbrella term to include a variety of disorders which resemble each other only in their severity, chronicity, and occurrence in childhood.

From the beginning, a great deal of the research centered around the development of objective criteria that would identify different nosological entities within the broad group of disorders classified under the term “childhood schizophrenia.” It was Kanner (1943) who, in his now classic article, first described the condition of early infantile autism. During the same period, Asperger (1944) described the condition of autistic psychopathy, while Russian researchers (Gilyarovski 1929; Sukhareva 1937; Simson 1948) were working on a variety of syndromes which they classified under childhood schizophrenia.

In Europe the first real attempts to differentiate among the disorders included under the term “childhood schizophrenia” were made by Anthony (1958a, 1958b). He was working in the broad field of infantile psychosis, which was considered the earliest form of schizophrenia. Anthony tried to include various syndromes and proposed a classificatory system consisting of the following three groups of childhood psychoses: Group 1—Early onset and slow chronic course. The syndromes included here are Kanner’s (1943) early infantile autism, Bender’s (1947) pseudodefective type, and Despert’s (1938) no onset type. Group 2—Onset at 3 to 5 years and acute course followed by massive regression. Here, Heller’s (1930) disease, de Sanctis’ (1908) dementia precocissima, Bender’s (1947) pseudoneurotic, Despert’s (1938) acute onset type, and Mahler’s (1952) symbiotic psychosis are included. Group 3—Onset in the middle and late years of childhood and fluctuating, subacute course. This group included Bender’s (1947) pseudopsychopathic type.

Meanwhile, in England, a “working party” was formed to study the schizophrenic syndrome of childhood (Creak 1961). They proposed the following nine characteristics as being specific to this syndrome: (1) A gross and sustained inability to relate normally to people under all circumstances. (2) An apparent unawareness of personal identity to a degree inappropriate to age. (3) A pathological preoccupation with particular objects. (4) A sustained resistance to change in the environment and a striving to maintain or restore sameness. (5) Abnormal responses to sensory experience in the absence of discernible organic abnormality. (6) A tendency to disintegrate into utter confusion every time the precariously maintained pattern of sameness is interrupted. (7) A relatively high frequency of speech disorders ranging from mutism to echolalic and repetitive speech. (8) Motor disturbances which are not accompanied by clear-cut demonstrable signs, the emphasis being on erratic functioning rather than on any neurological disorder. (9) A general background of low functioning in which islets of normal, near normal, or exceptional intellectual functioning or skill appear.

This list of characteristics, even though comprehensive, does not establish the relative importance of each in making a diagnosis. In addition, these criteria include most types of disturbed behavior observed in children, i.e., emotional, psychomotor, communicative, and developmental, and are therefore not necessarily specific to childhood schizophrenia.

Further research in England (Wolf and Chess 1964, 1965; Rutter 1966; Wing 1966; Rutter, Greenfield, and Lockyer 1967) addressed the subject of childhood psychosis and dealt with three basic issues that seemed particularly important. One was the question of intelligence and whether children with mental deficiency, with or without evidence of cerebral disorder, should be classified under childhood psychosis. The second question was whether infantile autism should be considered a subtype of childhood schizophrenia, and the third was whether childhood schizophrenia should be considered an early form of adult schizophrenia.

A considerable number of publications dealt with the second issue, that of autism. The initial opinion that autism is essentially the same condition as adult schizophrenia was based mainly on observations of similarities in the symptomatology of the two conditions (O’Gorman 1958) and on the observation that one of the key features in both is a difficulty with interpersonal relationships. In the United States, however, Eisenberg, as early as 1957, had emphasized the lack of uniformity in criteria for diagnosis and the need for specification of the criteria in future clinical reports. Later, Rutter (1968) cited clinical and research data to argue, rather convincingly, that autism is different from schizophrenia. (A detailed description of these differences is presented below in the section on “Differential Diagnosis.”) Many authors, in their attempts to provide a comprehensive
classificatory system, emphasized the importance of age of onset in their typologies (Bender 1947; Mahler 1952; Anthony 1958a, 1958b). It was Kolvin et al. (1971a), however, who undertook a systematic study comparing infantile psychosis (IP) and late onset psychosis (LOP) in an attempt to establish differential criteria for the two conditions. For the IP group, age of onset was below 5; for the LOP group, it was 13 years and over, although there were some children with age of onset between 7 and 13 years of age. The findings of this study confirmed earlier reports that early and late childhood psychosis are fundamentally different in age of onset, symptom patterns, family and social background, family history of evidence of schizophrenia, evidence of cerebral dysfunction, and level of intelligence (Kolvin 1971).

Both Rutter (1968, 1972) and Kolvin (1971) argue that children with an early onset of psychotic symptoms belong to a diagnostic category distinct from schizophrenia as seen in later childhood. They also propose that there is discontinuity between early childhood psychosis and childhood schizophrenia, and suggest that schizophrenia may begin with psychotic symptoms in later childhood which, however, are rarely overt before the age of 7 or 8 years. They claim that childhood schizophrenia is not a continuous process that can start in early infancy and continue into adulthood.

French-speaking writers have addressed the issue of childhood schizophrenia under the terms "psychose" and "schizophrenie infantile." Their classification also uses age of onset as a criterion, as well as the fact that the schizophrenic condition is also marked by a regression to a previous stage of affective development (Ajuriaguerra 1970; Soulé, Houzel, and Bollaert 1976; Palacio-Espasa 1980). The Kleinian claim that childhood schizophrenia is a form of regressive secondary autism (Tustin 1972) is well accepted by most psychoanalytically oriented French psychiatrists. They state that the confusion in terminology has arisen from the fact that in the classification of childhood psychoses the etiology of the disease is confounded with the symptomatology.

Generally, most French-speaking writers (Michaux et al. 1971; Dophe 1973; Goudemand et al. 1981) agree on the term "early psychosis" when onset occurs under 5 or 6 years of age and on the term "late psychosis" when the age of onset is between 6 and 10 years. Childhood schizophrenia is classified under the latter. Dophe (1973) places childhood schizophrenia under the category of "psychoses de structuration."

It is worth mentioning, however, that Soulé, Houzel, and Bollaert (1976), although suggesting five distinct syndromes of childhood psychosis, do not include childhood schizophrenia under any of them.

The work described so far is relevant to the problems of classification of childhood schizophrenia. Rutter (1972) discussed the drawbacks of an etiological classification, a scheme proposed by Eisenberg (1966), and suggested the use of a multi-axial approach to classification that could combine the merits of functional and descriptive diagnosis. This multi-axial system, which was developed at a World Health Organization seminar (Rutter et al. 1969), separated the different dimensions of diagnosis into individual axes and provided specific rules to ensure their use in a systematic and standard manner. The most recent revision of the multi-axial system of classification (Rutter, Shaffer, and Sturge 1975) comprises the following five axes: (1) clinical psychiatric syndrome; (2) specific delays in development; (3) intellectual level; (4) medical conditions including any associated biological or etiological factors; and (5) abnormal psychosocial situations. In this system, childhood schizophrenia comes under the category "psychoses with origin specific to childhood" (299), and it is stated that this category should be used only for psychosis that begins before puberty. This general category includes infantile autism (299.0), disintegrative psychosis (299.1), other psychosis (299.8), and unspecified psychosis (299.9). In this last subcategory, both schizophrenia childhood type (not otherwise specified—NOS) and schizophrenic syndrome of childhood are included. Excluded from this last category is schizophrenia of adult type occurring in childhood (293.0-295.8). This classification system has several advantages because it allows the description of a condition on different axes and allows separate consideration of important factors such as symptomatology, developmental delays, and intelligence level. This approach is particularly useful not only for diagnostic purposes but also for cross-cultural research so that comparisons can be made among groups of children who exhibit differing combinations of those factors.

### Diagnostic Criteria and Symptomatology of Childhood Schizophrenia

As early as 1942, Schneider, in his classic work on adult schizophrenia, proposed the following as first-rank symptoms of schizophrenia: hearing
thoughts spoken aloud, hearing voices talking to each other that comment on the behavior of the patient, feelings of influence on bodily functions, thought interference, thought stealing, communication of own thoughts to another, and feelings of being influenced from the outside world with regard to emotions, drives, and volition. These symptoms have been proposed to be pathognomonic for adult schizophrenia (Potter 1933; Fish 1962). The International Pilot Study of Schizophrenia (World Health Organization 1973) broadly confirmed their usefulness in differentiating schizophrenia from other disorders. Kolvin (1972) proposed criteria—based on Schneider's first-rank symptoms—that could describe, in terms of symptom frequency, psychotic behavior in children similar to that in adult schizophrenia. Three major groups of symptoms that could be used as diagnostic criteria were identified. The symptoms most frequently described were hallucinations, mannerisms, and an inclination of the ill child to give partial answers to questions. The next group of symptoms comprised disorders of thought (content, association, and thought blocking), and the third group consisted of disorders of affect (incongruity and blunting), drive, and volition.

More specifically, in the major study mentioned earlier (Kolvin et al. 1971a), the disorder of thought association and thought blocking was present in 60 percent of the LOP group. In addition, 80 percent of the same group displayed auditory hallucinations, while 48 percent had visual or bodily hallucinations in addition to auditory ones. It is important to note that no child had visual or bodily hallucinations without auditory ones. Blunting of affect was present in 63 percent of the cases, while mannerisms and jerky movements were present in 80 percent and 60 percent of the sample, respectively. In some cases, significant differences in the frequency of the symptoms between the LOP and IP groups emphasized the discontinuity between these conditions. (For a discussion of these differences, see the section on "Differential Diagnosis").

Most French-speaking writers do not discuss childhood schizophrenia separately from other late onset psychoses of childhood. Although Henny (1970) believes that adult schizophrenia has its genetic roots in childhood, he uses Creak's (1961) nine criteria for the diagnosis of childhood schizophrenia.

In the French literature the criterion that is most discussed in accepting the diagnosis of childhood psychosis is the barrier and difficulty in the child's relation to reality (Kestenbaum 1978). Dopchie (1973) suggests that the diagnosis should be based on (1) the symptomatology, (2) the structure of personality, and (3) the development of the disorder, which encompasses both age of onset and course of illness. Soulé, Houzel, and Bollaert (1976) insist that the diagnosis should be based on the clinical description of symptomatology, while Palacio-Espasa (1980) emphasizes the role of disturbances of the symbolic function.

There is, however, an altogether different trend in European research on childhood schizophrenia in which schizophrenia is considered a single nosological entity. One of the main European representatives of this line of thought is Vrono (1974), who has done extensive work on the subject in the U.S.S.R. and is also representative of other writers from Eastern countries. He states that "from the first investigations in this area, Russian psychiatrists . . . have viewed childhood schizophrenia as a single nosological entity, defined by the same criteria as other mental illnesses, namely, common etiology, pathogenesis, clinical picture, course and outcome" (Vrono 1974, p. 10; emphasis added).

Vrono's (1974) major study included 200 cases with a followup period of 5–20 years. The age distribution of his sample was as follows: in 21 percent the illness began before the age of 5, in 9 percent of the cases between 5 and 9 years of age, and in 70 percent of the cases between 10 and 16 years of age. He distinguished three types of onset (gradual, subacute, and acute) and emphasized the difficulty in differentiating between premorbid personality features and psychotic features, a difficulty also encountered by Kolvin and his colleagues. In describing the various types of the disease, Vrono considered phenomenology along Kraepelinian lines, age of onset, and course of the development of the disorder as diagnostic criteria.

Vrono examined the clinical features of the illness in the following three age groups: children up to the age of 9, children 10–12 years (prepubertal), and children 13–16 years of age (pubertal). The clinical features described in the first two age groups, which deal with preadolescents, are summarized below:

Age: 0–9 years

1. Episodic progressive course: a combination of continuous and intermittent symptoms with a period of a well-defined "schub." \(^1\)

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\(^1\) The Russian word comes from the German "schub" and denotes those acute events in schizophrenia that gradually abate but leave a lasting change or a schizophrenic defect.\n
2. Subacute onset: symptoms appear simultaneously or against a background of gradually developing personality symptoms. There is a polymorphism with a characteristic fear syndrome where the child may develop obsessive fears of darkness, solitude, or disease and where catatonic motor and speech disorders are extremely common. Psychotic symptoms such as hallucinations and delusions are rarely encountered in the initial period of childhood schizophrenia.

3. Recurrent course: a remissive or recurrent course which is rarely encountered.

4. Acute onset: the most frequent manifestations are sudden, fleeting states of fear with tension and anxiety, and occasionally attacks of panic, which may be accompanied by terrifying visual hallucinations. In other cases, the acute onset may be manifested by states of motor excitement.

Generally it can be said that various kinds of disorders have been included in this age group, some of which are indistinguishable from early infantile autism, brain syndromes, or severe neurotic problems. Some of the essential features of this group are the absence of hallucinations and delusions, and the presence of negative symptoms. In addition, although Vrono distinguished several subtypes of schizophrenia in this age group and his descriptions are very detailed, it is hard to determine whether the conditions described fall into a homogeneous group of disorders or not.

Age: 10–12 years

1. Continuous sluggish course: characterized by a gradual development of pathological symptoms without marked exacerbations or clear remissions. Early symptoms are marked by a profound change in the child's perception of himself and the world, with signs of a progressive deterioration of personality. The clinical picture is dominated by the emergence of negative symptoms. Positive symptoms appear in indistinct form, and the total picture resembles that of the simple type of schizophrenia.

2. Continuous, progressive course: a predominance of delusional and paranoid thinking where the process progresses moderately throughout the illness.

3. Recurrent course: rare in prepuberty and characterized by an acute onset dominated by disturbances in mood and a variety of positive symptoms. Later in the course of the illness, the attacks become less acute and a "transformation" of the syndrome can take place.

4. Episodic progressive: includes types with polymorphous attacks. The clinical picture is characterized by disturbances of affect such as hypomanic states with delusional fantasies or depressive states with obsessive-compulsive symptomatology.

Vrono's extensive study can be criticized on several grounds. Even though his work is a study on childhood schizophrenia, his sample includes a variety of disorders such as autism, brain syndromes, and severe neurosis. It appears that Vrono's main thesis is that schizophrenia is a single process beginning at an early age in which age differences produce changes in the clinical picture. This position directly opposes that of Rutter and Kolvin, who both maintain that early childhood psychosis is different from schizophrenia. Kolvin (1974), in his review of Vrono's work, notes a lack of clearly defined diagnostic criteria in Vrono's classificatory system. Because Vrono provides a long list of well-described symptoms but no symptom frequency analysis, Kolvin suggests that it is difficult to work out accurately how the various subgroups can be distinguished from each other. Consequently, if one were to compare findings from different cultures and include Vrono's findings, the validity of such a comparison would be questionable. However, Kolvin adds that the descriptive methods used by the Soviet investigators who follow the approach of Kraepelin are complementary to the quantitative methods used by English researchers.

Lebovici (1977) noted the similarities between Vrono's descriptions and his own and those of other authors in France, especially regarding oddities of speech in autistic children and their paradoxical attitudes. He emphasized that even though the severe and bizarre phobic symptoms in childhood described by Vrono may suggest the emergence of a schizophrenic psychosis, it is still difficult to determine pathology solely on the basis of such symptoms. He disagrees with Vrono's claim that the symptoms observed in children are an early or attenuated form of those observed in adult schizophrenics. Lebovici also supports the view of a discontinuity between early childhood psychosis and childhood schizophrenia, especially for the progressive and intermittent forms in which autistic children could be included. However, Lebovici does not seem to consider that early childhood psychosis is altogether different from childhood schizophrenia, even though he mentions in his article that early childhood psychosis does not always develop into schizophrenia. Lebovici also
suggests a reclassification that would place all cases of childhood psychosis under a single heading, irrespective of their clinical manifestations, and adds that this classification need not make any presumptions about the child's future. It seems that Lebovici's somewhat contradictory views highlight the uncertainty that still prevails in some areas in the field of childhood psychosis. However, his argument for the definition of objective criteria for diagnostic and research purposes is very important.

In a later French publication, Seabra-Denis (1975), reviewing the Russian approach, emphasized that the form of the development of the disease should be taken into account and distinguished the following three forms of development: (1) progressive-continuous, (2) intermittent, and (3) attack-like.

Along similar lines, and long before Vrono, Ushakov (1965, 1966) had reported on the symptomatology and the clinical peculiarities of childhood schizophrenia. He systematized them by grouping them into the following five categories: (1) compulsive automatisms, (2) coenostopathic interpretations, (3) affective dissociations, (4) associations of personality reactions, and (5) autism. Ushakov described three forms of the disease: (a) periodic forms with a short initial period of illness, (b) acute and subacute forms lasting for a period of up to 5 years, and (c) forms with a creeping course of development and a long period of onset. Pogády and Hasko (1975) from Czechoslovakia also consider schizophrenia a uniform disease, regardless of age. It is worth noting that in a sample of 114 children and adolescents hospitalized for the first time, 74 percent of the cases were difficult to classify because they presented a less differentiated, atypical psychopathological syndrome. In both studies, the age of onset of the disease was not clearly specified and the diagnostic criteria were not clearly defined. Therefore, Kolvin's criticism of Vrono's work can equally apply to the studies of Ushakov (1965) and Pogády and Hasko (1975).

Similar difficulties in diagnosing schizophrenia have been encountered in other European countries. In Germany, Nowak-Vogl (1979) noted that although there has been an increase in the number of children diagnosed as schizophrenic in German-speaking countries, there is an increased need to establish clearer and more objective criteria for doing so. He also criticized the fact that the main criterion used has been the child's inability to show empathy (Uneinfühlbarkeit). This criterion itself needs to be defined, since the determination of its presence or absence depends on the subjective interpretation of the clinician.

Another major issue in the diagnosis of childhood schizophrenia is that of changes in the clinical picture that occur with advancing age. Kolvin (1972) argues that a child of primary school age exhibits symptoms which are both simple and crude, but that as the child gets older the symptomatology becomes more complex and systematized. Similarly, Van Krevelen (1971b) notes that even though in the fully established state the symptoms resemble those of adult schizophrenics, they are somewhat transient, less elaborate, and not systematized. Vrono (1980) also emphasized the need to use a comparative-age approach to the study of schizophrenia.

Other investigators have also studied this issue. Nissen (1971), a German author, in a followup examination of a group of depressive children who grew up under extremely unfavorable conditions, found that 8.6 percent of them were diagnosed as schizophrenic in adult life. Similarly, in a study carried out in Vienna (Friedrich and Leixnering 1980), a comparison of Bleuler's, Scheider's, and Berner's criteria for the diagnosis of psychosis was made. Twenty-eight adolescent psychotic patients were observed and supervised for up to 5 years. When Bleuler's criteria were used, a change of diagnosis was noted over time. They found that the 22 cases of schizophrenia and the 6 cases of affective psychosis changed into 16 cases of schizophrenia, 8 cases of affective psychosis, and 4 cases of a borderline condition. When Berner's criteria were used, the 14 cases of endomorphic cyclothymia remained the same, while 13 of the 14 cases of endomorphic schizophrenic psychosis remained the same and only one diagnosis was changed to schizo-affective. Finally, when Schneider's criteria were used, all nine patients diagnosed as schizophrenic remained the same. These findings are somewhat difficult to interpret. They may suggest that Schneider's criteria are more clearly defined so that diagnosis remained the same with advancing age. On the other hand, one might attribute the differences simply to the differences involved in the sizes of the samples (the larger the sample, the greater the probability of a change of diagnosis with time). Problems in diagnosis and the issue of change of diagnosis over time can probably be clarified if adequately defined criteria are used and the necessary reliability studies are carried out.

It appears that the complexity and systematization of symptoms depend on three main factors (age, verbal ability, and intelligence of the child),
all of which must be taken into account in further research in the area of diagnosis in childhood schizophrenia.

**Incidence and Sex Ratios**

It seems that childhood schizophrenia is a rather rare condition: therefore, its incidence is rarely reported in the literature. It took Kolvin (1972) several years to collect 33 cases. Once again, the importance of establishing clear-cut diagnostic criteria cannot be underestimated. It could be argued that as long as all the psychotic disorders of childhood are grouped together, it is difficult to speak of the true incidence of the condition. On the other hand, in the case of conditions that are more clearly defined such as early infantile autism, there have been a number of studies (Lotter 1966; Brask 1970; Wing et al. 1976) reporting the prevalence of the condition.

As far as the sex ratio in childhood schizophrenia is concerned, Kolvin et al. (1971b) reported that boys outnumber girls 2.5:1. Similar findings have been reported in studies of adolescents, where boys also seem to outnumber girls (Steinberg 1976). However, Russian researchers such as Sukhareva and Kogan (1933) and Vrono (1974) do not report this difference. This could be due to variations in the definition and diagnostic criteria used.

**Differential Diagnosis**

A major issue closely related to diagnosis is that of differential diagnosis between schizophrenia and other conditions, and there is a substantial amount of literature related to this problem. The following conditions are dealt with separately in this section: autism, autistic psychopathy, schizophrenia with developmental disorder, progressive disintegrative psychosis, schizoid personality, borderline conditions, and "other."

Seven basic differences between autism and childhood schizophrenia have been extensively discussed by Rutter (1968) and Kolvin (1971, 1972).

1. A difference in the clinical features, i.e., hallucinations and delusions are common in childhood schizophrenia (Rutter 1968; Kolvin et al. 1971a) but are seldom present in autism. On the contrary, gaze avoidance, stereotypies, resistance to change, and insistence on sameness, as well as serious delays in speech and communication, are characteristic of autism but infrequent in childhood schizophrenia.

2. A difference in sex ratio, i.e., in autism boys outnumber girls 4:1 (Rutter 1968), while in childhood schizophrenia boys outnumber girls by a lower 2.5:1 (Kolvin et al. 1971b). It should be noted that no such differences are reported in adult schizophrenia, where the sex ratio is approximately equal (Mayer-Gross, Slater, and Roth 1955).

3. A difference in the family’s social background. Autism is frequent in the upper socioeconomic class (Lotter 1967), while childhood schizophrenia is frequent in middle or lower socioeconomic classes (Kolvin et al. 1971b). However, the findings regarding the social class of the parents of autistic children have recently been challenged by Lorna Wing (1980), who suggests that these results might be due to an artifact of referral policies and diagnosis.

4. A difference in the family history of the children. Schizophrenia is rarely present in the parents or siblings of autistic children (Creak and Ini 1960; Rutter 1967), while its occurrence is significantly higher in the families of schizophrenic children (Kolvin et al. 1971b).

5. A difference in the intellectual development of the children. Autistic children have been reported to have a low level of intellectual functioning, with a large percentage having IQs below 70 (Rutter and Lockyer 1967; Kolvin, Garside, and Kidd 1971). Schizophrenic children are reported to have higher IQs than autistic children, even though there is a tendency toward intellectual dullness (Kolvin 1972).

6. Perinatal complications and evidence of cerebral dysfunction such as abnormal electroencephalographic findings. They are present more frequently in autism than in childhood schizophrenia (Kolvin, Dunsted, and Roth 1971).

7. An excess of oddities in the personalities of the parents. They are more common in the parents of schizophrenic children than in the parents of autistic children (Kolvin, Garside, and Kidd 1971).

Some of the differences between autism and schizophrenia could be attributed to the difference in the age of onset in the two conditions, as suggested by Vrono (1980). However, the differences in sex ratio, family history, and social class are somewhat harder to explain.

Two related studies by Cox et al. (1975) and Bartak, Rutter, and Cox (1975) compared a group of autistic boys with a matched sample of boys with severe developmental or receptive language disorders. The findings showed no differences between the two groups with respect to parental warmth, sociability, demonstration of emotions, responsiveness, and presence or absence of parental psychiatric disorder.

Schizophrenia must also be differentiated from the syndrome of autistic psychopathy, first described...
disorder of emotions, behavior and speech together with a severe psychiatric picture with advancing age. In Sweden, Aarkrog (1973) discussed the problems of differential diagnosis between infantile borderline cases and schizophrenia with a slow and insidious onset. In Denmark, Brask (1959, 1970) and Aarkrog (1973) have described the borderline condition, which they view as often being a transitional form toward infantile psychosis. In the borderline states, contact is not decidedly autistic, and reality evaluation is not entirely lacking, so that there are more areas of personality intact than there are in infantile psychosis. Brask (1970) indicates that borderline psychoses are characterized by a fluctuating "functional level." In addition, Chilland and Lebovici (1974) describe borderline states in early infancy and during the latency period. In the early period the children are described as agitated, irritable, and hyperkinetic. During later years, the children may be irritable and create a lot of discipline problems at school; or they may be extremely inhibited and reach the level of mutism outside the family. They may also present bizarre phobias (Lebovici and Diatkine 1963). These researchers also suggest, as Aarkrog does, that certain areas of functioning such as intellectual development and satisfactory school performance remain intact in spite of the presence of anxiety and multiple bizarre symptoms that undoubtedly are outside the range of neurotic symptomatology. Kovalev (1980) also discusses difficulties in the differential diagnosis between a slowly progressing schizophrenia and borderline, neurotic, and residual-organic states with pseudoautistic traits. He lists a series of problems of psychopathology and symptomatology, and suggests that these may be related to changes in the clinical picture with advancing age. In addition, French-speaking writers,
mostly psychoanalytically oriented (Ajuriaguerra 1970; Wiener 1978; Palacio-Espasa 1980), have been particularly concerned with the early stages of emotional development and its role in differential diagnosis. The syndromes dealt with in their writings are autism, symbiotic psychosis, “psychoses à l'évolution déficitaire,” and serious developmental disarray. Mises and Barande (1963) and Ajuriaguerra (1970) also note the difficulties that arise when there is an organic dysfunction on which psychotic manifestations are organized.

Other relatively rare conditions may present problems in differential diagnosis—for example, acute psychotic-like episodes in childhood which might have been induced by drugs such as amphetamine (Connell 1958) or artane (Black and Woollacott 1974). Differential diagnosis should also be made from celiac disease (Challacamebe 1971), which may be accompanied by disorders of affect such as irritability, moroseness, apathy, and depression. These symptoms appear in children aged 1–3 years—the age itself excludes the possibility of schizophrenia—and usually disappear when a gluten-free diet is instituted. The rare acute forms of childhood schizophrenia must also be differentiated from the equally rare manic-depressive psychoses of childhood (Anthony and Scott 1960). Finally, Kolvin (1971) and Rutter (1972) argue that schizophrenia as we know it in adults can begin in childhood. They have gathered a substantial amount of evidence to support the claim that schizophrenia does occur in children and that its onset may be at 7 years of age or earlier. Rutter has even suggested that the term “schizophrenia” is in itself adequate and that there is no need to add the adjective “childhood.” This thesis has been disputed mainly by American writers such as Bender (1971) and Miller (1974). However, Rutter (1978) argued that conflicting evidence has derived primarily from studies that either failed to make systematic comparisons by age of onset (Ornitz 1971; Bomberg, Szurek, and Etemad 1973) or used broad definitions of schizophrenia (Bender 1947, 1960). Similar criticisms of Vroono’s (1974) work have been made by Kolvin (1974).

**Etiological Factors: Pathogenesis**

**Genetic Studies.** Although genetic research and family studies of adult schizophrenics and autistic children abound in the literature, there seem to be very few studies of the families of psychotic children with a late age of onset of psychosis. The idea of a genetic basis for schizophrenia has evoked controversy because of doubts about the validity of twin studies flawed by limitations in sampling and methodology. Although adoption studies conducted in Denmark provide overwhelming evidence of the substantial role of genetic factors in the origin of schizophrenic disorders (Kety et al. 1968; Wender et al. 1974), uncertainty still prevails regarding the mode of transmission and what is actually inherited (Shields, Heston, and Gottesman 1975), i.e., a pathological personality trait or a special vulnerability to the disease. More recently, Kety (1980) has suggested that the findings of the adoption studies give additional credibility to the etiological diversity of schizophrenia. He has proposed a model in which there is a single major locus of intermediate dominance (earlier suggested by Slater 1958) with 15 percent of schizophrenics as phenocopies, 1–2 percent as homozygotes, 84 percent as heterozygotes, and a penetrance of 46 percent and 23 percent in homozygotes and heterozygotes, respectively.

Carlier (1980) has undertaken an extensive description and critique of the studies that have used the method of adoption to isolate the genetic factor involved in schizophrenic psychosis. Her main conclusion is that very few studies have developed an adequate methodology for answering the crucial question. Her most important criticisms of these studies are (1) the lack of control of the age of separation of the child from the ill parent, (2) the method chosen for arriving at the diagnosis, and (3) the failure, in most studies, to report the age at which the diagnosis of mental disturbance in the children was made. She concludes that most studies to date agree that there is a genetic etiology in schizophrenia (adult and childhood), but there is not enough evidence of a direct genetic causal effect. Her conclusions are in agreement with those of other French-speaking writers, who maintain that although there are more disturbed children in families of psychotic parents, there is still no conclusive evidence that childhood schizophrenia is genetically transmitted (Gayral 1973; Bourgeois, Malarrive, and Charruand 1974; Goundemand et al. 1981). In another article, Carlier and Koubertoux (1979) maintain that even if a strong influence from family-environmental factors in childhood psychoses were demonstrated, a genetic analysis would still be useful and complementary. They conclude that psychoses of the schizophrenic type are marked by genetic heterogeneity.

**Family Studies.** The samples of the studies reviewed in this section are not strictly restricted to children, but the findings are included because
they highlight important issues in this area. Many theorists have suggested that schizophrenia arises as a result of disturbed parent-child relationships, and a great deal of research has been done in this field, especially in the United States (Bateson et al. 1956; Lidz 1958; Wynne et al. 1958). In these studies, the deviance of the individual is regarded as a manifestation of disturbed family relationships.

In Finland, Alanen (1958) studied 100 mothers of young schizophrenics and found that these mothers were domineering, possessive, and unable to understand the needs of their children. Furthermore, they behaved differently toward their sons than toward their daughters—being "possessively protective" toward the former and "inimically protective" toward the latter. In a later study, Alanen (1966) examined 30 families of schizophrenics in comparison to a control group of 30 families of neurotics. He distinguished two types of families in the group of schizophrenics: "chaotic" and "rigid." Parents in the rigid families were possessive and restrictive, whereas the boundaries between the different members of the chaotic families were unclear. However, Alanen did not claim that there was a direct cause and effect relationship between parental behavior and schizophrenia in the offspring.

In England, Hirsch and Leff (1975) attempted to replicate the findings of Wynne and Singer (1963), and Wynne (1968), who used a special method of scoring the transcripts of Rorschach tests of parents to study family communication patterns. Wynne and Singer found marked differences between the parents of schizophrenics and the parents of neurotics and normals, but Hirsch and Leff were unable to confirm these findings. Hirsch and Leff reported that the fathers of schizophrenics talked more than the fathers of neurotics. They also observed minor but statistically significant differences in communication deviance, as had been found earlier by Wynne and Singer. However, when Hirsch and Leff took into account the greater talkativeness of the parents of schizophrenics, the difference between the groups disappeared. Hirsch and Leff's results do not confirm Wynne and Singer's "transactional" hypothesis of the etiology of schizophrenia. It seems likely that the differences may be the result of selective referral biases or diagnostic disparity.

Another group of researchers (Blakar, Paulsen, and Selberg 1978) studied communication in schizophrenics from a social-cognitive viewpoint. They reported that families containing a schizophrenic member communicated less effectively in conflict situations than their controls.

In a review of the literature on the parental factors involved in schizophrenia, Hirsch (1979) concluded that there is no evidence of a direct causal effect and that the findings are controversial. He considered it important, however, especially for clinical purposes, to take into account the elements of stress-producing behavior in the parents of schizophrenic children.

One of the drawbacks of the studies on family interactions is that observations are made after the first or repeated hospitalizations of the schizophrenic offspring. Thus, it is difficult to determine whether the observed family communication patterns developed in response to the "ill" member or were present before the onset of "illness." This methodological problem might be obviated in future prospective studies.

In a related study in Germany (Schwoon and Angermeyer 1980), the reactions of families whose sons had been hospitalized for the first time with schizophrenia were compared with those whose sons had been hospitalized for surgical treatment. A personality questionnaire was used to assess how three family members (father, mother, and son) viewed themselves and each other. In the families with a schizophrenic son, the father-son relationship differed from that in the control families. This difference was attributed to the reaction of the father to the "deviant" behavior of the son, who did not conform to the father's expectations regarding male sex roles. The responses of the mother partially supported this conclusion.

A series of studies in England (Brown and Birley 1968) explored the role of psychosocial factors in the precipitation of schizophrenia and in the course of its development. Birley and Brown (1970) demonstrated that during the 3 weeks immediately preceding the first onset or an acute relapse with florid schizophrenic symptoms, there is often a marked increase in the frequency of certain social events in comparison to control groups. Some of the events would be expected to have been experienced as pleasant and others as unpleasant. The time relationships suggest that environmental stress could precipitate psychosis but would not cause psychosis in an otherwise "healthy" individual. This research deals with recent life events that may precipitate schizophrenia in predisposed individuals and does not address the effects parents may have on the children during development.

In Great Britain, the effects of "trauma" in early childhood have been investigated by Stroh (1966, 1974), who studied a group of children with "traumatic psychosis."
These children had been severely traumatized, both physically and mentally, in early childhood. He included them in the category of psychosis because of the intensity and breadth of their disturbance, their faulty adjustment to reality, their grossly distorted or diminished relationships to people, and their sometimes bizarre symptomatology. Even though cruelty and aggression were common in these children, they were able to form a strong bond with an adult caretaker. However, this bond could be easily disrupted. According to Stroh, this was caused by, or at any rate associated with, early episodes of violence which the child had experienced himself, witnessed in his intimate environment, or both. Similar observations have been made by Dockar-Drysdale (1968) in her description of the “frozen” child, and by Rosenfeld (1972). It is possible that these children may fit into the category of borderline psychosis.

The psychoanalytic viewpoint regarding etiological factors in schizophrenia is well represented by the works of Klein (1946), Fairbairn (1952), Winnicott (1952, 1965), and Laing (1967). They view personality and its deviation and disturbances as an outcome of the ways in which we deal with our primitive anxieties during early development. Consequently, the immediate environment—parents, family—plays a considerable role. However, descriptions of systematic investigations testing their hypothesis have not been published.

Most French-speaking writers also discuss the pathogenesis of childhood psychoses in the framework of psychodynamics. Diatkine (1969) stresses the premorbid manifestations of schizophrenia and mentions “affective debility” as an important component of childhood psychoses. Kestenbaum (1978) believes that there is no single factor that is more important than others in childhood schizophrenia, and she stresses the importance of psychological factors, along with family, constitutional, neurological, and hereditary factors. Soulé, Houzel, and Bollaert (1976) agree with the pathogenic approach of Klein, Mahler, and Winnicott. Diatkine (1969) gives a good definition of a concept of schizophrenic premorbidity with a psychodynamic structure.

The above descriptions by psychoanalytically oriented authors reflect work stemming primarily from clinical case studies and not from systematic research.

Antecedents or Precursors of Childhood Schizophrenia

There have been many attempts in recent years to identify the precursors (biological and psychosocial) of schizophrenia. It has been suggested that schizophrenia, which may appear in florid forms in late childhood or early adolescence, is often preceded by personality eccentricities and/or oddities. Similarly, there is evidence that individuals who develop schizophrenia as adults have frequently shown abnormalities of a nonpsychotic nature in childhood (Rutter 1972). It is therefore important to try to identify symptoms, personality traits, or other factors such as perinatal complications which may be correlated with schizophrenia.

Bourgeois, Mallarrive, and Charruau (1974) examined children who were reared by psychotic parents and identified three types of problems: (1) precursors of later adult psychoses (including schizophrenia), (2) parapsychotic or “induced” problems (e.g., hallucinations, delirious states), and (3) neurotic, antisocial, and behavioral disorders. They also found that 5–10 percent of the children were “super-normal,” creative, and “colorful.” These investigators concluded that it might be better for children to grow up with parents who have been identified as “ill” and are receiving treatment than with parents who are neurotic, borderline, or rejecting.

In studies in Denmark, Mednick et al. (1974) and Schulsinger and Mednick (1975) found that children at high risk for the development of schizophrenia showed a distinctive psychophysiological response to stress: an unusually marked autonomic reaction, which failed to habituate. The risk of psychiatric disorder was enhanced when, in addition to these psychophysiological characteristics, children were of low birth weight and had an excess of early perinatal complications and early stressful separation experiences. Ajuriaguerra (1970) reported studies in which a rather high percentage of perinatal complications, especially neonatal asphyxia, and traumatic experiences was found among schizophrenic children.

In a later study, Schulsinger (1976) compared a high-risk group of 207 subjects with severely schizophrenic mothers to a matched low-risk group of 104 subjects with no known mental illness in the family. She followed the two groups for over 10 years and reported marked differences between them with regard to type and degree of psychopathology. Almost 9 percent of the 173 fully reassessed subjects (10 years later) were classified as schizophrenics. In the high-risk group, 15 cases were diagnosed as schizophrenic, while in the low-risk group a particularly large number were diagnosed as neurotic and only one case was diagnosed as schizophrenic.
Onset, Course, and Prognosis

The onset and course of the development of schizophrenia have been studied extensively by Russian and German researchers. Vrono (1974) describes gradual, acute, and subacute forms of onset. Similarly, Kolvin (1972) describes types with an insidious onset and a rarer acute onset with florid symptoms. Ushakov (1965), on the basis of an intensive study of 200 schizophrenics aged 13 to 16, was able to establish that for the periodic forms of schizophrenia, the initial period is comparatively short, lasting only days or weeks. For the acute, subacute, paranoid, and hebephrenic forms, it is substantially longer, and it is especially long for the forms characterized by a creeping course. Ushakov suggests that the symptoms are characterized by complications in development which increase with time. Kolvin (1972) also mentions that the content of the symptoms becomes richer with increasing age, and both Vrono (1974) and Kolvin (1974) recognize the difficulty in disentangling remorbid behavioral anomalies from features of a psychotic onset.

Vrono and other Russian writers use four types of course of development of the disorder that are in accord with the classificatory system adopted by the U.S.S.R. Institute of Psychiatry—namely, the continuous sluggish, continuous progressive, episodic progressive, and intermittent recurrent courses of development. Vrono (1980) notes that the continuous sluggish course of development has a favorable prognosis, whereas an unfavorable prognosis is associated with the continuous progressive course, especially when there are exacerbations and protracted episodes without well-defined remissions.

Vrono (1974) distinguishes three broad groups that are related to prognosis by using the rate of personality deterioration as a criterion. First, there is a course of development with gradual and mild personality changes, in which the prognosis is good for the duration of the illness. There is another course of development that is initially favorable but later becomes increasingly unfavorable. Finally, there is a course of development of gross personality defect, and has a poor prognosis.

The question of prognosis has also been addressed by other European writers. Eggers (1973), in Germany, undertook a 20-year follow-up study of 57 schizophrenic children with an age of onset before 14. Eleven children had recovered completely, and about half had improved. The worst prognosis was for children with an onset before 10 years of age and for children with previously abnormal personality characteristics. Above average intelligence and a secure, friendly, and extroverted personality were related to good prognosis. Family history, a disturbed family atmosphere, and type of symptoms were all unrelated to outcome. Albert (1980) reported the follow-up of six cases of infantile schizophrenia over a 27-period. One case diagnosed as periodic catatonia was distinguished from the other cases by a normal development until puberty. The other five cases seemed to suffer from "systematic" catatonia, with a slowly progressive course of development characterized by symptoms resembling autism and psychomotor syndromes.

In another study by Lempp and Vogel (1966), 23 children were treated after being diagnosed as having infantile psychosis. The follow-up period lasted approximately 6½ years. Eleven of these children developed satisfactorily, while 12 required further institutional treatment. Early psychosis with a slow, gradual onset before school age foreshadowed poor prognosis. On
the contrary, prognosis for children with an onset after age 10 was favorable. In the last two studies, it was suggested that the schizophrenic child is frequently an only child.

In a followup study, the Russian writer Bashiva (1980) examined 222 patients with early childhood schizophrenia, including 102 patients with attack-like, slowly progressive schizophrenia. The forms of schizophrenia with onset in early childhood showed a distinct stability. Bashiva suggested that a variation in progression is inherent in each form of the disorder but the greatest variation is found within the range of the attack-like, slowly progressive type of schizophrenia.

From the work cited above, it can be generally concluded that prognosis is better for the acute and florid forms than for the insidiously developing ones.

**Treatment**

Schizophrenia in children is a complex disorder caused by an interaction between an adverse psychosocial environment and a genetically determined vulnerability. Treatment studies address both of these factors.

In reference to drug treatment, Kolvin (1972) suggests that phenothiazines often lead to the rapid disappearance of florid symptoms and to an arrest of the schizophrenic process. Bovet du Bois (1973) reports that thioridazine is effective in attenuating some of the symptoms found in psychotic children. Michaux et al. (1971) conclude that fluphenazine enanthate is effective in adolescent schizophrenia and partially effective in infantile psychosis, but has no effect on psychotic children in the latency period. It has been suggested (Jørgensen 1979) that the pharmacological treatment of schizophrenia in children should follow the guidelines for treatment of adult patients, but that special care must be taken during the treatment of children in pubertal development because of the well-known influence of phenothiazine derivatives on the excretion of prolactin. On the contrary, O’Gorman (1970) states that tranquilizers are very seldom effective in the treatment of childhood schizophrenia, in contrast to their efficacy in adult schizophrenia.

Kolvin (1972) advocates supportive psychotherapy for schizophrenic children but claims that analytical psychotherapy has made no contribution. However, others such as Winnicott (1967), Lebovici and McDongall (1960), and Kestenbaum (1978) advocate the use of analytical psychotherapy. Soulé, Houzel, and Bollaert (1976), reporting on psychotherapy practiced at the Institut de Puériculture de Paris, state that for early onset psychoses, therapy should be offered within the framework of a day hospital. They believe that the therapist should create an individual relationship with as much continuity as possible, keeping absences and interruptions to a minimum. These authors also recommend that the psychotherapist take physical care of the child (e.g., feeding, bathing). The difficulties that psychotherapists encounter in treating psychosis are compared by Soulé and his colleagues to Winnicott’s notion of the mother’s “hate” toward her newborn (Winnicott 1947).

Kestenbaum (1978) describes a comprehensive therapeutic intervention as having the following three steps: (1) the child should identify the therapist as a person; (2) work should be done toward amelioration of the use of speech; and (3) after contact has been established, the therapist should go through the early stages of emotional development with the child. In cases of mutism and severe autism, paraverbal techniques should be worked out in therapy. Kestenbaum states that psychotherapy is a mixture of art and science, and she maintains that the therapist should be a real object to the child, not just an object of transference.

Ajuriaguerra (1970) maintains that the results of psychotherapy depend on (1) the quality of the therapist’s emotional investment, (2) the absence of changes of therapists, (3) the synchronization of all the components of the treatment, and (4) the support of the parents.

Stroh (1974) has described the essential features in the inpatient assessment and treatment of psychotic children, including schizophrenic children. A specific feature of the functioning of his inpatient unit is the attempt to integrate the social, therapeutic, and educational aspects of care with the day-to-day care of the child. In this therapeutic setting, individual psychotherapy of the child, as well as counseling, support, and, if necessary, treatment of the parents, may be included (Tischler 1971).

However, it should be stressed that the various treatment plans for schizophrenic children, such as the one described above, have not been adequately assessed and there is no acceptable evidence indicating that any one method is better than the others (Rutter 1967). Furthermore, in the description of various treatment modalities, most authors use the term “childhood schizophrenia” in a rather loose manner. This stems from the many difficulties surrounding the use of the concept of childhood schizophrenia. As a result, it is not surprising that one set of researchers, studying children they call schizophrenic, may obtain findings
different from those of another set of researchers performing similar studies on children they designate as schizophrenic. Diagnostic differences make it extremely difficult to draw conclusions about the effects of various methods of treatment. Ideally, clinical impressions should be confirmed, and findings replicated, in adequately controlled evaluations using well-defined and widely accepted diagnostic criteria. However, undertaking such studies may be difficult because of the rarity of childhood schizophrenia.

Summary

The task of reviewing the European literature on childhood schizophrenia, difficult enough in itself, is further complicated by the fact that researchers have yet to agree on a common definition of the disorder. This fact is reflected in the comparative length of the various sections of this article—many pages being taken up by research on the issues of diagnosis, classification, and differential diagnosis. Various authors, under the all-encompassing term “childhood psychosis,” have attempted to trace the boundaries of the specific conditions found within it. Boundaries in this “map,” however, are often unclear and frequently overlapping. In addition, when one discusses “European” literature on the subject, one must constantly keep in mind the diversity in approach, and the emphasis in some cases on theoretical articles rather than on empirical data.

Extensive research has been devoted to the study of early infantile psychosis (autism, autistic psychopathy, infantile psychosis, and progressive disintegrative psychosis) and late onset psychosis in an attempt to describe the conditions and establish differential diagnostic criteria. The aim was to obtain evidence for the hypothesis that psychosis is a unitary entity.

Another important body of research, in defining the boundaries of childhood psychosis, has been the work on borderline states and on personality disorders, i.e., schizoid children.

Another focal point has been the study of the age of onset, which was used as a criterion for the classification of autism, childhood schizophrenia, and “organic” psychosis.

A major issue that has been extensively discussed was whether childhood schizophrenia is a single disease process which starts at an early age and continues into adulthood, or whether there is, on the contrary, discontinuity between early childhood psychosis and childhood schizophrenia. A basic difference is noted here between the Soviet approach, in which it is argued that there is a continuity of the disorder, and the British viewpoint which argues that children with an early onset of psychotic symptoms represent a diagnostic category distinct from schizophrenia as seen in later childhood.

The developmental factor (i.e., the changes in the clinical picture with age) has been singled out by many writers. They extensively discuss the relative crudeness and simplicity of symptoms at an early age versus the complexity and systematization of symptoms as age progresses.

In the review of the literature, it was noted that using prognosis or the description of the course of the development of the disease for diagnostic purposes has led to considerable confusion, since both prognosis and course can only be assessed after the illness has already progressed.

Finally, the search for etiological factors (i.e., heredity or environment) has so far had inconclusive results. However, most authors agree on a nature-nurture interactional model.

In terms of future research, it seems that comparative studies that cover course and follow-up are needed. In such research, it is important to use (1) a high degree of selectiveness of subjects, (2) adequately defined diagnostic criteria, (3) reliability studies, and (4) a developmental approach.

It may be useful to consider a European or international pilot study on childhood schizophrenia that would take into account the above-mentioned key issues and possibly use a multi-axial classificatory system.

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Announcement

The International Conference on Schizophrenia will be held in Edmonton, Alberta, Canada, on April 30-May 2, 1986.

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