. . . the diagnosis and understanding of schizophrenia

part III. speculations on the processes that underlie schizophrenic symptoms and signs

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Symptoms and signs are crucial in diagnosing schizophrenia and in bringing individuals to treatment, but what do they reveal about the nature of underlying disorder? Historically, in all branches of medicine, symptoms have frequently been believed to provide basic knowledge about underlying diseases. Sydenham (see Kraupl-Taylor 1966) used careful observation and cataloging of symptoms and signs to differentiate many disease entities (e.g., scarlet fever and measles) which were later validated as being etiologically separate disorders. Despite such successes, many investigators have deemphasized symptoms and focused on describing presumed underlying pathological mechanisms. For these investigators, symptoms represent peripheral manifestations with only limited importance for diagnosis or for revealing the nature of the underlying process. There are several examples in the history of medicine that support such an orientation; the diverse symptoms of syphilis, for instance, stem from the effects of a single pathogenic organism. If symptoms have such diverse values and limitations for defining various disorders, what do they reflect about the nature of schizophrenia?

The study of schizophrenia, as of other disorders, has been marked by conflicting opinions regarding the importance of symptoms in defining an underlying disease process. Generally, an inverse relationship has existed between an investigator's interest in describing symptomatology and his interest in describing the nature of underlying pathological processes. When one aspect is carefully explored, the other tends to be neglected. Kurt Schneider (1959), one of the foremost investigators focusing on diagnostically important syndromes in schizophrenia, has claimed that specific symptoms are pathognomonic of this disorder; in his list of "first-rank" symptoms of schizophrenia, Schneider identified certain delusions and hallucinations as the main criteria of a presumed underlying somatic disorder. Langfeldt (1969), taking a somewhat less extreme position, described characteristic diagnostic symptoms similar to those listed by Schneider but added to them other phenomena such as catatonic motor behavior. Although he considered these symptoms practically pathognomonic of an underlying process, Langfeldt also stressed other factors, such as personality change. Perhaps because of their commitment to a descriptive approach stressing symptoms as the main diagnostic criteria in schizophrenia, neither Schneider nor Langfeldt focused much attention on the possible nature of the pathological process that the symptoms define. Schneider's and Langfeldt's neglect of this important question makes it difficult to reconstruct and evaluate any conceptual framework that might have affected their selection of these particular symptoms as diagnostic of schizophrenia.

Using a less purely descriptive orientation, Kraepelin (1919), in his original conceptualization of the disorder "dementia praecox," considered a broader range of characteristics important than did Schneider and Lang-

feldt, who followed him. Kraepelin described characteristic hallucinations and delusions, motor phenomena, and blunted affect all as important diagnostic criteria, but he went beyond symptoms to define as important evidence of an underlying disease process such characteristics as age of onset and course of disorder. Other schools, following Kraepelin's focus on outcome, have emphasized even further the diagnostic importance of various courses of illness. This emphasis is especially prominent in Soviet psychiatry (Snezhnevsky 1968).

Further still from a total emphasis on symptoms, Bleuler (1950) hypothesized that there was, in schizophrenia, an underlying pathological process manifested primarily by "loosening of associations," a concept derived in his attempt to describe a common mechanism for the most fundamental symptoms of the disorder. Among these basic symptoms, Bleuler included disorders in form of thought, affect, and relating. He considered delusions and hallucinations, thought by others to be central to the concept of schizophrenia, as secondary restitutive phenomena.

Freud (1946) and subsequent investigators with psychodynamic orientations have focused least on symptomatology and most on describing supposed underlying processes. Although Freud used symptoms as diagnostic criteria, he viewed them primarily as clues to the central role of other more important behaviors and hypothesized mechanisms—for example, inability to relate, developmental arrest (fixation) and regression, and abnormal formation of mental structures. Several schools of psychiatry, following a psychodynamic orientation, have developed further the view that disorder in forming personal relationships is a crucial diagnostic criterion for schizophrenia (Kasanin 1945 and Meehl 1962). Focusing largely on relationship disorders, these schools often include a wider range of diagnostic symptoms and consider more patients as schizophrenic than do other orientations.

In spite of differences among various schools regarding the importance accorded to symptoms in relation to other diagnostic criteria, the range of symptoms considered diagnostic, and the role of symptoms in reflecting the nature of an underlying disorder, there is universal agreement that symptoms provide a common denominator for the identification of schizophrenic patients. The central role of symptoms in diagnostic practice has been confirmed in two recent international studies that compared the diagnostic criteria of large numbers of psychiatrists from diverse backgrounds (Cooper et al. 1972 and World Health Organization 1973). It has been possible, for example, to describe 12 discriminating symptoms and signs that were used as diagnostic criteria by psychiatrists with widely differing orientations (Carpenter, Strauss, and Bartko 1973).

Because there are major areas of commonality among investigators regarding which symptoms are important for the diagnosis of schizophrenia, it is possible to review these symptoms to determine more clearly the possible nature of the pathological processes that investigators are noticing in their widespread acceptance of this diagnostic category. To attempt such a speculative synthesis, the international studies described above were reviewed along with selected major diagnostic sources (American Psychiatric Association 1968, Bleuler 1950, Freeman 1969, Kraepelin 1919, Langfeldt 1969, Mayer-Gross, Slater, and Roth 1969, Meehl 1962, and Schneider 1959). From these works, it was possible to describe the following areas of symptomatology that were used most widely for the diagnosis of schizophrenia:

- *Disorders of content of thought and perception.* Schizophrenic symptoms in this area include delusions and hallucinations. Originally described by Kraepelin (1919) and Bleuler (1950), the symptoms in this group have met particularly widespread acceptance as criteria for the diagnosis of schizophrenia. From the list of discriminating symptoms and signs (Carpenter, Strauss, and Bartko 1973), the following symptoms are included in this category: widespread delusions, bizarre delusions, and hearing one's thoughts aloud (see table 6 in part I of this series of reports).
- *Disorders of affect.* This category of disturbance was one of the original signs of schizophrenia described by Kraepelin and Bleuler, but it is not included by Schneider as a major diagnostic criterion. From the list of discriminating symptoms and signs, blunted affect (see table 6, part I) is in this category.
- *Disorders of personal relationships.* Disorders of this type are exemplified in Meehl's (1962) concept of interpersonal aversiveness. This area includes poor rapport (table 6, part I) from the list of discriminating symptoms and signs.
- *Disorder of form of speech and thought.* Disorders of speech connections were originally described by Kraepelin and Bleuler as characteristic of schizophrenia.

These signs are represented by the discriminating sign, incoherent speech (table 6, part I).

- *Disordered motor behaviors.* These signs include phenomena such as stereotypies and waxy flexibility, originally described as diagnostic criteria by Kraepelin and Bleuler.
- *Lack of insight.* This sign has been noted by many authors. It is represented in the discriminating symptoms and signs by the item rating the patient as unaware that he has emotional problems (i.e., poor insight; see table 6, part I).

Although there is general acceptance among the various schools of psychiatry about the diagnostic importance of most of these six major areas of symptomatology, one area, disorder in personal relationships, has been particularly controversial. Disorders in relating were not stressed by early investigators, but they have assumed a central role in the concept of schizophrenia for many current schools of thought. Psychodynamically oriented psychiatrists especially have emphasized disorders of relationships as central in schizophrenia (Freeman 1969, Freud 1946, Kasanin 1945, Modell 1963, Sullivan 1953, and Szasz 1957). Although the focus on this area of disorder is especially strong in psychoanalytic orientations, the recognition of it as a notable characteristic is not limited to dynamically oriented psychiatrists. Schneider (1959), for example, while not using disordered relationships as a key diagnostic criterion, has noted a kind of relationship problem in schizophrenia. He, following Jaspers (1963), has described at length the feeling of distance and lack of empathy they believe one experiences in dealing with schizophrenics. Thus the source of controversy regarding personal relationships in schizophrenia centers not so much on whether disordered relationships are found in schizophrenia, but on the degree to which this characteristic has been focused on by some schools.

By using these six kinds of symptoms and signs generally agreed upon as central to schizophrenia, it is possible to consider two major issues regarding the processes that underlie schizophrenic symptomatology: 1) whether these processes overlap with, or are discretely different from, other kinds of psychiatric disorder and normal human functioning; and 2) whether there is a single underlying pathological process or several different processes, as suggested by symptom occurrence and by the precursors and outcome of the symptoms.

Are the Processes Reflected by Schizophrenic Symptoms Only Found in Schizophrenia, and Are They Discretely Different From Normal Human Function?

The first of these issues is the easier to resolve. It seems unlikely that the processes underlying schizophrenic symptoms occur only in schizophrenia since these symptoms themselves occur in other disorders (Breakey 1972, Carpenter and Strauss 1974, Carlson and Goodwin, 1973, Carpenter, Strauss, and Muleh 1973, and Taylor and Abrams 1973).

The issue of whether schizophrenic symptoms are discretely different from normal human behavior is more difficult to resolve. Although the characteristics of certain hallucinations, delusions, thought disorder, disordered relationships, and other symptoms of schizophrenia were once regarded as discretely different from normal experiences, the discontinuity of these phenomena from normal function has been increasingly challenged. Recent findings suggest that schizophrenic symptoms are in fact points on continua. Jaspers (1963), for example, although not intending to support the continuum conception, describes borderline hallucinatory experiences, such as "sense memories," and borderline delusionlike phenomena such as overvalued ideas. Other descriptive, experimental, and statistical findings also support the existence of continuities between schizophrenic and normal behavior (Salzman et al. 1966 and Strauss 1969 and 1973).

Several recent psychoanalytic views also conceive of schizophrenic symptoms on a continuum. Originally Freud and other psychoanalysts had stressed the discrete differences between schizophrenics and others, pointing out how schizophrenics cut themselves off from human relationships and used primitive psychological mechanisms such as projection. More recent psychoanalytic observations, however, suggest that relationships in schizophrenia are not severed completely and that even the primitive psychological mechanisms found in schizophrenia are not exclusive to that condition (Arlow and Brenner 1969).

One sign sometimes cited as being discretely different in schizophrenia from other conditions is the kind of relationship disorder described by Jaspers and Schneider. These investigators have claimed that there is a fundamental gap between the experience of schizophrenics and others that makes empathy with schizophrenics

impossible. On closer scrutiny this subjective argument for discontinuity appears to reflect investigative approach more than patient characteristics. The methods and orientation of some observers appear to be the major source of lack of empathy with patients who manifest bizarre thought and behavior. Many investigators who focus less than Jaspers and Schneider on description, and who attempt more to understand the psychological meaning of schizophrenic symptoms by working intensively with patients, find schizophrenics' symptoms understandable and empathy possible. (Fromm-Reichmann 1950, Searles 1965, and Sullivan 1953).

Together these findings suggest that the symptoms of schizophrenia are not specific only to schizophrenia but are related to other human behaviors through continua. One might further conclude from these findings that the underlying processes in schizophrenia also are not discretely different from the functioning of nonschizophrenics.

Perhaps this absence of specificity in schizophrenic symptoms has led to the general agreement that a diagnosis of schizophrenia can only be applied to an individual who has at least several of the symptoms that are considered diagnostically important (Carpenter, Strauss, and Bartko 1973). The concept of schizophrenia as it is used thus appears to involve the presence of multiple dysfunctions. It may be the accumulation of findings, not the specificity or discontinuity of any one, that represents what investigators mean by schizophrenia.

One Process or Many Processes?

Whether the diverse symptoms of schizophrenia represent a single process or many processes has been a central question since the description of the disorder by Kraepelin and by Bleuler. Kraepelin's (1919) defense of the single-process conception reflected his awareness of this problem. He stated:

> We are justified in regarding the majority at least of the clinical pictures which are brought together here as an expression of a single morbid process, though outwardly they often diverge very far from one another. [p. 3]

The title Bleuler gave to his book, *Dementia Praecox or the Group of Schizophrenias*, is further evidence of the importance of this issue dating from the very beginning of the concept of schizophrenia.

Nevertheless, most investigators have believed that a single basic process lies behind the syndromes that constitute schizophrenia, although assumptions about the nature of this process have varied. Bleuler (1950), for example, stated that loosening of associations was the basic process. Psychoanalytic investigators, on the other hand, have considered severe regression as fundamental (Arlow and Brenner 1969). This issue can be reevaluated on the basis of two types of data, the concurrent appearance of schizophrenic symptoms, and knowledge regarding the antecedents and prognostic importance of these symptoms.

Evidence From the Concurrent Appearance of Symptoms

If the major schizophrenic symptoms occurred frequently together, this finding would provide evidence for a single underlying process. One study by Cancro (1969) has provided evidence of the high correlation between disorder of object relations, affect disorder, and thought disorder in schizophrenia, suggesting that since they are often found together they reflect one underlying process. But in spite of such findings and the predominant view that there is a single process underlying schizophrenia, the fact that the symptoms considered diagnostic for this disorder so frequently fail to occur together challenges the unitary view now as it did in Kraepelin's time. Each of the six areas of symptoms can exist alone: Severe relationship disorders exist without delusions in simple schizophrenia; delusions without motor disorders occur in paranoid schizophrenia.

These observations do not disprove a single-process view since it is possible that one process can have diverse manifestations; but any theory supporting a unitary process of schizophrenia must explain the apparent independence of the six areas of symptomatology. Several such theories have been offered. Arlow and Brenner (1969), for example, have explained the diversity of manifestations by claiming that schizophrenic regression may take place in some areas of function while other areas remain essentially intact. Chapman (1966), studying the symptoms of early schizophrenia, has offered another explanation. He suggests that the

generally constant sequence of the different symptoms indicates that the different manifestations reflect a sequential unfolding of a single process. Although these are fruitful speculations, further evidence is necessary before either of these explanations can be accepted as valid.

Precursors and Outcome

Although current evidence regarding the concurrent appearance of symptoms does not provide many clues regarding the number and nature of processes in schizophrenia, data from investigations of the antecedents and prognostic implications of schizophrenic symptoms are helpful. These data suggest the utility of postulating that three major types of processes underlie schizophrenic symptoms and signs. These three hypothetical processes can be arrived at by grouping the six kinds of symptoms into three categories: positive symptoms, negative symptoms, and disorders in relating. The terms positive and negative symptoms were first used by Hughlings Jackson (1887) in his evolution-dissolution theory of nervous function to describe manifestations of postulated underlying mechanisms. We use these terms here primarily descriptively without necessarily implying Jackson's theoretical conceptions, but find the terms useful because symptoms within each of the groups appear to have some important basic similarities in their relationship to antecedents and outcome. In this way, the concepts of positive and negative symptoms may help shed light on the basic pathological processes involved in schizophrenia.

As Jackson described them, positive symptoms are those that have the appearance of being active processes —for example, delusions, hallucinations, and catatonic motor phenomena. In a discussion of this group of symptoms, Snezhnevsky (1968) considers them similar also because of their relative flexibility. Negative symptoms, on the other hand, involve primarily absence of normal functions. In schizophrenia, negative symptoms include such phenomena as blunting of affect, apathy, and certain kinds of formal thought disorder, such as blocking. Snezhnevsky describes the inflexibility of this group of symptoms.

There is some question about the consistency of these concepts, especially about how to categorize those manifestations of schizophrenia that reflect absence of normal function but are also flexible such as a transitory episode of loosening of associations. Nevertheless, the basic concepts appear valuable enough to justify attempts to apply them further. In this report, the criterion of flexibility will be given priority where necessary over the criterion of absence of a normal function, which in any case is the more difficult characteristic to establish. Positive symptoms will be considered as including from the six symptom areas disorders of content of thought and perception, certain types of form of thought (e.g., distractibility) and certain behaviors (e.g., catatonic motor disorders). Negative symptoms will be considered as including from the six symptom areas blunting of affect, apathy, and certain kinds of formal thought disorder, such as blocking. Disorders of relating will be considered separately. Of the six types of symptoms and signs, one, lack of insight, is obviously important but does not fit neatly into any category; nor are there many data available regarding its antecedents or prognostic implications. Because of the absence of detailed studies regarding its characteristics, this variable will not be discussed further here.

Antecedents to the Three Kinds of Schizophrenic Manifestations

Antecedents to positive symptoms. When reports regarding antecedents to positive symptoms are considered together, they suggest that these symptoms may be caused by any of a wide variety of factors. Determining the antecedents of positive symptoms has been aided by the fact that these symptoms often have a rather clear-cut sequence of onset and resolution (Chapman 1966 and Sacks, Carpenter, and Strauss 1974) which facilitates observations regarding immediate precursors that may play a causal role in their occurrence. For example, certain psychoactive drugs, especially amphetamines (Bell 1973), and certain physical disorders such as fever and corticosteroid excess (Carpenter, Strauss, and Bunney 1972 and Wolfe and Curran 1935) can cause the positive symptoms of schizophrenia. Such organic causes have been recognized by many psychiatrists. Kurt Schneider (1959), for example, in describing first rank symptoms, notes that they occur also in organic psychosyndromes.

Several investigators have suggested that all instances of positive schizophrenic symptoms have a direct organic basis. Conrad (1958) and Chapman (1966) have claimed

that the symptoms are likely to be of organic etiology because their development follows a specific sequential course of increasing cognitive and perceptual distortion. This argument for organicity is not very compelling, however, since regular progression of symptomatology with increasing disruption of function is also found in psychologically caused abnormal behavior (Spitz 1945).

Another view regarding the cause of positive symptoms is that in the majority of instances where no direct biological etiology can be established, these symptoms are psychological attempts at restitution to overcome an underlying disorder. For example, Bleuler (1950) explained these symptoms as restitutive attempts to overcome basic defects in association, and Freud (1946) described them as restitutive processes to overcome narcissistic regression.

Findings from family research (Wynne and Singer 1963) suggest that specific kinds of family environments may also be antecedents to positive symptoms. "Fragmented" schizophrenics—patients characterized by fragmented thinking—who often have a preponderance of positive symptoms appear to come from families in which clear but conflicting communications are frequent.

One potential antecedent factor for which existing data are essentially negative regarding a contribution to positive symptoms is in the area of genetics. Genetic findings that are adequately detailed to determine differential relationships to the three kinds of schizophrenic manifestations suggest that there may be no specific genetic contribution to the occurrence of positive symptoms. The data reported by Kety et al. (1968) suggest that patients who have positive symptoms do not necessarily have a significantly high family history for this kind of symptomatology.

Taken together, the findings regarding known and inferred etiologies of positive symptoms suggest that these symptoms may arise from a wide variety of biological, family environment, and psychological causes. If this inference is borne out, it may be most accurate to consider these symptoms as a single process that is a relatively nonspecific response to many conditions.

Antecedents to negative symptoms. Although the etiologies of positive symptoms are sometimes difficult to determine, evaluating the precursors and etiology of the negative symptoms of schizophrenia poses even more problems. This difficulty arises partly because negative symptoms tend to be chronic or have a gradual onset.

One major view of the antecedents to negative symptoms is that chronicity of a "primary disorder" and events (e.g., institutionalization) associated with such chronicity may be the major causes of negative symptoms. Evidence for this view, for example, comes from Bayard and Pascal's (1954) demonstration of a high correlation between chronicity of illness and the negative symptom blunted affect. "Negative" kinds of formal thought and motor disorder may also be associated with chronicity. Part of the contribution of chronicity to negative symptoms may arise from patients' increasing withdrawal because of social rejection elicited by the symptomatology of the "primary disorder." Jaspers (1963) and Schneider (1959) reflect the views of many when they describe the absence of empathy they feel for schizophrenics. Gruenberg (1969), Goffman (1961), Wing (1962), and Wing and Brown (1970) have described in detail many ways in which individual and institutional distancing reactions to the patient's disorder may contribute to his social breakdown. That breakdown, including blunted affect and other negative symptoms, has been considered a response to being treated in a progressively depersonalizing way. The nature of the "more primary disorder" postulated in this view as the starting point of the negative symptoms is often unspecified. One possible explanation is that the primary disorder of whatever nature may be considered as the cause of positive symptoms (e.g., Wing and Brown 1970) which in turn lead to societal responses generating negative symptoms.

Another major view regarding the antecedents of negative symptoms is the converse of the previous hypothesis. It holds that the negative symptoms themselves may reflect the primary disorder, which involves disorganization of more complex functions. This was the original view of Jackson. The studies of Chapman (1966) describing cognitive and perceptual abnormalities that precede the onset of delusions and hallucinations may be interpreted as lending support to this hypothesis. Investigators such as Bleuler and Freud conceptualized the negative symptoms as primary in this sense, and hypothesized that positive symptoms are mainly secondary attempts at restitution.

Another possible antecedent of negative symptoms may be a particular type of early family environment.

Wynne and Singer (1963) have described a category of amorphous schizophrenics who have a predominance of negative symptoms. These investigators suggest that a major antecedent of this disorder is a family background of vague parental communications that contributes to developmental lacunae in the child, resulting in amorphous patterns of thinking and feeling.

Although these findings and hypotheses about the antecedents of negative symptoms need further testing to determine which hypotheses, or combinations thereof, are most valid, they do support the value of considering these symptoms as a closely related group.

Antecedents to disorder in relating. Disorder in relating as judged by its antecedents appears to be a somewhat different process from the positive and negative symptoms. Evidence for this view comes from several sources. First, patterns of relating seem to be rather constant, ongoing functions relatively independent of, and preceding, psychiatric symptoms. For example, the history of a particular level of social relationships is a powerful predictor that a similar level of social relationships will occur in the future, regardless of symptoms (Schooler et al. 1967 and Strauss and Carpenter 1974c). Second, although very few controlled data are available regarding the detailed patterns of relating in schizophrenia, some valuable clinical hypotheses have been generated suggesting that type of personal relations functioning is a specific psychological process. These hypotheses have been developed in greatest detail by psychoanalytically oriented investigators. Federn (1952), for example, has described basic difficulties in self-other differentiation in schizophrenia. More recently, Arlow and Brenner (1969) have hypothesized that the nature of psychotic relationships reflects positive attempts by the individual to deal actively with aggressive, dependency, and sexual needs. They suggest that the antecedents to these disordered relationships arise from developmentally determined flaws in hypothesized psychological structures. Such views warrant considerably further investigation to trace in detail the nature and history of relationship patterns and to clarify further their role in schizophrenia.

One source of data regarding the antecedents of all three manifestations of schizophrenia described above should be mentioned because of its potential to shed light on the nature of the processes involved in this disorder. Several studies suggest that schizophrenic symptoms do not arise suddenly, but have behavioral precursors that are apparent years before the symptoms themselves become manifest. These studies include investigations of children at risk for schizophrenia and evaluations of school reports and other records of individuals who later became schizophrenic. These studies are particularly sound methodologically since the data are recorded before the onset of disorder, preventing retrospective falsification, and control subjects can be selected to compare individuals who later become schizophrenic with those who do not. These studies have generated findings showing that people who are later diagnosed as schizophrenic frequently have manifest excessive shyness, lower IQ, or a high incidence of antisocial behavior early in childhood (Lane and Albee 1970, O'Neal and Robins 1958, Rolf and Garmezy 1972, and Watt 1972). These findings suggest that either the schizophrenic symptoms arise from an abnormal personality substrate apparent early in childhood or that the symptoms have nonspecific precursors suggestive of a progressive pathology developing over many years.

Unfortunately, although sophisticated methodology for collecting and evaluating school and other records has been used in these studies, the diagnostic evaluations of individuals after they became schizophrenic were generally limited to hospital diagnoses or diagnoses reached by agreement of several psychiatrists. Since symptom data have not been reported, it is not possible to determine exactly what characteristics the early dysfunctions antedate. This problem is compounded since most of these studies come from the United States, where the diagnostic criteria for schizophrenia are particularly broad (Cooper et al. 1972). For this reason, these studies might best be interpreted as suggesting that identifiable behaviors may be apparent long before the onset of broadly diagnosed schizophrenia, although it is unclear exactly what symptomatology these behaviors precede.

Together, these findings and speculations about the antecedents of the three kinds of schizophrenic manifestations, and the processes they may reflect, suggest the following points:

- Positive symptoms may reflect a nonspecific process that can be a reaction to a variety of causes including organic, psychological, or family environment conditions.

- Negative symptoms may be interpreted as reflecting a process that arises from the chronicity of some primary disorder, or as a response to society's reaction to other symptoms of the patient. The converse may also hold, in which case negative symptoms may reflect a primary pathological process that originates from a specific kind of family experience or other kind of etiology different from those associated with positive symptoms.
- Disorders of personal relationships appear to have their own longitudinal history and consistency as a psychological process.

Prognostic Implications of the Three Kinds of Manifestations of Schizophrenia

Outcome of positive symptoms. Positive symptoms, such as hallucinations and delusions, appear to have relatively little prognostic importance (Jansson 1968 and Strauss and Carpenter 1972) except possibly when associated with a negative symptom, such as flattening of affect. For example, although delusions in themselves have varying prognostic implications, those without a major affective component indicate relatively poor prognosis. Delusions that do have a strong affective—for example, depressive or anxiety-laden—component, on the other hand, indicate a relatively good prognosis (Albee 1951, Astrup and Noreik 1966, and Kind 1969). Types of formal thought disorder and motor disorder, such as confusion or catatonic motor disorder, that can be included in the category of positive symptoms also have little prognostic importance (Bellak 1948 and Vaillant 1964).

Negative symptoms. In contrast to positive symptoms, negative symptoms may have considerable prognostic importance. Blunting of affect, for example, is an indicator of poor prognosis (Astrup and Noreik 1966). The source of prognostic importance for negative symptoms is uncertain, however. It may arise primarily from the association of these symptoms with established chronicity of illness, which in itself is a powerful predictor of outcome (Strauss and Carpenter 1974b).

Disordered relationships. Disordered relationships may have the most important prognostic implications of all of the three types of schizophrenic manifestations. It has been shown in many studies to be a powerful predictor for many areas of function (e.g., Phillips 1966 and Strauss and Carpenter 1974c). Individuals with a history of poor social relationships tend to continue to show disorder in this area and also to have a poor recovery from the positive and negative symptoms of schizophrenia. As such, relationship disorder may reflect either an important continuing process that antecedes disorder in other areas, or it may reflect a lack of resources to recover from decompensation that has originated from other sources. In either case, disorders in relating play a crucial role in the prognosis of schizophrenic symptoms.

Summary and Conclusions (Part III)

The data and speculations that have been presented on the underlying processes of schizophrenic symptoms and their relationship to the continuum characteristics, possible multiplicity, antecedents, and outcome of schizophrenia have the following implications:

1) Schizophrenic symptoms and signs appear in conditions other than schizophrenia and do not seem to be discretely different from functioning that occurs in normals and other nonschizophrenics. This suggests that the processes in schizophrenia are not discretely different from other kinds of functioning and disorder. The findings also imply that the concept of schizophrenia, as it is used, is to some extent a cumulative one, the symptoms and signs of which can be found individually in other disorders but generally must occur together for a patient to be considered schizophrenic.

2) Whether the symptoms of schizophrenia reflect a single process or several independent processes cannot be answered definitively until etiology or other validation criteria have been conclusively established. Until such a criterion is determined, however, the findings cited in this review lend support to a multiprocess conception of schizophrenia. Information regarding antecedents and prognosis suggests that three such processes may be involved:

- Positive symptoms can develop or resolve over a relatively short period of time. Sometimes they can be traced directly to organic causes. In other instances, they appear to originate in certain kinds of family communication patterns. The several causes of these symptoms that have been identified and their minimal prognostic importance suggest that they are a nonspecific response

to a variety of conditions and not necessarily part of a long-standing process.

- Negative symptoms, on the other hand, tend to be associated with chronicity. It is not clear, however, whether negative symptoms and the process they reflect are the source of chronicity, the result of it, or a combination of both relationships.
- Disorders of personal relationships have their own antecedents and have important prognostic implications for future functioning in this area and for outcome of positive and negative schizophrenic symptoms as well. In this way, disorders of social relationships appear to represent a process with important implications for all of the schizophrenic manifestations.

If, as these speculations suggest, schizophrenia is a concept involving several processes, perhaps three major ones, it will be important to test the validity of these processes by providing more information about whether they, in fact, have separate etiologies, outcomes, and treatment requirements. Understanding the relationships among these processes will also be important. Do they represent different levels on a developmental continuum? Can there be a high degree of pathology in one process with nearly normal function in another?

It should also be evaluated whether postulating the existence of these three processes is more useful than using more global concepts of schizophrenia subtypes. The concepts of positive and negative symptoms, for example, relate closely to a basic dichotomy described in the literature on schizophrenia. This dichotomy—whether viewed as process-reactive (Higgins and Peterson 1964), amorphous-fragmented (Wynne and Singer 1963), good-poor premorbid (Garmezy and Rodnick 1959), or schizophrenia-schizophreniform psychosis (Langfeldt 1969)—is described in one form or another in most theoretical systems. The speculation regarding three processes described here suggests that instead of considering two kinds of schizophrenia, it may be more useful to think in terms of three basic functional processes. Such a conception implies that for the most accurate description, all three of these manifestations would have to be routinely evaluated. All three might interact in ways to be determined, and each process might have different etiologies and responses to treatment.

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The St. Louis Experiment, Research Report 3, has become available from the Center for Studies of Crime and Delinquency of the National Institute of Mental Health. The reports in this series provide brief descriptions of research projects and are designed to disseminate information to researchers, program administrators, and others who are involved in the fields of delinquency, crime, and mental health. *The St. Louis Experiment* describes a project that treats antisocial children in an open community setting. The publication, (ADM) 74-90, is available from the Center for Studies of Crime and Delinquency, NIMH, Rm. 12C-04, 5600 Fishers Lane, Rockville, Md. 20852.