process and reactive schizophrenia: some conceptions and issues*

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Origins of the Process-Reactive Concept

Psychiatry’s historic concern with prognosis provides the base for the evolution of the process-reactive distinction in schizophrenia. The enduring giants of the past—Kraepelin, Bleuler, Meyer, Sullivan—all grappled with the issue of prognostic efficacy and suggested factors that influence the course of the disorder; these gradually framed the dimensions that now characterize the twin concepts of process and reactive schizophrenia.

Although the separation of a process group of schizophrenics was initially made by Frank in 1932 (29), the forerunners of the distinction were provided by Karl Jaspers (51) and Eugen Bleuler (10), both of whom sought to distinguish between process and reactive psychoses.1 But the most meaningful origins of the concept must begin, as do so many aspects of psychiatric thought, with the contributions of Kraepelin.

When at the close of the last century Kraepelin first brought order to the mass of symptoms that he found in mental patients, he chose general paralysis as the disease model for creating a schema for psychiatric classification; the pattern of that model decreed that each mental disease be classified in terms of a specific etiology, a determinate course, and an inevitable outcome. As Zilboorg and Henry (117) point out, the distinguishing feature of the Kraepelinian system of classification (60) was a prognostic attitude in which the validity of diagnosis was determined by outcome. Thus, an appropriate outcome designated an appropriate earlier diagnosis; an unanticipated outcome reflected a diagnostic error. To this bias was added an even less viable one that continues to exert an influence on current psychiatric thought. Mental disorders were divided on the basis of exogenous or endogenous factors. Since the former presumably arose out of external events, they were potentially curable; the latter, however, stemming from inherent biological/constitutional defects, were deemed incurable. The course and the outcome of the disorder were thus predetermined, and any refer-

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1 The author is grateful to Dr. Robert Cancro for comments regarding the early usage of a process-reactive terminology.
ence to the antecedent and consequent of a morbid process was to be made in terms of the natural progression of events.

Referring to the effects of such a confluence of diagnosis and prognosis, Zilboorg and Henry note the unfortunate results that ensued:

One cannot say that because a disease ends in a certain definite way it is a certain definite disease. Kraepelin himself was apparently unaware of this singular deviation from medical principles and did not foresee that the fatalism with which it was imbued weakened even further the rather unstable and never too strong rational therapeutic interest with regard to mental diseases. There is no doubt that it was not Kraepelin’s intention to diminish the therapeutic efforts or to keep them only within the limits of the aging tradition of hospital management and humanitarian tolerance. But the therapeutic efforts were to become based on the complacent, expectant attitude that if the disease is a manic-depressive psychosis the patient will get well, and if it is a dementia praecox the patient will deteriorate—or, in the more turgid language of psychiatric formalism, if it is a manic-depressive psychosis “the prognosis is good for the attack,” and if it is a dementia praecox the prognosis is unfavorable.

Even in Kraepelin’s era such a simple resolution did not coincide with factual data. In the clinics of Germany a wide range of nondeteriorated remissions in schizophrenia were noted ranging from a low of 8 percent to a high of 52 percent. Kraepelin acknowledged that a complete and lasting cure could be achieved in some instances, since his own observations and statistical studies indicated that improvements extending from months to decades were achieved in some 26 percent of his diagnosed dementia praecox cases. Here too heterogeneity was present, recovery tending to vary with diagnostic subtype: hebephrenics showed fewer favorable outcomes (some 8 percent recovering); catatronics, on the other hand, showed demonstrably more remissions (approximately 13 percent). For Kraepelin, however, data such as these did not necessitate modification of his conceptual position. First, there was the likelihood that diagnostic errors had been committed. Second, there remained the reality that the criteria for recovery were often vague and fragile and not readily replicable from investigator to investigator. Finally, even in those instances in which improvements extended over a decade, recovery was not necessarily the most likely outcome.

Meyer, uncommitted to the inevitability of deterioration in schizophrenia, observed than an uncompromising theory could not be constructed on compromised data. He concluded—

that between dementia praecox and manic-depressive insanity and simple psychosis there is an uncertain territory which refuses a categorical arrangement in the easy and simple dogmatic terms that “some disorders must be a deteriorative brain-disease because they early present certain signs also seen in actually accomplished deteriorations” and the claim that it would be futile to make an effort to analyze the data as a whole in terms of cause and effect.

It is interesting to note that the Kraepelinian tendency to confirm diagnosis by prognosis and to revise classification, if necessary, on the basis of outcome is also held by some contemporary investigators. Langfeldt, for one, distinguishes between the prognostically unfavorable cases of process schizophrenia and the more prognostically favorable instances which he prefers to term “schizophreniform” psychoses. However, Langfeldt does not hold that prognosis determines diagnostic judgment but rather that the presence of certain process symptoms heightens the probability of ultimate schizophrenic deterioration. Here too the presumed relationship between process symptoms and poor prognosis proves to be something less than invariant when put to actual empirical test.

Still another bias provided by Kraepelin was related to his view of the personality attributes of patients during the premorbid period. Many of the traits that characterized his patients were those that we now identify with the shut-in personality—excessive shyness, withdrawn asociality, capricious demandingness. These dispositions were to be found prior to the adult life of the patient, providing a continuity with the past extending back into the patient’s early years. But again data such as these were sacrificed to theory. Kraepelin saw these behavioral patterns not as antecedents to symptom expression but as
a product of the malady and its cause. What then of those persons with similar predispositions who failed to develop a schizophrenic disorder? For Kraepelin the explanation could be twofold: (1) other factors produced schizophrenic-like peculiarities, and (2) an arrested state of dementia praecox ("latent schizophrenia") could exist (57). Thus the predetermined course of a dementia praecox was reflected in the longitudinal emphasis assigned to the disorder.

By contrast, Meyer perceived the premorbid period as characteristic of "factors that are apt to shape or undo a life—specific defects or disorders of balance, with special tendencies and habitual ways of bungling and substitutions and a special make-up which is liable to breakdown in specific manners." Thus for Meyer the premorbid period was one in which complete action grows more and more disorganized by initially trivial and noninjurious subterfuges—subterfuges which, "in some individuals, lead further, become harmful and uncontrollable, tend to assume types of definite anomalous mechanisms, unintelligible and crazy if viewed apart, but more or less intelligible, as a string of actions substituting for, and often missing, an efficient adjustment to concrete and actual difficulties."

That Meyer identified variants within the disorder is clearly apparent from his writings:

... the fluctuations observable in dementia praecox are decidedly too often accounted for by renewed upsets and tangles and irritation of idiosyncracies, and that the prognosis of the ultimate tendency is remarkably often foretold, so that of the cases interpreted as actual deteriorations but few surprise us with a recovery, and those that do recover are as a rule specified at the outset as cases merely akin to this group worth naming by the end-stage, but with varying amounts of balancing material (72A).

It is interesting to note the consequences that follow from a Kraepelinian as opposed to a Meyerian position. The former provides its greatest contribution to a descriptive classificatory schema; the latter makes possible the introduction of a more therapeutic and preventive orientation in psychiatry. Meyer found gratifying Freud's and Jung's view that at work in the disorder was a group of complexes consisting of "insufficiently balanced experiences in various ways modified by symbolism," but he rejected an interpretation of the origins of the disorder in terms of hereditary or toxic factors.

... I would prefer to adhere in my attempt to define the responsible factors as far as possible in terms of prophylactic suggestiveness, in terms of untimely evocation of instincts and longings ... and ensuing habit-conflicts with their effects on the balance of the person, and on the sum total of mental metabolism and actual doings and on the capacity for regulations in emergencies (72A).

Thus, despite the acknowledged difficulty of providing therapy for schizophrenic patients, Meyer's views were more positive toward amelioration:

The best procedure is to tide over the acute tangle with as much tact and ease as possible, to promote relaxation, and to relieve the situation wherever that can be done, bearing in mind the facts obtained referring to the upsetting factors, the probable complex-constellations and prevailing physical disorders. As soon as the patients feel that they meet with help instead of an argumentative and corrective attitude they can be led considerably when the time comes or where the difficulty has not led to complete blocking. Then a positive re-education in the form of habit-training and of readjustment has to set in. It is obvious that experience brings a certain divination and that individual capacity plays a decided role in the straightening out of the difficulties, both during the tangles and in ultimately marshalling the forces to a more practical unity and level again; it is also obvious that we cannot be very optimistic in most cases, as little as when we try to win over our less unbalanced neighbors to a better mode of thought, belief, and conduct and behavior (72A).

Any brief citation of the theorists responsible for the systematization of the process-reactive concept must include an acknowledgment of the genius of Bleuler. His view that dementia praecox was not a viable disease entity but rather a group of reactions, some of which did not eventuate in deterioration, proved to be the forerunner of studies of remission and the forms of premorbid patterns, mental-status factors and symptom attributes that accompanied recovery as opposed
to deterioration. The influence of psychological factors was acknowledged by Bleuler who saw in secondary adaptive symptoms, such as autisms and delusions, a dependence upon psychic influences and interests. Bleuler observed that the disorder “may take a course which is both qualitatively and temporally rather irregular [with] constant advances, halts, recrudescences or remissions possible at any time”—a view that served as the pathway for subsequent studies of prognosis in schizophrenia. If there was little variation in the course of the disorder, as Kraepelin had suggested, why study outcome at all? If, however, prognosis was irregular and not readily predictable, then premorbid life history patterns, behavioral antecedents, and symptoms could all be evaluated as predictors of the directions the disorder could take. In Meyer’s words, attention would then have to be directed toward “factors which we see at work in the life history of cases of so-called dementia praecox.”

Finally, we must turn to Harry Stack Sullivan as the exemplar of a psychiatry that emphasized factors which are to be found in the life history of schizophrenic patients. Sullivan’s contributions to the study of schizophrenia are far too numerous to elaborate, but several are particularly relevant to the study of the process-reactive concept. Far more than any other investigator, Sullivan’s psychodynamic formulations and his great interest in the psychological antecedents and correlates of a schizophrenic disorder reflected the growing preoccupation in America with a more developmental and psychologically oriented view of the disease process. In brief, this viewpoint had several foci: (1) an increased emphasis upon life-history antecedents and the role of precipitating stresses in actuating the disorder; (2) a view of the schizophrenic process itself as a reintegrative effort at adaptation; (3) a rejection of the prevailing dogma that recovery, by definition, implied a misdiagnosis of schizophrenia; (4) emphasis on the role of the hospital and its milieu in blocking or heightening chronicity; (5) the role of sexual and social adaptation in the disorder; (6) a stress on interpersonal factors and cultural distortions provided by the home with particular emphasis on the "subject's life experience as experienced—i.e., what he actually lived or underwent, not what he is alleged to have experienced”; (7) the perception of stress as arising from societal relations, rather than from impersonal physical factors; (8) the significance placed upon a “really satisfying adjustment to a sex object” as a markedly favorable prognostic sign; (9) rejection of a simple dichotomous organic-psychogenic etiology; (10) the differentiation of social (nonsymptomatic) versus personal recovery (i.e., reorganization of the disordered personality); and finally, (11) the importance of psychological intervention as a requisite for a favorable outcome in some cases.

The flavor of Sullivan’s views can be captured by many quotations from his writings. The following illustrate his biases with regard to the issues of etiology, course, and outcome in schizophrenia:

**Antecedents**

Study of onset of disorders in male patients seems to establish two factors preliminary to schizophrenic psychoses. Firstly, the appearance of the disorder is late in a long series of subjectively difficult adjustive efforts. Secondly, it seems never to occur in those who have achieved if only for a short time a definitely satisfying adjustment to a sex object.

One finds that the individual who has had a schizophrenic illness has not, in the first place, developed the abrupt manifestations of hereditarily-determined deterioration in the life processes. Instead, he has stood in a significantly and distinctively difficult position in the social situation in which he has lived; he has developed a striking, more or less specifically distinct technique in dealing with people with whom he has lived; in the course of this peculiarly distinguished life he has come upon certain situations which were most serious in their negative effect upon his self-esteem; and after encountering these situations (which include as significant factors only other people) after, perhaps, a rebuff to his self-assertion, he has shown a significant and characterizable failure to react by any of the methods of reacting to rebuff which are more or less well known to all of us from our personal experience . . .

**Etiology**

It is easy to divide the material under con-
sideration into "praecox" illnesses based on organic pathology and "schizophrenic" illnesses based on functional pathology. The division, however, is irrational and unprofitable, for some of the former cases recorded a good measure of mental health just as did most of the latter. In other words, in frankly defective patients, undergoing severe and relatively typical schizophrenic processes, nothing fully distinctive from extraordinarily talented individuals suffering schizophrenia has appeared in this investigation.

Historically, psychiatry has been a field peculiarly afflicted by bad thinking and premature hypothetic formulation. Of many reasons for this, I will touch upon two. The facts of mental illness have often been seen through the aberrating medium of patho-physiological preconceptions—brain pathology and the like, endocrine disorders being perhaps the most recent. And the physician has been carried into the recondite field of mind without training in the technologies suiting him to his enterprise, and with training tending definitely to disqualify him for perceiving the data on which he should base his conclusions. Especially in the field of the schizophrenic phenomena, there has been a pandemic of formulating on limited if not actually irrelevant basic data, with singularly bad hypotheses, some of the most vicious features of which have been incorporated into persisting psychiatric astigmatisms (99).

**Outcome**

... it is the life situation of the patient that determines the prognosis. What he has derived from his forebears, his life experience, and that which befalls him during his illness—these, correlated with the situation which confronts or seems to confront him in the event of his recovery—these, and these only, are the determining factors which make in their biological summation, for benignity or malignancy of the situation.

Psychiatric prognosis may best be considered as a specialized technique in social psychology. Its problem is the prediction of the future adaptability of an individual within some more or less clearly envisaged milieu composed principally of people. To reach a judgment of prognosis, facts are accumulated in regard of (a) the personality of the patient, (b) the morb-
tically prevalent in American psychology—one in which life-history antecedents and prepotent habit patterns were viewed as precursors to the disorder and markedly relevant to outcome.

If one were to mark a developmental trail from the premorbid period to the ultimate outcome in schizophrenia, the significant prognostic points in the sequence would be those charted (A-B-C-D) below.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Precipitant</td>
<td>Morbid Phase</td>
<td>Outcome</td>
</tr>
<tr>
<td>C</td>
<td>of Childhood/</td>
<td>(Onset)</td>
<td>(Symptoms)</td>
</tr>
<tr>
<td>D</td>
<td>Adolescence/</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Early Adulthood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meyer</td>
<td>Kraepelin</td>
<td>Sullivan</td>
<td>Bleuler</td>
</tr>
</tbody>
</table>

To summarize their prognostic contributions, Kraepelin and Bleuler, wedded to biological causation, accentuated prognostic criteria derived at point C in the sequence; i.e., symptoms as predictors of outcome. The more psychologically minded viewpoints of Meyer and Sullivan would be reflected in emphasis given to prognostic contributions at points A and B in the sequence.

One can perceive elements of this lineage in an experimentally minded present. The parallel to C → D type studies is revealed in factor-analytic investigations of symptom patterns and outcome, patterns of physiological responsivity in schizophrenia, psychometric test studies, etc. By contrast, the A/B → D relationship often takes the form of the manipulation of cue-relevant variables (e.g., stress, censure, symbolic representations of familial interactions, portrayals of interpersonal and sexual relationships, etc.) in conjunction with the study of schizophrenic adaptation or disorganization.

Attributes of the Process-Reactive Dimension

The process-reactive concept incorporates all points in the developmental sequence of the schizophrenic disorder since wide variations can be observed among patients at each point. Specifically, variation in the premorbid-personality patterns of patients, the time interval preceding the onset of the disorder, the type of precipitant that may potentiate the disease process, and the symptom picture during the course of the disorder all have been related to prognosis in schizophrenia.

Although the concept of a process as opposed to a reactive schizophrenia has the widest acceptance, other, but comparable, dichotomous terms continue to be used—dementia praecox/schizophrenia, chronic/episodic, typical/atypical, true/schizophreniform, evolutionary/reactive—to reflect the varying patterns present in the schizophrenic disorder.

In general, the picture presented by a so-called process case may be described as follows: The patient's prepsychotic personality is a poorly integrated one revealing markedly inadequate behavior in the sexual, social, and occupational areas; trends to social isolation and a lack of emotional responsivity to others are clearly evident. There is usually no acute precipitant to characterize the turn toward psychosis; rather, the onset (usually in late adolescence) is an insidious one without a recognizable and consensually validated stressor evident. Symptomatically, there is a gradual onset of emotional blunting, a withdrawal from life's daily activity; apathy and indifference hold sway, and somatic delusions and marked disturbances in thinking may characteristically be present and maintained for long periods of time.

By contrast, the reactive patient has been described by Wiener as follows:

From birth to the fifth year, the maturational and developmental history showed no defects, physical health was good. Generally school and home adjustment was good. Parents were accepting. Heterosexual relationships were established. The patient had friends, and domestic troubles did not disrupt his behavior.

The onset of the illness was often sudden with a clear-cut, understandable precipitating event. Aggression was expressed verbally. Decency was retained. The course was fulminating, with massive hallucinatory experiences, ideas of reference, and mild paranoid trends, as well as sensorial impairment. A thought disorder was present according to some authors, but not others. Response to treatment was good (106).

Kantor, Wallner, and Winder have provided an excellent summary of the criteria that best differentiate the process case from the reactive one (56). As indicated in table 1, these criteria
Table 1. Case-history criteria for differentiating process and reactive schizophrenia
[from Kantor, Wallner, and Winder (56)]

<table>
<thead>
<tr>
<th>Process schizophrenia</th>
<th>Reactive schizophrenia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Birth to the fifth year</strong></td>
<td><strong>Fifth year to adolescence</strong></td>
</tr>
<tr>
<td>a. Early psychological trauma.</td>
<td>a. Good psychological history.</td>
</tr>
<tr>
<td>b. Physical illness, severe or long.</td>
<td>b. Good physical health.</td>
</tr>
<tr>
<td>c. Odd member of family.</td>
<td>c. Normal member of family.</td>
</tr>
<tr>
<td></td>
<td>a. Well adjusted at school.</td>
</tr>
</tbody>
</table>
| | b. Domestic troubles unaccompanied by behavior disruptions. Patient had "what it took."
| | c. Extroverted behavior trends and interests. |
| | d. History of adequate social, physical, mental functioning. |
| | e. Normal siblings. |
| d. History of breakdown of social, physical, mental functioning. | g. Accepting father. |
| e. Pathological siblings. | | |
| f. Overprotective or rejecting mother. | **Adolescence to adulthood** |
| g. Rejecting father. | b. Sudden onset of psychosis; stress present and pertinent; later onset. |
| | c. Verbal aggression. |
| | d. Good response to treatment. |
| | e. Short course in hospital. |
| | **Adulthood** |
| b. Little capacity for alcohol. | b. Much capacity for alcohol. |
| c. No manic-depressive component. | c. Presence of manic-depressive component. |
| d. Failure under adversity. | d. Success despite adversity. |
| e. Discrepancy between ability and achievement. | e. Harmony between ability and achievement. |
| f. Awareness of change in self. | f. No sensation of change. |
| g. Somatic delusions. | g. Absence of somatic delusions. |
| h. Clash between culture and environment. | h. Harmony between culture and environment. |
| i. Loss of decency (nudity, public masturbation, etc.). | i. Retention of decency. |

embrace all points in the developmental sequence of the disorder.

The link between the case-history criteria in process and reactive schizophrenia provided by Kantor et al. and favorable and unfavorable prognostic indices as formulated by Huston and Pepernik (47) can be seen by referring to table 2. There is a scattered amount of surplus content in both listings. For example, body type is a rather outmoded variable that does not claim the
Table 2. Favorable and unfavorable prognostic indices in schizophrenia [from Huston and Pepernik (47)]

<table>
<thead>
<tr>
<th>Favorable</th>
<th>Unfavorable</th>
</tr>
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<tbody>
<tr>
<td><strong>Clinical factors</strong></td>
<td></td>
</tr>
<tr>
<td>Acute onset*</td>
<td>Gradual onset.*</td>
</tr>
<tr>
<td>External precipitant*</td>
<td>Long duration of illness prior to hospitalization.*</td>
</tr>
<tr>
<td>Short duration of illness prior to hospitalization.*</td>
<td>Inappropriate affect.*</td>
</tr>
<tr>
<td>Preservation of affect.*</td>
<td>Flat affect.</td>
</tr>
<tr>
<td>Tension and anxiety.</td>
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</tr>
<tr>
<td>Depression.</td>
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<tr>
<td>Manifest moderate hostility.</td>
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<tr>
<td>Self-reproaching delusions.</td>
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</tr>
<tr>
<td>Compliantly paranoid.</td>
<td></td>
</tr>
<tr>
<td>Ability to rationalize reality lapses.</td>
<td></td>
</tr>
<tr>
<td><strong>Social and personal history factors</strong></td>
<td></td>
</tr>
<tr>
<td>Upper socioeconomic group.</td>
<td>Lowest socioeconomic group.</td>
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<tr>
<td>Good educational history.</td>
<td></td>
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<tr>
<td>Good occupational history.</td>
<td></td>
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<tr>
<td>Steady church attendance.</td>
<td></td>
</tr>
<tr>
<td>Married.</td>
<td>Single, divorced or separated.</td>
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<tr>
<td>Good marital adjustment.</td>
<td></td>
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<tr>
<td>Good recent sexual adjustment.</td>
<td></td>
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<tr>
<td>Relatively stable prior to onset.</td>
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</tr>
<tr>
<td>Under 30.</td>
<td>Over 35.</td>
</tr>
<tr>
<td><strong>Psychological test factors</strong></td>
<td></td>
</tr>
<tr>
<td>High IQ.*</td>
<td>Low IQ (under 90).*</td>
</tr>
<tr>
<td>Functioning at lower level than potential.</td>
<td>Marked impairment of abstract thinking.</td>
</tr>
<tr>
<td>Little impairment of abstract thinking.</td>
<td></td>
</tr>
<tr>
<td>Favorable Rorschach indices (M, C, total R, F).</td>
<td></td>
</tr>
<tr>
<td><strong>Constitutional factors</strong></td>
<td></td>
</tr>
<tr>
<td>Ecto-mesomorphic.</td>
<td>Endomorphic.</td>
</tr>
<tr>
<td>Pyknic.</td>
<td></td>
</tr>
<tr>
<td><strong>Physiological factors</strong></td>
<td></td>
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<tr>
<td>Chills after mecholyl.</td>
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<tr>
<td>Anxiety precipitated only by mecholyl.</td>
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</tr>
<tr>
<td>Small blood pressure response (or decrease) to mecholyl.</td>
<td>Increased blood pressure response to mecholyl.</td>
</tr>
<tr>
<td>Moderate blood pressure response to epi-nephrine.</td>
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</tbody>
</table>

**Note:** asterisked items reflect more reliable prognostic indices.
attention of contemporary investigators. Similarly, the severity of physical illness in the earliest years lacks strong empirical validation. Other variables such as the form of manifest aggression, IQ level, early psychological trauma versus the presence of a good psychological history, and the capacity for alcohol in adulthood have not been sufficiently researched to command attention. However, other variables have sturdy empirical supports and these factors, in the form of dimensionalized attributes, are included in the two scales that are most frequently used as indices for process and reactive status: the Elgin Prognostic Scale (107, 6) and the Phillips Scale of Premorbid Adjustment in Schizophrenia (75). Both scales have the marked virtue of supplanting vague and subjective descriptions of unscaled dimensions with quantitatively ordered criteria that bear a demonstrably reliable relationship to prognosis in schizophrenia.

Rating Scales for Process-Reactive Schizophrenia

Elgin Prognostic Scale

The original Elgin Prognostic Scale (EPS) was devised by Wittman on the basis of a review of some 50 studies of prognosis in schizophrenia. Originally, it was comprised of 30 subscales (25 measured premorbid adjustment and five the presenting symptoms), which were subsequently trimmed to 20; each scale carried "armchair" weights that reflected the prognostic significance of the items based upon clinical judgment. Factors at the favorable end of the scale were arbitrarily assigned negative values; those at the unfavorable pole, positive values. An algebraic sum of these various weighted measures constituted the overall prognostic index. Case history information was the preferred locus for the ratings. The various scale items included those factors related to prognosis to which reference has been made previously: childhood personality patterns, rate of onset, precipitating events, presenting symptoms, duration of psychosis, and body build. Although each scale had several rating points, only the polarities bore descriptive statements.

Reliability reports on the scale are surprisingly few. McDonough (70) cites an intrarater reliability of +0.89, obtained from independent readings of case history data. This is consistent with Wittman's two-rater reliability of +0.87.

Chapman, Day and Burstein (12) report agreement of 0.97 between two raters after extensive resolution of differences in interpretation of items and ratings accorded these items by the clinical judges. (Other studies have used the criteria set forth by Kantor, Wallner, and Winder with reasonably high degrees of reliability, but these studies are not relevant to the reliability of ratings provided by the EPS (28, 59, 119).)

Regarding the components of the scale, these are best revealed in a factor-analytic study conducted by Lorr, Wittman, and Schanberger (67). Using Elgin Scale ratings provided by two clinical judges on 200 successive admissions of hospitalized psychotics, the factor analysis revealed three factors: schizoid withdrawal, schizophrenic reality distortion, and a somewhat poorly defined factor of personality rigidity and maladaptation.

On the first factor, 13 of the 20 scales have factor weights of 0.35 or greater. Typical of such high loadings are scales tapping defects of interest, insidious onset, shut-in personality, schizothymic personality, limited range of interests, low energy tone, lack of heterosexual contacts, etc. As Becker (8) has pointed out, the first factor loads so heavily on relevant dimensions that it alone probably reflects the elements that constitute the process-reactive dimension. The overweighing of this first withdrawal factor is seen in the subscales that merely reflect minor variants of the same behavior. The second factor, reality distortion, has also been confirmed by Becker; and this, together with the emotional rigidity reflected in Elgin ratings of traits characterized as careless indifference and exclusiveness-stubbornness, enables a judgment of severity of pathology to be made. Poor prognosis and greater severity of disorder are reflected in high scores on items comprising the factors; a more favorable prognosis typical of the reactive schizophrenic would be characterized by low scores on the subscales.

Since the appearance of the Elgin Scale, Becker (6, 7) has created a revision that provides for more precisely described intermediate points within each subscale thus strengthening the likelihood of more reliable ratings by clinical judges. This revised scale is presented in appendix A.
Subsequently, Steffy and Becker (97, 98) created an abbreviated version of the Elgin Scale on the basis of the factor-analytic research that has been cited. Those items that constitute the revised form are indicated by a bold dot. The validity of the original scale was successfully determined initially on the responses of 343 diagnosed schizophrenics to various types of shock treatment (109). The scale was far more effective in predicting outcome results than were the prognostic estimates made by staff members. Subsequently, Wittman reported two additional studies (108), one conducted with 825 schizophrenic patients and another with 804 schizophrenic and 156 manic-depressive patients, again comparing the predictive efficacy of scale versus staff on clinical status of the patients following various forms of treatment. In these studies also the EPS proved to be superior to the clinical judgments of staff members.

Attesting to the validity of the Becker revision of the Elgin Scale is the more recent study of prognosis by Chapman et al. (12). These investigators used a mental hygiene clinic as the base for their study, since it provided for a brief psychiatric stay before patients were either discharged or referred to one of seven State hospitals. Subjects in the study included an interracial group of 106 males diagnosed as schizophrenic. Of this group approximately two-thirds were first admissions, the remainder having had one or two prior admissions totaling, on the average, 5 months of hospitalization. EPS scores were obtained on the basis of social history data and supplemented by interviews in order to rate those subscales related to presenting symptoms.

Subsequent followup permitted biserial correlations to be computed for EPS-scores and patients' discharge status for 1– to 9–month periods following admission. It was not until the 6th month after admission that the scale began to predict discharge reliably, but even at 9 months the correlation ($r_{bis}=+0.38$) predicted less than 16 percent of the variance. Furthermore only 11 of 20 items of the scale were significant predictors of discharge status with no scale exceeding an $r_{bis}$ of +0.37. Thus, the EPS predicted discharge only slightly better than chance and no better than knowledge of the patient's marital status alone. However, appropriate consideration must be given to the many factors that can lead to a summary discharge of patients from a mental hospital. It is quite likely that either a more adequate criterion of improvement or a more stringent criterion for recovery (e.g., a ratio of time out to time in the hospital over a prolonged period of time) would demonstrate more reliably the prognostic utility of the EPS. Data to be cited shortly regarding the prognostic utility of the Phillips Scale attest to the need for a more rigorous criterion of recovery than the one employed by Chapman et al.

Of considerable interest is the observation by these investigators of the difficulties encountered in using the EPS. I take the liberty of quoting extensively from their appraisal since these authors have provided a rather definitive critique of the instrument:

The wording of the descriptive labels which Wittman offered for items, although clinically rich and descriptive, is exceedingly imprecise. It is not entirely clear what is meant by "shut-in" personality or "poor bite on life." Even phrases like "withdrawal and disinterest in social surroundings" or "dates frequently" were found to be decidedly ambiguous in the absence of specification of the degree and variety of withdrawal, or how many dates. Ambiguity in some items results from a lack of specification of whether the material is to be rated at a behavioral or an interpretive level—e.g., "insecurity and inferiority feelings" (item L). Also, some of the items call for a judgement which is very difficult to rate objectively, even with optimal information—e.g., "low-energy tone" (item G).

Furthermore, in at least three items, two characteristics are stated as opposites which are not necessarily opposite. For example, in item J the rater must score "marked academic interests versus active interests in sports"; in item K he must score "careless indifference versus worrying, self-conscious type"; in item L...
he must score “exclusive stubborn traits versus insecurity and inferiority feelings.” In the present sample several patients were both studious and athletic, or both self-conscious and carelessly indifferent, or stubborn with feelings of inferiority. Also, some patients showed neither of the two characteristics—e.g., they were neither studious nor athletic.

Many single items contain a variety of characteristics not necessarily related, with the requirement that they all be rated on a single continuum. For example, we are asked to rate in item 0:

“Shut-in personality: General.—The psychotic condition is simply an exaggeration of the peculiar type of personality shown all through childhood. Stormy childhood often with overprotection and anxiety, a difficult adolescence characterized by inability to get along with and mix with other children. Constitutional apparently rather than product of specific environment.”

In addition many of the items appear to refer, at least in part, to the same variables. The descriptive paragraphs of nine of the 20 items mention, among other things, something about inadequate social interests.

There are also items on the EPS which might be expected to have differing implications for level of adjustment, depending upon the subculture; e.g., item E, “range of interests”; item J, “marked academic interests versus active interests in sports”; item K, “careless indifference versus worrying, self-conscious type.” A well-adjusted young man of upper middle-class background would more likely have wide interests (a reactive sign) and academic interests (a process sign) than would a well-adjusted member of a lower class group. Also, “careless indifference” is probably more socially acceptable in some lower class groups than in the middle class (12).

To these disadvantages must be added others. The EPS is an unwieldy instrument, far too elaborate, too multivariate, too inclusive of scales that fail to correlate with prognostic criteria, too biased in favor of an old-fashioned constitutional and somatotypic base, and above all, dependent upon life-history and mental-status data far more extensive than those usually available in the typical case-history file. Becker’s abbreviated version of the scale offers many improvements but some of the shortcomings remain.

The Phillips Scale of Premorbid Adjustment in Schizophrenia

In 1953 Phillips reported the results of an outcome study using a newly devised ordinal prognostic rating scale (75). The scale was originally developed (and subsequently cross-validated) using case histories of schizophrenic patients who had improved or failed to improve following some form of shock treatment. Initially the scale consisted of three subsections: (a) Premorbid History; (b) Possible Precipitating Factors; and (c) Signs of the Disorder. With each subscale there were further subdivisions containing brief descriptive statements with empirically (and, in part, intuitively) determined weights. Each item of the subscales ranged either from 0 or 1 to 5 or 6.

In creating the original subscales, a score of 3 was assigned to divide the improved from the unimproved groups of patients. The smaller the weighted score, the more significant was the item as an index of improvement; the greater the weighted score, the more definitive the index of nonimprovement.

The final order of weights for the items of each subscale was determined by those case-history findings that characterized the two preliminary groups of patients Phillips had used in his initial study. In some instances, it was possible to create items with seven steps representing increasing adequacy of adjustment. In other instances, only four such points could be derived from the data. Two other groups of patients were then rated on the scale to check its validity as a prognostic index. The final validating group was comprised of 31 patients, 29 of whom had been diagnosed schizophrenic, and the remaining two as paranoid conditions. Five clinical judges rated these patients 6 to 12 months after some form of shock treatment (electroshock, insulin coma, metrazol, or a combined treatment) as: “greatly improved,” “moderately improved,” and “least improved.”

Phillips found that case data related to the recent premorbid period bore the most unequivocal relation to outcome, particularly that subscale which dealt with the social aspects of the patient’s recent sexual life. Recent sexual adjustment and the past and present adjustment in
interpersonal relations also proved to be particularly effective. By contrast there existed only a suggestive relationship between the precipitating event and outcome (a finding supported by Chapman, Day, and Burstein's analysis of the comparable EPS items). Data derived from signs of the disorder suggested that effective reactivity and the degree of mood and thought disorder also bore a relationship to therapeutic potential. This last group of items, however, is highly dependent upon the presence of excellent mental-status accounts in the case folder. Since Phillips had found a marked tendency for premorbid-history scores to correlate highly with signs of the disorder \(^3\) \((r=+0.91)\) and to a lesser extent with possible precipitating factors \((r=+0.70)\), other investigators turned to the premorbid-history subscale as the sole criterion for assignment of schizophrenic patients to disparate prognostic groups \((79)\). This scale (now termed the “Phillips Scale of Premorbid Adjustment in Schizophrenia” or, more simply, “the Phillips Scale”) has a number of advantages over the Elgin Scale. First, it avoids such elusive concepts as constitutional bias, low energy tone, asthenic build, toxicity or exhaustion. Second, it demands only minimal case-history data to secure reliable patient ratings. Third, the reliability of the scale has been vigorously substantiated. Fourth, its construct validity has been elaborated through a series of interdependent and independent studies. On the other hand, the scale has a number of shortcomings as a psychometric instrument, including inadequately defined variables, the assignment of somewhat arbitrary weights, etc.

The Phillips Scale consists of five subscales: Recent Sexual Adjustment; Social Aspects of Sexual Life during Adolescence and Immediately Beyond; Social Aspects of Recent Sexual Life (with separate criteria for those above and below 30 years of age); History of Personal Relations; and Recent Adjustment in Personal Relations.\(^4\) Since each subscale has a range of weighted values from 0 to 6 the possible total range of scores extends from 0 to 30. Recalling Phillips’ intention to establish a subscale value of 3 as the fulcrum point between improved and unimproved cases, scores from 0 to 15 have been used to denote so-called good premorbid schizophrenic cases, with 16 to 30 representing the range for assignment as a poor premorbid case. More recently, there has been a move on the part of investigators to remove the ambiguity posed by midscores and to set the scale criteria for designating good and poor premorbid cases as 12 and below, and 17 or 18 and above, respectively.

**Reliability Data**

A variety of reliability studies have been conducted with the Phillips Scale. These studies have included variations both in the source of the rated data (patient interview, parent interview, and case-history files) and the degree of clinical sophistication of the raters. Typical of the findings are those presented in table 3, which is based on research at Duke University \((32)\).

The data of table 3 clearly support the contention that the Phillips Scale is a highly reliable instrument when the total score is used for assignment to a poor or good premorbid category. Individual subscales vary in reliability, with the two related to the past history and present pattern of personal relations being most unreliable. Encouraging is the fact that when the patient is used as an informant, in only five of 46 cases is a category reversal obtained.\(^5\) Furthermore, patients tend to report their premorbid histories as similarly as do other family members. It is possible to interview cooperative patients and, on the basis of the information supplied by them in a structured interview situation, to secure a reliable assignment to either a good or poor category. An additional bit of data obtained by the Duke investigators is that marital status accounts for most of the variance in the Phillips Scale, the point biserial correlation of marriage and total score being +0.78. Furthermore, in a study of 65 male schizophrenics, 50 (or 77 percent) could be correctly classified as good or poor by a

\(^3\) Seidel \((85)\) reports a correlation between the premorbid history scale and total prognostic scale of +0.96.

\(^4\) A copy of the premorbid scale with guidelines for scorers as modified by A. Fanna and N. Garmezy appears in appendix B.

\(^5\) These findings suggest that a 24-item, self-report measure of the process-reactive continuum that has been developed recently by Ullmann and Giovannoni may prove to have considerable utility in future research \((102)\).
Table 3. Abbreviated summary of several reliability studies of the Phillips Scale [data from Garmezy, Farina, and Rodnick (32)]

<table>
<thead>
<tr>
<th>Study</th>
<th>Source of data and informants</th>
<th>Raters</th>
<th>Correlation</th>
<th>Number of category assignment errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Interview: 17 male schizophrenic patients versus parents. Case history versus patient interview. Case history versus parent interview.</td>
<td>Two senior clinicians—one for patients, another for parents. Senior clinician.</td>
<td>+0.59</td>
<td>2/17</td>
</tr>
<tr>
<td>II</td>
<td>Case history data: 13 male schizophrenic patients.</td>
<td>Senior clinician.</td>
<td>+0.62</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Case history data: 10 male schizophrenic patients.</td>
<td>Senior clinician versus graduate student trainee. Senior clinician versus undergraduate research assistant.</td>
<td>+0.90</td>
<td>1/10</td>
</tr>
<tr>
<td>IV</td>
<td>Case history data versus patient interview: 14 male schizophrenic patients.</td>
<td>Senior clinician I versus senior clinician II.</td>
<td>+0.92</td>
<td>0/14</td>
</tr>
<tr>
<td>V</td>
<td>Case history versus patient interview: 15 male schizophrenic patients.</td>
<td>Senior clinician I versus senior clinician II.</td>
<td>+0.92</td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>Case history: 15 male schizophrenic patients.</td>
<td>Two 2nd year clinical psychology graduate students.</td>
<td>+0.90</td>
<td>3/15</td>
</tr>
<tr>
<td>VII</td>
<td>Case history data: 80 female schizophrenic patients.</td>
<td>Two senior clinical psychologists.</td>
<td>+0.86</td>
<td></td>
</tr>
<tr>
<td>VIII*</td>
<td>Interview: 29 male schizophrenic patients Interview related to patient's life history using nonpsychotic brothers as informants (N = 26). Interview: patient and brother (N = 20). Interview: patient and brother (N = 18).</td>
<td>Senior graduate clinician.</td>
<td>+0.95</td>
<td>+0.98</td>
</tr>
</tbody>
</table>

*Data from W. Bradford.
knowledge of marital status alone. Although the designation of marriage invariably provides a rating of good premorbidity, single patients (particularly youthful ones) may rate either in a good or poor premorbid category. These data on the significance of marital status as a prognostic index are substantiated by the observation by Chapman et al. that EPS scores bear a strong relationship to marital status, the married patients being classified at the reactive end of the scale and the unmarried at the process end (12). Of equivalent importance was the finding that marital status alone could predict discharge from the State hospital as well as did the EPS. These results coincide with those obtained in a VA psychiatric evaluation project (53).

Validity Data

The prognostic validity of the Phillips Scale is attested to by several studies. Farina and Webb (25) tested its efficacy with two groups of male schizophrenic patients: One group had successfully remained out of the hospital for at least 18 months (success group); another group was unable to remain out of the hospital on trial visit or discharge status for longer than a 3-month period (failure group). Success or failure of short-term trial visits bore only a slight relationship to premorbid scale scores. However, when the criterion of later hospital status was used (e.g., whether patient was in or out of the hospital 4 to 10 years later) the scale separations revealed a high level of statistical reliability. Seidel too has demonstrated a significant positive correlation \( r_{bb} = +0.46 \) between premorbid scale scores for 63 male schizophrenics, 31 of whom had been hospitalized continuously for at least 3 years and 32 of whom had been discharged in less than 3 years with a psychiatric evaluation of either "social recovery" or "recovery" (85).

In another study utilizing female schizophrenic patients, Farina, Garmezy, Zalusky, and Becker (24) employed a stringent criterion of recovery. All female first-admission patients to a State hospital over a 3½-year span were followed for a period of 5½ years and the time spent in and out of the hospital for each patient during that period was cumulated. Two extreme groups were then selected—a recovered group (N=50) consisting of all patients who had remained in the hospital no more than 6 months and who had been out of the hospital for at least 5 years, and a nonrecovered group that had been hospitalized for 5 years or more and had remained out of the hospital for a total period of less than 6 months.

All patients were given Phillips ratings by a clinical judge who had no knowledge of the patients' hospital histories. Both marital status and Phillips Scale ratings were found to differentiate significantly between the two groups of patients. Since married patients were found in both groups, the authors proceeded to rate this select subsample in terms of the scores obtained on scales D and E (History of Past and Present Personal Relations) as a measure of social functioning. Scores on these scales of patterns of personal relationships were found to differentiate adequately between seemingly homogeneous groups of married schizophrenic women.

A subsequent and comparable study of male patients yielded similar prognostic results (23).

Relationship Between Phillips and Elgin Scales

Both the Phillips and the Elgin Scales have had their proponents and enthusiasts. But the question as to whether or not one can incorporate data obtained from one instrument with data obtained from the other remained unanswered until the publication of a recent study by Solomon and Zlotowski (96). These investigators rated 46 case histories using the EPS and the Phillips Scale. Their data indicate interrater reliability coefficients of +0.90 and +0.92, respectively. Their most important findings were these:

1. The presenting clinical picture does not correlate markedly with the premorbid adjustment data of either the EPS (items A–N) or the Phillips Scale. These correlations are +0.35 and +0.31, respectively.

2. A high degree of relationship exists between the two scales; the overall correlation based upon total scores is +0.87; for the Phillips Scale alone the correlation with total EPS is +0.78. These and related reliability coefficients are presented in table 4 below. These data clearly support generalizing from data obtained with either scale.
Table 4. Relationship between Elgin and Phillips Subscales
[from Solomon and Zlotowski (96)]

<table>
<thead>
<tr>
<th>Number items</th>
<th>Phillips subscales</th>
<th>(14) Number items premorbid adjustments (A–N)</th>
<th>(1) Precipitants (N)</th>
<th>(5) Clinical picture (P–T)</th>
<th>(19) Total Elgin</th>
<th>(13) Total Phillips</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Premorbid adjustment (1a–e)</td>
<td>0.80</td>
<td>0.37</td>
<td>0.25</td>
<td>0.78</td>
<td>0.87</td>
</tr>
<tr>
<td>2</td>
<td>Precipitants (2a–b)</td>
<td>0.63</td>
<td>0.44</td>
<td>0.25</td>
<td>0.64</td>
<td>0.72</td>
</tr>
<tr>
<td>6</td>
<td>Clinical picture (3–4)</td>
<td>0.45</td>
<td>0.18</td>
<td>0.67</td>
<td>0.59</td>
<td>0.71</td>
</tr>
<tr>
<td>13</td>
<td>Total Phillips</td>
<td>0.81</td>
<td>0.40</td>
<td>0.52</td>
<td>0.87</td>
<td>........</td>
</tr>
<tr>
<td>19</td>
<td>Total Elgin</td>
<td>0.96</td>
<td>0.48</td>
<td>0.50</td>
<td>........</td>
<td>........</td>
</tr>
</tbody>
</table>

In the remainder of this paper, I will concentrate on efforts to review briefly the construct validity of the instruments, which extends beyond mere prognosis. No other methods for defining the process-reactive continuum will be cited although other procedures have been employed and have been well reviewed in a substantial paper by Higgins (44).

Some Issues Involving the Process-Reactive Concept

In this section, I will not attempt to deal with a review of the experimental studies that have been performed on subjects categorized as either process-reactive or good premorbid/poor premorbid schizophrenics. The interested reader is referred to articles by Higgins (44), Herron (43), Rodnick and Garmezy (79), and Garmezy and Rodnick (34) for a review of such research. Instead, related research will be reviewed within the context of specific issues posed by the process-reactive (or poor premorbid/good premorbid) concept.

Biases Inherent in the Process-Reactive Concept

The history of the process-reactive concept reinforces the view of schizophrenia as a dichotomous typology influenced either by a presumed somatic etiology or a psychogenic base.

Commenting on the reasons for such a persistently held viewpoint, Garmezy and Rodnick wrote as follows:

The fact that some types of schizophrenia seem to have a readily identifiable psychogenic precipitant whereas no obvious stressors are seen in other cases all too frequently has led to the conclusion that somatic considerations alone influence the latter group.

Discomfort with the current state of psychological research—its complexity, diffuseness, imprecision and (at times) superficiality—has led some investigators to look longingly toward the greater exactitude and lesser complexity promised by the biological sciences. Recent advances in studying the biology of schizophrenia undoubtedly have reinforced the belief that the complex problems of the genesis of this disease are more researchable in fields such as biochemistry and physiology. Coupled with these advances has been an awareness by investigators of the great methodological difficulties inherent in any effort to reconstruct retrospectively, through the verbal reports of patients or parents, the early family milieu of an individual.

The biases of individual investigators have also played a role in accentuating a simplified dichotomous conception of the disorder. Benjamin has pointed out how the reductionistic biases of some investigators deny the possibil-
ity of attributing causality to psychological variables. Graduate training in all disciplines all too frequently produces the type of tunnel vision in research to which Benjamin has assigned the very appropriate terms of "biophobia" or "psychophobia."

The comfort of the "either-or" solution creates ready adherents to a mind-body dualism. The lack of an adequate theoretical conceptualization of schizophrenia which can effectively incorporate both psychological and biological variables tends to foster such simple choices (34).

There are really three issues contained in this passage: (1) Are process and reactive schizophrenia two separate and distinct disorders, or do both stem from a common disease entity? (2) Is the process-reactive distinction best viewed as a dichotomous typology or as a continuum of which the process-reactive designates are merely the polarized extremes of the dimension? (3) To what extent is it valid to equate process schizophrenia with an organic etiology and reactive schizophrenia with psychological antecedents? Although determinate answers to these questions are not available, a variety of research studies indicate the more likely form such answers will take.

1. Process-Reactive: A single or multiple disorder?

The clue to this issue can be found in data related to symptom expression during the disorder. We have shown how the clinical symptom subscales of the Elgin and Phillips Scales lag in prognostic significance (75, 12). In Becker's (7) abbreviated version of the EPS, three of the five clinical scales—"inadequate affect versus emotional instability or appropriate affect," "ideas of influence," and "atypical symptoms"—have been eliminated because of their prognostic limitations; only "hebephrenic symptoms" and "physical interpretation delusions" are retained. The data provided by Chapman et al. (12) suggest that of these two only "hebephrenic symptoms" relate to discharge status 9 months after admission (although affect and atypical symptoms, discarded by Becker, reveal prognostic significance). The research of Solomon and Zlotowski (96) indicates that the symptom items of the Phillips and Elgin Scales have "substantially lower interrater reliability as well as item-to-total reliability when compared with the premorbid adjustment set."

These latter findings may merely attest to the inherent unreliability of scales that are based on fragile mental-status data rather than on any inherent similarity between the process and reactive groups during the morbid phase of a schizophrenic disorder.

Two recent unpublished studies of presenting symptoms at the time of admission to a psychiatric hospital in which the Minnesota Multiphasic Personality Inventory was used to compare the overt symptom patterns of good and poor premorbid patients are of interest.

Schaefer (82) sought to examine the question of whether schizophrenia was a valid appellation to assign to newly admitted good and poor premorbid patients. Her method for answering the question was to examine the symptom picture presented by acutely ill patients in each group at the time of their admission to the hospital, using the patients' self-reports on the MMPI to evaluate and compare symptomatology. Although the study could not possibly answer the ubiquitous question of one versus multiple disorders, Schaefer hoped that data on the symptom status of two such diverse groups of patients would at least clarify the issue of the appropriateness of a diagnosis of schizophrenia in each grouping. Forty-eight white male patients were located in a canvass of the files for the years 1943–55 (prior to the advent of tranquilizing drugs) of the Inpatient Psychiatric Service of the University of Minnesota Hospital. These patients were between the ages of 21 and 45, with a diagnosis of schizophrenia, and had completed an MMPI within 10 days of hospital admission. It is surprising that in the heartland of the MMPI only 48 patients over a 12-year span could be obtained who met these criteria for subject selection. Schaefer then applied the Phillips Scale to the case histories that were available for these patients.

Of the 48 subjects, 32 were categorized as "poor premorbs" (on the basis of Phillips scores that were 18 and above) and 16 were categorized as "good premorbs" (on the basis of 13 and below).

In addition to testing for the significance of differences between the groups on the 10 clinical scales of the MMPI, a comparison was made...
using Welsh’s A and R factors (105), Barron’s Ego Strength Scale (3), Schofield’s Prediction of Change Scale (83, 84), and Jenkins' Prognostic Scale for Schizophrenia (54).

The profiles of the good premorbid and poor premorbid groups are presented in figure 1.

**Figure 1.** Mean MMPI profiles of good and poor premorbid Schizophrenic patients.
[from Schaefer (82)]

There are strikingly few instances of marked differences between the groups. The “goods” differed significantly from the “poors” only on the L scale, whereas “poors” were significantly higher (0.05 level) than the “goods” on scales Pd (psychopathic deviate), Sc (schizophrenia), and K (validity scale). Since both Pd and Sc are weighted with K, the mean scale scores for each group without the K correction were computed. When this was done, both Pd and Sc failed to differentiate between the groups, suggesting that the obtained differences had been due primarily to the K weighting assigned to each scale rather than to differences that were basic to the contents of the specific scales. Using the method of non-K correction, the only reliable scale difference that was obtained was for the Ma scale (mania), with “goods” revealing significantly higher scores in comparison with “poors.” Of the other scales introduced into the study, only Schofield’s Prediction of Change Scale reflected reliable differences, with the “goods” scoring higher than the “poors.” This finding is in keeping with the more favorable treatment potential of the former group.

In comparing the percentages of persons in each group who had scale scores ¥ 70 (the usual cutoff for more manifest pathology), no significant differences on any of the scales were found between the two groups of schizophrenic patients. In general, the mean clinical scale scores for the “poors” were higher than those of the “goods,” indicating a more severely disturbed sample of schizophrenic patients (a finding that is quite consistent with the characteristics of poor premorbidity). However, there is a striking similarity in the configural patterns of the two groups.

Concurrent with, but independent of, Schaefer’s study, Church (13) also conducted a multiphasic study of good and poor premorbid male schizophrenic patients. Her groups, however, were far more chronic than were Schaefer’s. Here too, however, the “poors” appeared decidedly more disturbed than the “goods,” sufficiently so for Church to question the applicability of a diagnosis of schizophrenia to all of her subjects, while calling for a replication of the study with more acute cases. Schaefer’s study, unconfounded by the effects of prolonged hospitalization or issues of diagnostic appropriateness, would suggest that these two groups of prognostically differentiated cases legitimately could be viewed as schizophrenic in terms of expressed symptomatology.

These data, however, do not provide a basis for the rejection of the view that there are multiple disorders at work in process-reactive schizophrenia. Although outcome for the two groups of patients may differ, symptom expression during the morbid (and acute) phase of the disorder, on which so much of diagnosis is based, does suggest the appropriateness of labeling so-called process and reactive patients as manifestly schizophrenic.
2. Process-Reactive: Dichotomy or continuum?

Closely related to the first question is the issue of the identification of the process-reactive differentiation as a dichotomous typology or a continuum. The former viewpoint arose historically from the differentiations provided by Bleuler in terms of recovery/nonrecovery. More recently, other investigators have urged that the process-reactive distinction should be viewed more appropriately as a continuum with the poles of the dimension represented by the classical process case at the one end and the reactive case at the other.

With regard to the dichotomous view, one can point to the distribution of scores of 343 schizophrenic patients rated by Wittman on the earlier Elgin Scale. Wittman's data are reproduced in figure 2 and attest to her view that "such bimodality indicates statistically that two definitely separated classes or types have been included in the sampling." Thus "the hypothesis . . . that there are two types of schizophrenia differentiated as to prognosis, appears to be corroborated" (107).

By contrast, the view of a process-reactive continuum is derived from various sources of data. A number of studies report fairly substantial numbers of schizophrenic patients who fall intermediate between the two extremes. Kantor et al., in the paper that has been cited, had two clinical judges rate the case histories of 108 schizophrenic patients on the basis of the 24 variables listed in table 1 (see p. 36). Judges then assigned each case to one of three categories: "process," "reactive," or "cannot say." Twenty-two of the 108 earned a "cannot say" rating. Since the records presumably were adequate enough for rating purposes, it would appear that ambiguity in classifying to either category existed in 20 percent of the cases. Additional evidence of ambiguity was provided by split ratings that occurred in 22 of the remaining 86 cases. Although some of this disparity may be accounted for by sparse case-history data, it is quite probable that many atypical cases were to be found within the 41 percent of the patients sampled who could not be consistently and accurately labeled.

A clearer example of diagnostic overlap is seen in King's (59) study of autonomic responsiveness in process-reactive cases. In this investigation, 90 patients were classified as either "process," "process-reactive," or "reactive," the intermediate category being designed "to represent schizophrenics with both types of characteristics to an almost equal degree." The characteristics which were rated were once again the 24 distinguishing attributes as suggested by Kantor et al. Apparently of the group of 90 cases, it was possible to secure clinical agreement on the assignment of 24 patients to each of the three categories. Thus approximately 21 percent of the patients selected could be reliably assigned to a combined process-reactive grouping, a figure in keeping with the original data provided by Kantor, Wallner, and Winder. Apparently the types of attributes provided by Kantor et al. are not distributed in the simple bimodal fashion suggested by Wittman (107).

Further support for the notion that a simple dichotomy will not suffice is apparent in the many laboratory studies that have been conducted with process-reactive or good premorbid/poor premorbid patients. The fact that extreme groups have usually been used for research purposes should predispose toward a bimodal distribution of data. Actually, an examination of the variability present within these groups clearly indicates the large degree of behavioral overlap that is characteristic of studies employing the two groups. Were evi-
idence of such overlap to be restricted to one or
two functions, one could argue that the response
measures employed and the functions being
tapped were irrelevant to the issue of a dichoto-
mous typology. However, the range of studies evi-
dencing overlap is so great and incorporates so
many behavioral measures that are presumed to
be relevant to schizophrenic pathology that it is
difficult to continue to assert the existence of a
simple process-reactive dichotomy. Simply to
illustrate the range of contents in which such
overlap between so-called process and reactive
groups is clearly evident, one can point to studies
of critical flicker frequency and spiral after-effect
(70), genetic levels of perception on the Ror-
schach (28), child-rearing attitudes of mothers
and fathers as reported by schizophrenic and
normal patients (31), size estimation of themati-
cally meaningful pictures (38), verbal learning
under reward and censure (9), abstract ability
within the two groups (42), concept attainment
on materials involving social approval and disapp
proval (72B), and autonomic responsivity (119).
The list is as lengthy as the number of experi-
mental publications that have appeared in the lit-
erature. One is restricted in tabulating such a
listing solely by the depressing current tenden-
cies of reporters of research to present data to
the reader relevant to their measures of central
tendency while failing to report their data regard-
ing the dispersions of these measures. One is
reminded of Kety's admonitio, nat "recognition
that any sample of schizophrenics is probably a
heterogeneous one would seem to indicate the
importance of analyzing data not only for mean
values but also for significant deviations of indi-
vidual values from group values."
The third form of evidence that could serve to
establish a process-reactive continuum has
meager experimental support. It has become
fashionable in experimental psychopathology to
use extreme groups when studying the effects of
a given independent variable. In the case of proc-
ess-reactive schizophrenia, it is not merely fash-
on that dictates this modus operandi but the far
greater reality of the limited pool of schizo-
phrenic subjects that is available for experimental
purposes. The concept of a continuum, however,
would necessitate the use not only of extreme
groups but, at the minimum, the use of an inter-
mediate group as well. This procedure was used
by King in his study of autonomic responsivity,
which has been cited previously.
It will be recalled that King used the criteria
provided by Kantor, Wallner, and Winder to select
three groups of patients: process, process-reactive,
and reactive. As a measure of autonomic responsiveness, the maximum fall in systolic
blood pressure (MBFP) following the injection of
mecholyl was used. Results indicated that the
mean MBFP scores in ascending order of magni-
tude were as follows: process (lowest), process-
reactive (intermediate), and reactive (highest).
Further statistical tests revealed that the process
group differed significantly from the process-reactive
group with the latter, in turn, approaching a
reliably lower value in comparison to the reactive
schizophrenics. Unfortunately, efforts to replicate
these findings without using an intermediate
group were not only unsuccessful but, in one
instance, produced diametrically opposing results
(119, 55). This casts into doubt the reliability of
King's results, but it cannot detract from the
appropriateness of the use of an intermediate
group of cases for experimental purposes.
Farina also has employed a categorization of
subjects based upon both the extremes and an
intermediate rating of poor and good premorbid
schizophrenic patients, although his interest
resided not in the patients themselves but rather
in the patterns of dominance and conflict exhib-
ited by the parents of good and poor premor-
bid schizophrenics. His comments on results
obtained with parents of the intermediate group
are interesting because they suggest a continuum
of parental behaviors based upon variation in the
premorbid adjustment level of their sons.
Inspection of the dominance indices of
"good" and "poor" parents suggested that sup-
port for the hypothesis (of sex dominance of
parents and premorbid adjustment of the son)
was more marginal in those cases where the
sons' scores fell within an intermediate range
(11–19) on the scale. Fathers of the "good"
group appeared more clearly dominant over the
mothers in those cases where the son had a
very low premorbid score (toward the zero end
of the scale) and seemed less dominant when
the son's premorbid score approached 16. The
data for the "poor" premorbid group seemed
to show a more random variation. However,
here too, the dominant parent (mother) seemed more clearly ascendant when the son’s premorbid score was extreme (approaching 30) in comparison with the intermediate scale values. The net effect was to suggest that for the schizophrenic groups, father dominance increased with decreasing premorbid scores of the sons and mother dominance increased with increasing premorbid scores. In the middle ranges of premorbid scores (15 and 16) both parents appeared to be more nearly equated in dominance behavior (21).

Becker (7), in his research on genetic level Rorschach scores, employed a distribution of scores on the Elgin Scale and found a significant relationship between variation on the process-reactive continuum and developmental scores derived from the Rorschach as well as (in the case of males) the conceptual level of responses to the Benjamin Proverbs Test. More process-like schizophrenics obtained lower genetic-level Rorschach scores; more reactive-like schizophrenics secured developmentally higher scores. Results such as these add support to the likelihood that the process-reactive dimension represents a continuum of severity of the schizophrenic disorder rather than a simple dichotomous entity. Most results obtained in studies (e.g., Slotnick, Solomon, and Zlotowski, etc.) employing correlational methods in which the variables represented the patient’s level of process-reactive status on the one hand and variations in some behavioral measure on the other reflect assumptions that a continuum rather than a typology is most appropriate for characterizing the severity of the schizophrenic disorder.

3. Process-Reactive: Organic versus psychogenic etiology?

A persistent and unyielding conceptualization of the process-reactive continuum involves the assumption that the primary etiological factor in the former is biological/genetic whereas the antecedent for the latter is primarily psychogenic. I have already cited reasons for the tenacity with which this view is held. What are its origins? And how viable is the belief in the light of available evidence?

The source of this orientation is clearly evident in Bleuler’s classification of mental diseases. Four decades ago in the English edition of his *Textbook of Psychiatry* Bleuler wrote:

> One class of the psychoses shows itself as a morbid reaction to an affective experience, as a prison psychosis to a confinement, and an hysterical twilight state to a jilting on the part of the beloved (reactive psychoses, situation psychoses). In the other class there is a morbid process in the brain, that conditions the psychosis (process psychosis, progressive psychosis). But no division can be based on these classes because the two symptomatologies intermingle (10).

Certain inherent biases in this paragraph are suggested. “Process” implies an ongoing, progressive, organically-determined development over time; “reactive” implies a more immediate response to some current stimulus or influencing condition. The etiologic assumptions are also clear, as is the dichotomous classificatory schema involved. However, the wisdom of Bleuler is most clearly seen in his cautionary note that an element of interaction is present in the etiology of both process and reactive conditions since organic and psychogenic elements intermingle. Nevertheless, for reasons of the prevailing biases that surround the terms “process” and “reactive,” other investigators have seen fit to select the more neutral “good” and “poor” premorbid terminology since these are operationally specific to the scale used for rating patients. In commenting upon this decision, Garmezy and Rodnick wrote:

> To the reader the separation of patients into “good” and “poor” premorbid categories may suggest that we too have a dichotomous conception of the disorder which is coterminous with the process-reactive differentiation. This is not so. The separation of patients into “goods” and “poors” is not founded on a theoretic belief involving differentiated etiologies but is simply a first entry into the problem of reducing variance through the use of a scaling instrument with marked limitations. Although “goods” and “poors” do share some attributes which have been assigned to reactive and process cases, our own position is theoretically neutral and makes no assumptions involving an exogenous-endogenous position. Indeed the research of our group strongly suggests that premorbid adjustment can be thought of as a continuous rather than a dichotomous distribution. In several re-
cent studies the use of the scale in a trichotomous fashion provides further differentiations within the groups. For experimental convenience, however, we have taken to using the extremes of the distribution — an arbitrary but useful procedure. Therefore, our own view of "goods" and "poors" is based upon utilitarian considerations. The critical empirical problem which remains unanswered is that of determining the nature of the range of differences in performance between the groups in various tasks and the exploration of personality variables and life history factors which are correlated with such differences (34).

Evidence in support of a differentiated etiology is based upon two classes of data: The first relates to observed similarities between cases of clearly defined organic pathology and chronic (presumably process) schizophrenia; the second relates to genetic determinants in process versus reactive schizophrenia.

Typical of the first group of studies comparing organic and chronic schizophrenics are those related to conceptual performance. Tutko and Spence (100), in a carefully designed study, compared the performance of normal, brain-damaged, and process and reactive patients (on the basis of Phillips scores) on the Goldstein-Scheerer Sorting Test. Their hypothesis was that the similarity between organic and process cases would be greater than that obtained for the process and reactive groups. Of greater importance was the formulation advanced by these investigators that the types of errors made by the groups would differ. For process and organic patients, Tutko and Spence predicted that the errors made would be primarily restrictive ones ("an inability to suggest similarities among sets of objects"); for reactivives, errors would be primarily of the expansive type ("inappropriately broad or idiosyncratic"). Typical of restrictive errors were those categorized as "no response," "split-narrow" (the definitions embrace only a subgroup of items), "chaining or object naming," and "concrete fabulization" (objects are merely mentioned in the context of a narrative). There were two types of expansive errors: abstract fabulization (an extended narrative related or unrelated to the objects) and syncretistic and symbolic responses (overinclusive, loosely associative boundaries).

The findings of the study were essentially these: (1) Normals gave the greatest number of abstract responses but did not differ reliably from the other three groups; (2) reactivives' errors were primarily expansive ones; (3) the errors of the process and brain-damaged groups essentially were restrictive in nature; (4) the reactive group was most prone to give additional responses followed by the normals, process, and brain injured.

Summarizing their study, the authors note:

In most of their Inadequate responses, the brain-injured subjects erred in the direction of being unable to specify a common property that characterized all of the objects. That is, they failed to suggest any basis of commonality, specified a property of only some of the objects in a group, or merely described them in some fashion. However inadequate their responses often were, their approach to the task might at least be characterized as appropriate in that they tended to stay within the limits of the task as specified by the experimenter's instructions and confined themselves in their responses to the fairly immediate properties of the objects.

The performance of the Process schizophrenics was similar to the brain injured in that the predominant types of error made by these subjects were of the same kind. However, their inability to specify common properties of the objects was less marked than the brain injured. That is, they gave significantly more Adequate responses and more often suggested multiple bases for the objects belonging together. Further, for those responses that were considered Adequate, the Process schizophrenics gave more responses that were categorized as Abstract.

Like the Process subjects, the Reactive schizophrenics gave significantly more Adequate responses than the brain injured, and within this category, proportionately more Abstract responses. In both of these measures, however, the two schizophrenic groups did not differ significantly and thus may be said to have been equivalent in overall goodness of performance. There were marked differences between the groups, however, in the kind of In-
adequate responses given. The Reactives might be described as erring in the opposite direction from the Process and brain injured. The Reactives were typically able to suggest some basis for the objects belonging together (response failures were rare). Their responses, however, were frequently overinclusive in the properties they specified, loosely associated with the specific objects, or so bizarre and idiosyncratic as to have no discernible connection with the objects. The willingness of the Reactives to offer a response, however inappropriate, is further demonstrated by the finding that they gave significantly more multiple responses than any other group, including the normals. This frequently had the effect of saying too much, since within a single answer, it was not unusual to find a high level, abstract response among responses of poorer quality.

The overall performance of the normal control group was, of course, superior to all of the other groups; i.e., they gave a significantly greater number of Adequate responses and a higher percentage of Abstract responses. Examination of the Inadequate responses of this group revealed less of an imbalance between Restrictive and Expansive errors than in any of the other groups. The majority of their errors, however, were of the Expansive type and in this sense, they were more similar to the Reactive schizophrenics than to the other groups (100).

Although the authors suggest that their finding may “support the hypothesis that some type of brain pathology may be responsible for the symptoms exhibited by process schizophrenics, as opposed to etiological factors of a more functional nature in reactive schizophrenics,” they are appropriately cautious in suggesting that different etiological considerations may produce similar symptom pictures.

This observation, of course, is one that was made by Jaspers in his monumental work on general psychopathology:

That the outcome is the same is no proof that the disease is the same. The most diverse organic brain diseases show the same outcome in the same type of demented state (52).

I have quoted Tutko and Spence at length in order to give the reader the opportunity to consider their findings in some detail. It is clear from their description that process and organic patients differ in certain significant ways. The organic patient apparently attempts to grapple with the sorting problems but is cognitively unable to do so successfully. Furthermore, this incapacity is accentuated by the fact that he is apparently able to maintain the task set. By contrast, the process patient is conceptually more adequate, shows an ability to produce more adequate and abstract responses than his organic counterpart, but his performance appears to reflect more a motivational than a cognitive insufficiency. The restrictive errors to which Tutko and Spence make reference are the more probable kinds of errors that an inactive and withdrawn patient is likely to make. A low activity output combined with an inability to maintain a task set are attributes that are more likely to generate nonresponding, or attention only to subsets of stimulus materials, or object naming, or simple narrations. To this extent, one can perceive in the conceptual habits of patients a continuity with those behaviors of the premorbid period that are so characteristically process-oriented. By contrast, the most striking attribute of the performance of reactives is their “coping behavior.” Despite the destructive impingement of their psychosis, they continue to search for solutions to the problems, however inappropriate these efforts may be. If they speak too much, they do at least try unremittingly to attain solutions, and such efforts to grapple with problems also suggest a continuity with their more adaptive patterns of the past.

This point perhaps can be made clearer by referring to Payne’s systematic studies of overinclusiveness (74). Various tests of conceptual performance (including the Goldstein-Scheerer Sorting Test, Payne’s Object Classification Test, and Benjamin’s Proverb Test) suggest that overinclusiveness is characteristic of acute schizophrenics, whereas chronic schizophrenic patients do not show such behavior. What are the criteria for overinclusiveness in these tests? For the Goldstein-Scheerer Test, overinclusiveness is measured by the number of objects grouped together in the “handing over” part of the test; for the Object Classification Test (which provides for 10 correct sortings), the measure is in terms of the
variety of additional unusual sorts given; for the Proverb Test the response measures are in terms of both talking time and the number of words spoken. These responses too are activity measures and thus it is not surprising to find acute patients manifesting overinclusive behavior, whereas chronic patients do not. In comparable fashion, Epstein’s overinclusiveness score was a measure of frequency of responding with items that were presumably an essential component of the stimulus concept.

In making this point, it is not my intention to negate the significance of overinclusiveness when applied to schizophrenic behavior; but I do suggest that it is important to consider the nature of a response measure and the diverse processes that may underlie it when evaluating seemingly comparable performances by process and organic patients. A combination of inability to maintain a task set, the intrusion of irrelevant nontask-oriented stimulus events and a depressed behavioral output can produce a picture of conceptual deficit in schizophrenia alike in certain structural respects to that produced by organics, but with strikingly different process components underlying the behavior.

However, other demurrers to the organic-process parallelism can be offered. Some investigators have reported negative evidence regarding the performance of process and brain-damaged patients on tasks that appear to be relevant to a concept of organicity (70). Others find that obtained differences may be explicable on factors related to variables such as length of hospitalization rather than process-reactive status (101). This last point brings to mind the observations of Kety (58) and Horwitt (45) that obtained physiological differences between schizophrenics and non-schizophrenics often reflect consequences, rather than antecedents, of psychopathological processes in schizophrenia.

In Horwitt’s words:

... It is earnestly hoped that investigators, impelled to study the biology of schizophrenia or of other mental disorders, will attempt to control the variables mentioned so that we may better distinguish between the causes of schizophrenia and its effects. Admittedly such controls are expensive and difficult to administer, but they are worthy of incorporation into any research program where man is the experimental subject. Much has been said about the faults of psychiatrists who do not make sufficient use of the laboratory concepts of cause and effect in evaluating mental disease. Conversely, the biologist should not be so naive in the interpretation of his data that he loses cognizance of the fact that schizophrenia is not a simple entity, and that he, too, must beware of the trap of confusing cause and effect (45). Kety’s concern is equally strong:

The physiological and biochemical changes which are secondary to the psychological and behavioral state of the patient are of interest in themselves, and understanding of them contributes to total understanding of the schizophrenic process; it is important, however, not to attribute to them a primary or etiological role (58).

Such admonitions to the biologically-minded have equivalent significance for those who maintain a more psychological posture toward schizophrenia.

 Genetics

A more telling point that suggests the potential validity of a process/organic-reactive/psychogenic hypothesis is contained in the literature of the genetics of schizophrenia. But here too the literature is, at best, sparse and equivocal. The most relevant data are to be found in Rosenthal’s (80) superb analysis of that genetics literature.

Using Slater’s data on identical twins (93) as the base for this analysis, Rosenthal compared twin pairs that were concordant and other pairs that were discordant with respect to schizophrenia as a test of his hypothesis that “typical or process schizophrenia is found more frequently among concordant pairs, atypical or reactive schizophrenia occurring more often among discordant pairs of one-egg twins.” Slater’s case histories were rated against Phillips-Scale criteria to ascertain each twin’s premorbid social and sexual adjustment. Unfortunately, all of the 11 sets of twins produced Phillips scores that fell toward the poor premorbid end of the scale. For the concordant pairs the mean Phillips score for the index case was 23.2 with the mean for the cotwins, 24.4; for the discordant pairs the means for the index cases and cotwins were 21.3 and
Thus, the absence of reactive schizophrenics in the sample does not allow for a determinate test of Rosenthal’s hypothesis. In support of his contention is the observation that four of the six sets of twins within the discordant group who had escaped the illness had the better premorbid social and sexual history. However, only one twin of the six sets had a premorbid score that would unequivocally place him in a good premorbid category.

A further analysis of the data revealed that severity of illness was linked to concordance. Using age of first admission as an index of onset, Rosenthal compared his discordant and concordant pairs and found the mean age of onset in the former to be 22.9 years versus 37.7 years for the latter group. Furthermore, there was virtually no overlap between the two groups. In terms of outcome data, “poors” tended to show a more deteriorative course than did the “goods.” Since onset and outcome are more determinate indices of process-reactive status, Rosenthal’s data appear to suggest the presence of a genetic bias in the process group and a nongenetic component among reactives. The greater prevalence of schizoid-schizophrenic illness among family members of “poors” in contrast to the “good” premorbid group would appear to lend further substance to the data. Two additional points, however, should be noted. First, Rosenthal’s data on female schizophrenics failed to support the triad of hypotheses of greater severity of illness as well as earlier age of onset and more baleful outcome in the concordant twins. Second, preliminary data gathered by Gottesman and Shields, who are currently conducting a twin study of 57 pairs of twins drawn from 16 years of consecutive admissions seen at Maudsley Hospital during the period 1948–64, suggest that the discordant-discordant pairings are not readily explicable on the basis of Phillips premorbid scores. Other data, however, are supportive. Gottesman writes:

We found no strong connection between age at first hospitalization and MZ concordance.

Before age 25, 7/13 were concordant, with 7/15 concordant after age 25. Counting probands rather than pairs. By omitting probands with an onset of schizophrenia at age 35 or later, concordance rates are 14/25 (56%) for MZ and 3/18 (17%) for DZ. Among our 10 concordant MZ pairs 5 had onsets after age 20. Among our 14 discordant MZ pairs 9 had onsets after age 20.

Probably our most interesting preliminary findings that tie up with your notion of a process-reactive dimension are those relating severity to concordance. Dividing the MZ and DZ probands into those hospitalized for under and over one year, we find concordance rates of 20% and 67% in the MZs and 11% and 12% in the DZs. Using under and over two years, we find 27% and 77% in the MZ and 10% and 15% in the DZ.

With work situation at the time of follow-up as another indicator of severity we obtain a confirming view of the relationship with concordance. For MZ probands working and out of hospital for more than six months when last known, the concordance rate is only 17%. For all other outcomes the MZ concordance was 75%. For DZ probands with a good outcome the concordance rate was 0% and for all other outcomes concordance rate was 22%.

Relationship between hospitalization and concordance did not appear to be related to current age.

Gottesman’s current analyses are only tentative and an answer to the issue of genetic variation and biological heterogeneity in schizophrenia must await a more definitive treatment of his data. For the present we are left with Rosenthal’s conclusion that—

. . . the combined findings of discordance in monozygotic twins and the virtual absence of schizophrenia among members of their families are strongly suggestive that a schizophrenic gene is not the responsible agent in the illness of these twin index cases. . . .

On the other hand, the combined findings of concordance in the monozygotic twins plus the fact that history of probable schizophrenic illness occurs in approximately 60 percent of their families is strongly suggestive of an hereditary determinant (80).

Rosenthal’s findings are suggestive; hopefully Gottesman’s data may shed still more light on . . .

7 Personal communication from Gottesman and Shields. [Data referred to were subsequently published in: Schizophrenia in twins: 16 years consecutive admissions to a psychiatric clinic. British Journal of Psychiatry, 112:809-818, 1966.]
this issue. But the question of biological heterogeneity in schizophrenia is obviously extremely complex, and among identical twins variations in premorbid adequacy could well be related to variations in environmental stress. Recent publication of the volume devoted to the Genain quadruplets (81) can well serve as a case in point.

Most case histories that are available in the genetic studies of schizophrenia are so sparse and so unyielding of case dynamics that factors in the premorbid history are generally limited (and often nonproductively) to more demographic forms of data. It seems reasonably conservative to assert that the magnificent case study of the Genain quadruplets provided by Rosenthal and his collaborators and by Wynne et al. (110) in a separate publication stand alone in the literature of the genetics of schizophrenia. Without such a history it would not have been possible to perceive how the different role relationships established during the earliest years of the quadruplets’ lives set in motion varying patterns of adaptation that were to eventuate in a process type of schizophrenia in three of the four quadruplets and to produce a more reactive form of the disorder in the fourth.

As Rosenthal points out in his effort to erect a conceptual framework for the study, theories that emphasize a diathesis-stress interaction are coming to prominence in research in schizophrenia. Such theories (72) assert that a predisposition to schizophrenia is inherited but that the disorder more typically is potentiated by a variety of stressors—more often psychological in nature. A review of the life histories of the Genain quadruplets not only implicates heredity but points to differential environmental experiences as a potential component in the subsequent development of a more process-like syndrome of schizophrenic symptomatology. But studies of varying psychological antecedents in process and reactive schizophrenics are of fairly recent origin. Since many of these studies suggest that variations in the role patterns within the family of schizophrenic patients not only exist but can be differentiated along a process-reactive dimension, a brief review of the literature is in order.

Before doing so, I feel impelled, in closing this section, to quote Ralph Gerard’s words of wisdom:

Avoid the disaster and confusion that results from the careless admixture of different levels of discourse. Mind does not act on matter, nor matter on mind. There are only an antecedent mind-body state and a consequent mind-body state, whether mental or physical aspect chances to present more acutely. . . . This can all be given point at a favorable level of argument, as to the cause or genesis of psychoses. The constitutionalists and the organicists and environmentalists and mentalists too often are quarreling with each other as to which of them has the cause. Now it is obviously useful to find out that schizophrenics have abnormal capillaries in their fingers, that they had abnormal experiences in their childhood, and that they have abnormal individuals as parents and sibs; but one does not exclude the other and no one of them can possibly be the whole story (36).

4. Studies suggestive of differential patterns of socialization in process-reactive schizophrenia

There is a growing, if inconclusive, body of evidence to suggest that variations in premorbid social and sexual adequacy may be related to variations in family organization and socialization practices. Such data, some of a direct nature, others highly inferential, may have implications for variations in early socialization patterns that characterize process and reactive schizophrenics. Several of these studies have been reviewed elsewhere (34) and, therefore, I shall merely catalog some of these recent findings.

- Poor premorbid patients, when responding to a child-rearing attitude scale as they believed their mothers and fathers would have responded during a period of time when they (the patients) were growing up, tend to ascribe more pathologic child-rearing attitudes to both parents. Intrafamilial comparisons based upon such items suggest a pattern of heightened maternal dominance in families of “poors” and more characteristic patterns of paternal dominance in the case of good premorbid schizophrenic patients. Thus the traditional pattern of powerful mother/ineffectual father that is so pervasive in the familial literature of schizophrenia appears to be more typically a poor premorbid pattern (31).

- Actual parental interactions in a situational test procedure confirm the above findings: (1) For the poor premorbid group the mother reveals
marked dominance with father playing a more
submissive role; a characteristic pattern of paren-
tal conflict and discord predominates. (2) By con-
trast, the good premorbid parental groups tend
toward father ascendancy with mother showing
greater submissiveness; a lesser pattern of dis-
cord is in evidence. (3) Normal control parents
share authority patterns and reveal little overt
indication of conflict (21).

- Poor premorbid patients reveal greater
deficits in visual discrimination and concept for-

mation if the stimulus contents involve maternal
censuring cues; there is a lesser tendency for
“goods” to be affected by pictorial cues depict-
ing father as the censuring figure (19, 18, 61).

- Poor premorbid patients, in terms of
response to TAT cards, show greater “anxiety-
related imagery” in response to mother and
a lesser response to father; “goods” show a
reverse pattern. “Poors” show greater avoidance
to both parental figures (4).

- Parents of poor premorbid schizophrenic
patients reveal more immature defensive behavior
on the Rorschach Test than do parents of good
premorbid patients; parents of neurotic controls
fall intermediate between the two schizophrenic
groups with the differences between “poors” and
neurotics tending to approach statistical reliabil-
ity (5).

- Good premorbid schizophrenic patients show
greater interference in performance on the Digit
Symbol Test of the WAIS following exposure to a
tape recording of a father censuring a son than
do “poors.” By comparison, “poors” show the
greater interference following maternal censure.
Intragroup comparisons indicate that “goods” are
more affected by paternal than maternal censure
whereas “poors” show a reverse pattern.
“Goods” tend to be more disturbed by father-son
conversations, particularly under conditions in
which the parent-child interaction is characterized
by censure (37).

In citing these results, I must once again
assert that I am not attempting to negate the
importance of biological heterogeneity in schizo-
phrenia. For one thing, data such as those cited
are fraught with shortcomings that enable only
the most adventuresome investigators to assume
that they unequivocally indicate the existence of
distorted family pathology early in the life of the
preschizophrenic child (33). Nevertheless, they
do allow for some interesting speculations (31).
Marked maternal dominance tends to produce
male children who are docile, submissive, exces-
sively obedient, and estranged from their peers
(65). Such behaviors are not unlike those mani-
ifested by poor premorbid patients. Heightened
conflict between parents of “poors” may further
accentuate the social withdrawal of those children
who later develop a more malignant form of
schizophrenia.

On the other hand, the good premorbid patient
may often have a father of more masculine stat-
ure who at least provides the patient (as a child)
with a model of masculine behavior although his
strong tendency to punish or threaten may acen-
tuate the predisposition to anxiety that is charac-
teristic of the good premorbid schizophrenic
patient. Such an earlier pattern could also help to
explain why the good premorbid patient often
tends to develop a psychosis under intensive
threats to his self-esteem and masculine identity.
In any event, it is difficult to assert unequivocally
that an organic substrate underlies a process
schizophrenia and a psychological substrate the
reactive type when there is some reasonable evi-
dence suggesting that different psychological
antecedents may also be at work in the two forms
of schizophrenia.

Three decades ago, in introducing his survey
of existent research in dementia praecox, Nolan
D. C. Lewis was impelled to write:

. . . There is too great a tendency on the
part of workers to consider mental disorder
either as due to influences penetrating from
without, or due to something dissolving or
disintegrating within the individual. Even those
who express themselves so as to include both
general sets of factors, usually formulate prob-
lems which are pointed toward either the
“psychogenic” or the “organic” concepts in
psychiatry—to use a current terminology (66).

The terminological distinction continues to
exist, often accompanied, unfortunately, by the
same biases of an earlier period.

Behavioral Heterogeneity and the
Process-Reactive Continuum

Were the distinctions produced by the use of
the Elgin and Phillips Scales to be restricted
solely to prognosis, the scales would have a limited import. The fact, however, that such distinctions are now coming to prominence either as independent or control variables in a wide-ranging series of research investigations further heightens the importance that must be accorded the continuum. To catalog all references to the construct validity of these scales would extend this chapter far beyond its present limits. The reader can find testimony to the utility of the distinction in a number of publications including those of Higgins (44), Herron (43), Garmezy and Rodnick (34), Rodnick and Garmezy (79), and Silverman (89), to name but a few.

Study upon study has reported reliable differences between process-type and reactive-type cases in such diverse areas as learning (9), cognition (100), language and verbal behavior (15, 16), perception (17), motivation (78), judgment (1), physiological responsivity (14), child-rearing attributes of parents (31), compliance and avoidance reactions (30, 95), adaptation to social rewards and punishments (30), parental relationships (22), etc.

Merely illustrative, but unequivocally effective as an example of the utility of the Phillips Scale for reducing behavior variability in schizophrenia, is the research on size estimation conducted by Harris (38). Harris' interest lay in relating the symbolic content of pictorial stimuli to distortions in the size estimates accorded these stimuli by schizophrenic subjects. To test his hypothesis of a tendency by patients to overestimate, Harris constructed scenes that depicted a mother and a son in several different interactions—overprotective, rejecting, and accepting—together with a more neutral tree-bush scene and a simple geometric figure (a square). The patients first viewed the scenes and were then asked to judge from memory the size of the pictures they had been shown.

The data for the total schizophrenic and normal groups showed such marked overlap that statistical tests are not required to reveal the sterile quality of the findings. Figure 3 provides the picture of nonsignificance. When, however, the total pool of schizophrenic patients is separated into subgroups of good premorbid and poor premorbid patients, the differences are dramatically accentuated. As can be seen from figure 4, poor premorbid show the predicted overestimation of mother-son pictures whereas good premorbid tend toward underestimation; by contrast, normal subjects are clearly revealed as the more objective perceivers of the size of previously seen pictures. Commenting on the productive returns
realized by Harris’ use of the Phillips Scale, Gar- mezy and Rodnick wrote:

What if Harris had failed to separate his patient group? In that event, his results would have proved disappointingly ambiguous. . . . Combining the data of good and poor premorbid Ss results in mean values which approximate the objective reality achieved by normals in estimating the size of a standard stimulus; but this is clearly an artifact produced by summat ing the widely disparate and bidirectional behaviors of the two subgroups of patients. Had Harris, then, viewed the schizophrenic group as a totality, he would have committed a type 1 error (the rejection of a hypothesis that is true). To return once more to the problem of variability, it is of importance to note that the combined schizophrenic group showed such marked variability in performance that a comparison of the variances of the experimental and control groups by F tests for each scene necessitated, in most instances, rejecting an assumption of homogeneity of variance—a condition which did not obtain when the good and poor premorbid separation was employed (34).

Of greater significance than the point cited above are the implications for theory that can be adduced from data supplied by more homogeneous subgroups of schizophrenic subjects. Again the Harris experiment is a case in point. Recently, Silverman (91) has advanced a cognitive control theory of attention which permits an effective integration of Harris’ research with other seemingly unrelated studies in schizophrenia. Silverman relates the tendencies toward overestimation to Piaget’s formulations of developmental factors in relation to attention. “Centration”—the tendency to fixate upon a stimulus—heightens overestimation of the stimulus. In the young child such centration effects are the result of a tendency to anchor upon dominant objects in the stimulus field—a tendency that is reduced as the child grows older and learns to shift his attention toward and away from the center of a stimulus field. Individuals differ in the extent to which they scan visual fields; extensive scanners show little over- or underestimation, but limited scanners tend to overestimate the stimulus objects to which they attend. Such response dispositions when applied to schizophrenics, Silverman asserts, can be related to symptom, premorbid history, and acuteness of the disorder. Poor premorbid s are minimal scanners; good premorbid s show more extensive scanning behavior. Such developmentally earlier scanning behavior is consistent with differences in genetic levels of perceptual development between process and reactive cases as suggested by the Rorschach developmental scoring studies of Becker (7) and Fine and Zimet (28, 118).

Of comparable importance are the defensive aspects of these two variants in scanning behavior (92). Minimal scanners may be more avoidance-oriented in the face of stressful stimulation, turning away from threatening aspects of their environment and reducing their field of perceptual and cognitive awareness. Such behaviors are clearly consonant with the more acutely ill poor premorbid patient’s hypersensitivity to potentially noxious stimuli and to his prepotent habits of defensive avoidance under threat (30). The excessive scanner Silverman relates to the hyperalert individual who searches for cues that arouse his anxiety and then seeks to cope with such arousal by the production of cognitions and ideations that require a reinterpretation of potentially noxious stimulus events—behavior that is more characteristic of a paranoid schizophrenic.

To return to the Harris experiment, I would merely assert that it is not a unique instance of the success achieved by use of the Phillips Scale in reducing behavior variability while clarifying varying patterns of response in the two premorbid groups. But is the Phillips Scale (and by implication the Elgin Scale as well) unique in its capacity to generate such behavioral homogeneity? Can a differentiation based upon a more traditional Kraepelinian system of classification produce equivalent effects? This important question warrants discussion.

Diagnostic Subtype, the Process-Reactive Continuum and the Reduction of Behavior Variability

Recognition of the prognostic variations among the subtypes of schizophrenia extends back to Kahlbaum and remains a continuing concern of psychiatry (69).

The search for application of the Kraepelinian
classification schema to research in schizophrenia can be seen in the following statement from the most recent edition of Henderson and Giespie's Textbook of Psychiatry:

Research into the many problems posed by schizophrenia has been frustrated by doubts and uncertainties about the heterogeneity of the clinical material being studied. Possibly the majority of observers now think that schizophrenia is not a clinical entity but a group of syndromes, of different aetiologies though with similarities in their clinical features; yet research has usually proceeded on the assumption that a biological entity was being investigated. The varieties of schizophrenia shortly to be described are clinical groupings of symptoms, they have no known pathological basis; but it might well now be more profitable to select for biochemical research these clinical subdivisions rather than schizophrenia as a whole, and particularly the most typical cases of hebephrenia and catatonia (41).

This suggestion had been long realized in the early interdisciplinary studies of schizophrenia that had been conducted at Worcester State Hospital during the 1930's and 1940's. Under the direction of Hoskins, Shakow, Malamud, and others, a series of physiological and psychological studies were conducted primarily on long-term chronic cases (46). The psychological investigations, in Shakow's words, "ranged from the patellar-tendon-reflex latent time at one extreme to group behavior involving competitive and cooperative activity at the other. . . ." To review these studies would take us far afield, but it is clear that in many areas the use of clinical subtypes produced marked differences in adequacy of performance. Thus, paranoid patients revealed superior performance on a test of steadiness (48); catatonics showed the greatest improvement over mean reaction time in successive experimental periods (50); on a pursuit learning task the order of achievement on initial performance (from highest to lowest) was: paranoid, unclassified, hebephrenic, indeterminate, and catatonic (49).

In a recent review of part of the Worcester program of research Shakow was prompted to write:

Both interindividual and intraindividual variability are a major source of difficulty in research on schizophrenia. In our psychological studies, groups of schizophrenic patients have quite consistently given coefficients of variation three times that of normal subjects, and individual patients two times that of normal ones. In studies of physiological functions, these have varied from one and one-half to more than twice that of normal subjects. Of the many sources of variation I shall only concern myself here with the two important ones of nosology and attitude.

Taken in its broadest sense, nosology, has many facets. Initially there is the fundamental problem of the diagnosis of schizophrenia and its subtypes. Aware of this problem, we have made every effort, especially in our Worcester studies, to obtain reliable diagnoses of patients. In addition to certain definite exclusion criteria, we had specified standards for the general diagnosis of schizophrenia, as well as for subtype classification. Whenever there was a question about the schizophrenia diagnosis, the patient was not used in the research. If the patient did not clearly meet the criteria established for one of the four subtypes, the category of mixed, unclassified, or indeterminate was used.

We have a tendency these days to be descending about subtype classification. In fact, there are even "nihilists" among us who would do away with all diagnostic categories, the less enthusiastic of these calling for at least the casting overboard of the subtypes. If diagnoses are to be made on the relatively careless bases so prevalent in many centers, then I would go along with this point of view. If, however, they are based upon carefully worked out and tested criteria, then they deserve considerable respect. I say this despite my original and continuing "dynamic" bias. For the clear-cut syndromes of behavior, for which such labels are referents, have definite value for research purposes, even carrying consistent dynamic and "style" implications for those interested. I am not claiming that there is not much room for improvement. Perhaps it will come through the factorial techniques, which, after some thought, we decided not to use at Worcester. What I do hold is that such perceptive clinicians as Kraepelin and Bleuler saw things that we might also see if we look carefully (88).

The elaborate use of subtypes, characteristic of the Worcester research, has not been followed
in most psychological studies of schizophrenia. A sampling of the literature does indicate that a substantial number of studies have employed a paranoid/nonparanoid dichotomy without attending to a more thorough division by diagnostic subtypes. Silverman (89, 91, 92) has cited and described many of these studies (40, 68, 73, 87, 90, 39, 77, 86, 103, 104).

A number of factors that extend beyond theoretical considerations may account for the active interest in the paranoid/nonparanoid differentiation. For one thing, paranoid patients are more readily identified psychiatrically and thus constitute at least a partially homogeneous group. For another, they bulk large as the subjects for experimental investigations since their relative intactness, frequent cooperativeness and ideational sufficiencies make them ideal choices as participants in research. Third, they are sufficient in number in many large hospitals to provide an adequate N for a designated experimental patient group. This is not to deny the importance of such a distinction, but rather to indicate factors that have restricted the use of the entire range of the Kraepelinian classificatory schema in schizophrenia. Still another factor, of course, has been the notorious unreliability of psychiatric diagnosis. In many hospitals the very careless bases of classification to which Shakow alludes reflect the more typical diagnostic attitudes. Only in research-oriented psychiatric centers where either the clinical staff shares a dedication to the research enterprise or the research staff carries on its own program of vigilant psychiatric diagnosis is it possible to approximate the diagnostic exactitude and acumen that was so characteristic at Worcester.

Does this mean, however, that given the same meticulous attention to diagnosis a comparable research payoff to the one achieved in the Worcester studies would result? I think not, and the reasons for this view are contained both within the attributes of the subject samples that were used in those earlier studies and within a particular methodological procedure that was uniformly followed.

With regard to the subject attributes, Shakow writes:

The patients we generally studied can be described as chronic. They had a mean age of approximately 30, a mean schooling of 9 to 10 years, and a mean hospitalization age of approximately 7 years. (Hospitalization age is defined as the time elapsed since first hospitalization for mental disorder (88).)

The methodological quality to which I make reference relates to the care with which the Worcester group approached the critical issue of the patient’s cooperativeness. A final quote from Shakow will make clear the precision that was accorded ratings for this control variable.

Another problem which troubles psychologists perennially is the part played by the cooperation or attitude of the subject. Almost all psychological tests and experiments require at least the passive participation of the subject. The data from such studies, except those directly investigating functioning at nonoptimal levels (a hazardous procedure, I must point out), carry the implication of having been collected under optimal conditions—external as well as internal. When there is suspicion that nonoptimal conditions are present, justifiable doubt about the validity of the findings arises. The argument may be offered that poverty in cooperativeness is intrinsic to schizophrenia; therefore, any attempt at the separation of its effects is at best academic. This thesis had validity to the extent that poor cooperation is intrinsic. The argument, however, runs into the difficulty of not making a distinction between the intrinsic effects of attitude and of other temporary or superficial interfering effects. In order to control for this factor in our studies, we consistently used an A to E rating scale which defined various levels of cooperation. The patients used in the studies reported fall mainly into the classes we labeled A and B cooperation, those showing either active interest in the task itself or active effort because of secondary interest (88).

The effect of these twin factors of chronicity and cooperativeness undoubtedly served to produce markedly homogeneous groups in which the control of less relevant subject variables may have permitted those very aspects of subtype “style” to which Shakow has alluded to exercise some effect. Whether or not subtype composition would have an equivalent yield with an acute population is a valid question that can only be determined through empirical study. But I must con-
fess that I am not sanguine about the success of such a venture.

My pessimism is induced by the results of a survey that was conducted under the aegis of the Duke Schizophrenia Project that Dr. Eliot H. Rodnick and I headed. I present these data showing the relationship between diagnostic subtypes and Phillips premorbid score ratings most tentatively because they are derived from a biased sample of cases—namely, those patients who participated in our research. It would have been far more impressive had we been able to gather comparable data on consecutive admissions of newly hospitalized schizophrenic patients; but unfortunately such data were not available to us.

Furthermore, I sound the cautionary note that the vagaries that inhere in psychiatric diagnosis all operate here. In exchange for this apologia, however, I would note that the hospital settings in which we worked were undoubtedly more typical of the contemporary American psychiatric scene than Worcester State Hospital under the guiding hands of its outstanding professional group of the 1930's and 1940's. Thus the data are probably more representative of the typical field situation in which an investigator is likely to find himself. In figure 5, curves are presented showing the relationship of total Phillips Scale scores to three classes of schizophrenic patients (totaling 126 cases) and 35 normal subjects. As can be seen, the degree of overlap of schizophrenic subtypes into the good premorbid category is so great that it insures behavioral heterogeneity. Such effects are less apparent with the chronic and acute undifferentiated schizophrenic subjects, but quite marked for the paranoid and miscellaneous groups. In effect, I am asserting that it is quite probable that a selection of paranoid, or catatonic, or hebephrenic subjects will distribute itself so widely along a process-reactive continuum that one should not expect to secure consistent and statistically reliable differences over the wide range of laboratory tests that have been cited in this chapter. (Parenthetically, I would add that the bimodal distribution observed by Wittman is not so striking for the total Duke schizophrenic group despite selection procedures that were designed to insure good and poor premorbid subgroups.)

Figure 5. Distribution of total premorbid scores (Phillips Scale) for schizophrenic diagnostic groups and normal subjects.

All told, the evidence suggests that greater reliance can be placed on the reduction of subject variability through selection based on those procedures that separate subjects on the basis of prognostic rather than symptom criteria.

Application of the Concept of a Process-Reactive Continuum to All Forms of Psychopathology

The final section of this paper is devoted to an issue of overriding conceptual significance. Is the process-reactive concept unique solely to schizophrenia, or is it applicable to all forms of functional mental disorders? The minimal data available to us support the latter position, although we lack experimental studies that would provide a more determinate test of how extensively the concept can be generalized. The research of Zigler and Phillips on the relationship of social competence to symptom formation, diagnosis, and psychiatric outcome is most relevant to a consideration of this issue (76, 111-116).

These investigators have traced the correlates of a social competence index that embraces six variables: age, intelligence, education, occupation, employment history, and marital status. Variables such as these bear, of course, a striking parallel to the earlier research on premorbid adequacy conducted by Phillips. Each variable is divided into three categories (scored 0–1–2 in increasing order of social competence), presuma-
bly representing points along a continuum of social adequacy. As described by Zigler and Phillips, the categories within each variable and their order from low to high social competence are as follows:

1. **Age.**—24 and below, 25—44, and 45 years and above.

2. **Intelligence.**—IQ's, based on a standard intelligence test, of 84 or less, 85–115, and 116 and above.

3. **Education.**—None or some grades including ungraded or special classes; completed grade school, some high school, or completed high school; and some college or more.

4. **Occupation.**—The Dictionary of Occupational Titles is used to assign a given occupation into one of the following groups: unskilled or semiskilled, skilled, and service; clerical and sales; professional and managerial. (The variable is left unscored for individuals not falling into one of the categories.)

5. **Employment history.**—Usually unemployed; seasonal, fluctuating, frequent shifts in employment, or part-time employment; and regular employment.

6. **Marital status.**—Single; separated, divorced, remarried, or widowed; and single continuous marriage.

Zigler and Phillips view mental disorders as representing a "continuous process in which the premorbid, initial, middle, and ultimate stages are meaningfully related." A consequence of this developmental position is their view that "the relationship of achieved level of maturity (defined in terms of premorbid social competence) to certain dimensions of psychopathology is not unique to schizophrenia but instead cuts across all forms of functional mental disorder" (116). They find support for this position in their study of outcome in mental disorder in which schizophrenic and nonschizophrenic groups were compared (115). Using a total sample of 251 patients who had been admitted over a 9-year period to Worcester State Hospital for a functional disorder, these investigators studied the relationship of social competence to hospital stay or hospital discharge, to length of institutionalization, to the frequency of rehospitalization, and to the time elapsing between discharge and readmission.

Except for the failure to differentiate highs from lows on the last-named prognostic criterion, the high competence group systematically showed a higher frequency of discharge, a shorter period of institutionalization, and fewer instances of rehospitalization. A subsequent study, in which the form of treatment received by the patient was controlled, produced comparable findings, thus suggesting that the social-competence variable may be a more significant predictor of recovery than is the treatment the patient receives.

Another type of evidence bearing on the generality of the process-reactive continuum requires a somewhat extended chain of inference. Levine (64) has observed that the relationship between Rorschach genetic scores of developmental maturity previously found to differentiate process and reactive schizophrenia (6, 118) can also serve to discriminate among nonschizophrenic psychotics and is related to length of hospitalization. Thus a relationship, albeit a tenuous one, is suggested between levels of premorbid social competence, outcome in schizophrenic, and nonschizophrenic psychosis and level of maturity as expressed by Rorschach developmental scores.

Another empirical chain relating the process-reactive continuum to nonschizophrenic attributes is forged by research relating social attainment to reactions to stress in nonpathological subjects. Relevant findings include evidence that, even among normal men, degree of maladjustment is related to social adequacy (27); furthermore, normal subjects of lower levels of social attainment perform less adequately on psychomotor tasks run under failure-stress conditions (26); and higher social attainers show a greater adaptive response to a failure-induced stress including a less marked physiological reaction and a more realistic shift in goals following such failure (35).

Still another link is provided by the observation that social attainment is also related to the developmental level of perceptual functioning on the Rorschach Test (62).

And, finally, the study by Zigler and Phillips of the relationship of social competence to symptom expression in the functional disorders is particularly suggestive (116). Earlier studies had identified (113) a triadic cluster of symptoms that correlated with level of social competence.
“Self-deprivation and turning against the self” (typically suicidal attempts and ideas, bodily complaints, tension headaches, self-depreciatory and depressive behaviors, etc.) was found to be positively related to a higher level of social competence, more favorable outcome, and the presence of manic-depressive and psychoneurotic diagnoses and negatively related to the character disorders and schizophrenias. Symptoms of “self-indulgence and turning against others” (e.g., maniacal outbursts, perversions, drinking, rape, assaultiveness, lying, etc.) were correlated with lower levels of social competence, predicted a less successful outcome, and were positively related to character disorders and negatively related to manic-depressive, psychoneurotic, and schizophrenic diagnoses. Finally, a cluster of symptoms defined as “avoidance of others” (withdrawn, suspicious, hallucinatory, bizarre ideas, etc.) was also found in patients of low social competence, predicted a less successful course, and was positively related to schizophrenia while negatively related to the other three diagnostic groups.

When the relationships between symptom patterns and the process-reactive continuum in all four diagnostic groups were compared, the results suggested that such relationships transcended any single diagnostic group. Individuals with high symptom scores (defined as an emphasis on symptoms in the self-deprivation or turning-against-the-self category) were found to have high social competence scores, whereas low social competence indicators in all four diagnostic groups were accompanied by low symptom scores. Zigler and Phillips concluded:

This finding, in conjunction with the earlier finding that both schizophrenic and nonschizophrenic patients with high social competence scores have a better prognosis than those with low scores, calls into question the heuristic value of the process-reactive distinction in schizophrenia. The implication here is that the process-reactive distinction is reducible to the social competence dimension, which is continuous in nature, and which is applicable not only to schizophrenia but to all of psychopathology. This approach makes of psychopathology a unitary phenomenon rather than a collection of discrete entities, each conceptualized in terms of unique dimensions and parameters. . . . Although in general the conventional psychiatric categories are related to the level of social maturity attained one finds patients with both high and low social competence scores in each of the conventional diagnostic categories. This less than perfect relationship may simply reflect what has long been suspected, namely, that in terms of the meaningful correlates of the diagnostic categories, the conventional diagnostic system is a relatively sterile one. It further suggests that the ability to predict such factors as outcome could be enhanced through the construction of a new diagnostic system based on a combination of premorbid social competence measures and related symptom dimensions (116).

I am not prepared, as are Zigler and Phillips, to dismiss our traditional psychiatric nomenclature. But the implications for research in these data are very clearly indicated. Most studies that have utilized a process-reactive separation for schizophrenics have not set forth the same distinction among the normal control or alternate psychiatric groups that have been used. I can point to the Duke Schizophrenia Project as a case in point. In the diagram below I have checked the groups used repeatedly in those studies. It is perfectly clear that box 4 has not been a component part of these studies—and for good reason. Both the Phillips and the Elgin Scales have such a low ceiling that most nonschizophrenics (and virtually all normal subjects) tend to score at the more reactive end of the scale. Zigler and Phillips, in the study cited above, have noted this tendency for nonschizophrenic patients to have both higher social competence and higher symptom scores relative to the schizophrenic patients. But without box 4, we cannot separate differences that are due to schizophrenic processes from those that are a function of social inadequacy.

<table>
<thead>
<tr>
<th>Diagnostic Categories</th>
<th>Normal</th>
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<tbody>
<tr>
<td>Social Adequacy</td>
<td>Schizophrenics controls</td>
</tr>
<tr>
<td>Good (Reactive)</td>
<td>1✓</td>
</tr>
<tr>
<td>Poor (Process)</td>
<td>3✓</td>
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</tbody>
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Hopefully, the Social Competence Index may provide a more adequate method for separating patients of all diagnostic categories than has hitherto been available to us. A diligent search of patients may enable us to fill cell 4 in future studies with appropriate nonschizophrenic controls. But it will not be easy. The research of Zigler and Phillips is based upon case records garnered over a 9-year period. At any given point in time, finding high and low social competence depressives, psychoneurotics, character disorders, and normals will be difficult. If we can manage to do so, then it will be profitable to initiate studies that go far beyond Zigler and Phillips' preoccupation with syndromes of symptoms. Studies to be initiated could include replications of those research investigations that have fruitfully differentiated between process-type and reactive-type schizophrenics.

A program of research into the biochemical, psychological, and social aspects of patient functioning could provide more definitive answers to a variety of questions. How adaptive under stressful and nonstressful conditions is the functioning of process-type, nonschizophrenic cases in relation to a comparable group of schizophrenic patients? Do such groups differ at varying levels of physiological functioning? To what extent do the basic patterns of socialization differ in such groups? Are both groups similarly responsive to different classes of social and nonsocial reinforcers? Do both groups show similar or different patterns of adaptation over time to new and stressful situations?

These are but a few of the many questions that could be asked if we were to provide, within our investigations, for groups of schizophrenic and nonschizophrenic patients of high and low social competence with attendant normal controls. The potential productivity of such an approach is limitless. Were we to assume, for example, the continuity of premorbid, morbid, and postmorbid adaptation, then research with potentially and actually disordered children could be given comparable attention. Children who were already beginning to show failures in adaptation as well as others who came from environments that provide high base rates for cases of adult psychopathology could become subjects for comparable studies of cognition, language, learning, and perception to which I have alluded earlier. Beyond the heuristic value of such a program of research would be the important growth of attention to preventive aspects of disorder that these studies would inevitably entail. Such a venture warrants extended exploration.

Summary

This paper has reviewed some aspects of psychiatry's historical concern with the process-reactive distinction in schizophrenia, focusing upon a number of issues central to the concept: (1) Are process and reactive schizophrenia two separate and distinct disorders, or do both stem from a common disease entity? (2) Is the process-reactive distinction best viewed as a dichotomous typology or as a continuum? (3) Can process schizophrenia be equated with an organic etiology and reactive schizophrenia with psychological origins?

Studies of rating scales designed to measure degrees of process-reactive status are reviewed. The relative efficacy of Kraepelinian nosology as opposed to the process-reactive distinction for reducing subject heterogeneity is considered. Finally, the extension of the concept to all forms of psychopathology is discussed with particular emphasis on measures of social competence.

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Addendum

When the decision was made to reprint "Process and Reactive Schizophrenia: Some Conceptions and Issues," the Schizophrenia Bulletin's editors inquired whether I thought it necessary to update my article. While I was considering their question, Dr. Jerry Higgins of the University of California at Santa Barbara sent me a preprint of his article, "Process-Reactive Schizophrenia: Recent Developments"; happily, this excellent review of the relevant literature, extending over a 6-year period (December 1962 through January 1969), made my projected task of revision superfluous.

Readers and researchers interested in process-reactive schizophrenia will find Higgins' critique stimulating—and somewhat discouraging. Recent research on this dimension shares with other investigative areas of schizophrenia several drawbacks: namely, indeterminate data, failures to replicate studies, and the erosion of relationships among variables that once appeared powerful, precise, and unequivocal. Indeed, as Higgins points out: "[F]or every study supporting the efficacy of the concept, two nonsupportive ones can be cited. Notwithstanding this less-than-ideal state of affairs, it should be noted that while nonsupportive studies are many, contradictory studies are few." Among the host of factors contributing to this investigative impasse, Higgins numbers "small samples, underrepresentation of ends of the continuum, chronicity, drugs, sociocultural contamination, and careless selection of dependent variables." Brightening an otherwise bleak evaluation is Higgins' contention that the use of a process-reactive distinction "continues to permit reduction of schizophrenic heterogeneity with sufficient frequency to ensure its continued and broadened application."

Higgins reviews a wide band of investigative interests: criteria for classification, personality studies, research into concepts of arousal and responsiveness, conceptual behavior, language and verbal associative processes, learning and performance (including the effects of specific types of reinforcers; e.g., praise and censure), interpersonal perception, and family relationships.

Missing from Higgins' review, however, is an issue raised in my original paper: Is there evidence for differential genetic loadings at the extremes of the process-reactive continuum? Some recent studies provide provocative leads into that question, notably, Irving Gottesman and James Shields' Maudsley-Bethlem schizophrenic twin project.\(^1\) In examining the relationship of severity of disorder to concordance, they find consistent differences in concordance between the monozygotic twins of severely and mildly affected probands (whether the criteria for determining severity are based on outcome data, age when first hospitalized, or mean ratings of "global psychopathology"). Supporting evidence is provided by Einar Kringlen\(^2\) on the basis of global mental health ratings; the concordance rate in MZ twins for the reactive and schizophreniform psychoses is 25 percent, compared to 31 percent for a chronic group (i.e., remittently admitted or leading a sheltered life beyond the hospital) and 60 percent for long-term chronically deteriorated patients. Gottesman and Shields also evaluated premorbid personality traits—using Phillips Scale (or comparable) ratings, case history information, and personality test data to categorize their MZ schizophrenics into three groups based upon the quality of adaptation prior to illness: "schizoid," "otherwise abnormal," and "normal." Concordance rates proved to be highest (75 percent) for those cases where the proband twin had been schizoid and lowest (25 percent) when premorbid adaptation was within normal limits.

It would appear that: (1) There exist in schizophrenia two matrixes of variables (i.e., process schizophrenia—high severity of disorder, poor outcome, and maladaptation in the early premorbid years; reactive schizophrenia—lessened severity, favorable outcome, and adaptive early premorbid behavior), each characterized by a high degree of internal correlation; and (2) a

\(^1\) Journal of Nervous and Mental Disease, 149(6):450-472, 1969.


heightened concordance rate in MZ twin pairs reflects the powerful imposition of a genetic factor. Given these two assumptions—neither of which is an overextension of the literature of schizophrenia—the suggestion of differentially weighted genetic components in process as opposed to reactive schizophrenia seems evident. Support for this conclusion can be derived from the Kety-Rosenthal-Wender-Shulsinger Danish study of biological and adoptive families of adopted schizophrenics. These investigators report the presence of schizophrenic spectrum disorders in biological family members of the chronic and borderline schizophrenic adoptive group, whereas no instances of such disorders were recorded for the relatives of patients diagnosed as acute schizophrenic reaction. Despite these findings, however, the resolution of the issue of a differential etiology, or differential weightings of a similar etiology, for process and reactive schizophrenia must await the accumulation of far more extensive data than are currently available.

As a final comment, I would suggest that those readers who are interested in more general reviews of the empirical and conceptual status of process-reactive schizophrenia consult the following sources:


Appendix A

Elgin Prognostic Scale
(Becker revision—abbreviated scale items are denoted by bold dots (•))

The definitions for the subscales of the Elgin Prognostic Scale as modified by Becker are given below. Items A through 0 are rated on the basis of the anamnesis data. Items P through T are rated on the basis of the presenting clinical symptoms.

- A. Defects of Interest Versus Definite Display of Interest
  0. Keen ambitious interest in some of the following: home, family, friends, work, sports, arts, pets, gardening, social activities, music, dramatics.
  1. Moderate degree of interest in several activities including social gatherings, sports, music, opposite sex, etc.
  2. Mild interest in a few things such as job, family, quiet social gatherings. The interest is barely sustaining.
  3. Withdrawn and indifferent toward life interests of average individual. No deep interests of any sort.

- B. Insidious Versus Acute Onset
  0. Development over a period of 0 to 1 month with sudden, dramatic divorcement from more or less commonplace living.
  1. Development over a period of 2 to 4 months with marked personality changes from relatively commonplace living.
  2. Development over a period of 5 to 7 months with moderate personality changes. May be some accenting of previous trends, but changes also.
  3. Changes have taken place over a period of 8 to 12 months, with noticeable personality modifications, but primarily an accenting of existing trends.
  4. Slow development of symptoms, but possible to detect personality changes in 2 years prior to onset.
6. Very slow development of symptoms so that final disorder appears as an exaggeration of already strongly accentuated personality traits. Indications even prior to adolescence.

C. Shut-in Personality

General.—The psychotic condition is simply an exaggeration of the peculiar type of personality shown all through childhood. Stormy childhood often with over-protection and anxiety, a difficult adolescence characterized by inability to get along with and mix with other children. Constitutional apparently rather than product of specific environment.

0. Apparently normal childhood, little evidence of shyness, unusual difficulty, or else unusual behavior is attributable to environmental factors.
1. Only mildly this way, but some resemblance to pattern.
2. Moderately the picture described above.
3. Very much as described above.

D. Schizothymic Versus Personality

0. Very sociable, fond of people and social gatherings; many friends, active in groups and sports, participates in life of his community.
1. Moderately sociable, likes people and social gatherings, but doesn’t go far out of way to meet people.
2. Mildly shy, mildly sociable. Will interact when the situation presents itself. Prefers association in family group as a rule.
3. Moderately shy, retiring, etc. More concerned with ideas than people.

E. Range of Interests

0. Wide and varied interests, keen bite on life and its opportunities, forward and interested in making adaptations to daily life in many spheres.
1. Moderate breadth of interests, interested in making adaptations to daily life, but does not go out of way to seek new opportunities.
2. Moderate restriction of interests. Narrow goals, but some detectable variety of interests within a narrow orientation.
3. Inadequate interest in varied problems of life, rigid, narrow goals or interests, circumscribed activities because of the narrow range of interests.

F. Constitutional Bias

0. A healthy, strong, energetic, physical and mental makeup that makes the interplay between heredity and environmental influence during childhood a satisfactory one.
1. Suggestions of defects in physical and mental stamina occasionally observed. Not at all marked. Perhaps proneness to repeated illness in childhood.
2. Regarded from early childhood as different, queer or odd; perhaps associated with some real defect or handicap—physical, such as deformity, or speech defect, but more often only an imaginary defect of personality.

G. Low Energy Tone

0. Very strong drive, keen, active, and alert interest and ambition shown in school, social and work spheres. Good grasp on life, liked life and had energy enough to enjoy it. Outgoing and adequate in meeting life.
1. Moderately adequate drive, interest, energy as described above.
2. Moderately inadequate energy tone. Tends toward submissive, passive reactions. Shows some potential to face life’s problems, but would rather avoid them than expend the necessary energy.
3. Submissive, inadequate, passive reactions, weak grasp on life, does not go out to meet life’s problems, does not participate actively but passively accepts his lot without having the energy to help himself.

H. Asthenic Build

0. Large, barrel-shaped trunk, with relatively short legs and arms; shield-shaped face, short, broad head upon a thick neck, set well down between shoulders.
1. Athletic build. Balanced weight, good musculature, head shape, etc., intermediate to 0 and 4.
2. Long, slender extremities with relatively small, narrow trunk: egg-shaped face, elongated narrow head on a tall, slender neck.

I. Heterosexual Contact

0. Purposefully contacts the other sex, dates frequently, makes successful effort to be attractive in manner, dress, accessories, etc., so as to be popular with girls (boys).
2. Dates when situation affords. Maybe marries, but to have difficulties in compatibility. Wants to interact with other sex, has some techniques, but not completely successful.
3. If married, apt to divorce or separate. Generally this is rated as a midpoint between 2 and 4.
4. Moderate lack of heterosexual contact. Tends to avoid dates, dances, but has on occasion participated in same. Might think he (she) would like to marry someday, but has little enthusiasm for it.
6. No association with the opposite sex. Never had any dates. Avoids dances and social gatherings which require the intermingling of boys and girls.

J. Marked Academic Interests Versus Interests in Sports
0. An active interest in sports, participates in baseball, basketball, tennis, football or other sports. A solitary sport such as swimming or golf is not so important unless the patient plays or swims with others rather than himself.
1. Moderate interests in sports and other interests.
2. Mild interest in sports, mild interest in study.
3. Moderate interest in study—without other interests.
4. Fond of study, works diligently at school and excels in this field, associated with inadequacy in sports and social fields, a grind without the ambition or drive in work and play to equal his achievements as a student.

K. Careless Indifference Versus Worrying Self-Conscious Type
0. Subjectively sensitive, critical of self, preoccupied with own conflicts, but shows little of the extreme, bizarre, unusual, mysterious, or socially unacceptable in behavior.
1. Some concern and preoccupation with difficulties—a moderate position to 0 and 4.
2. Withdrawal and disinterest in social surroundings, careless of social requirements, given to daydreaming and eccentricity, dirty, disheveled appearance, profane language, unacceptable habits.

L. Exclusive Stubborn Traits Versus Insecurity and Inferiority Feelings
0. Timid, lacks self-confidence, feels insecure and inferior. Very sensitive and critical of self; feels certain problems in life but participates and does not accept his lot passively or without regret and struggle.
1. Moderately like 0.
manic-depressive aspects in which there is a facile
display of emotion.
2. Moderately inadequate affect. Tends to be rigid,
dull, or slightly inappropriate. Only moderate
responsiveness to emotional stimulation.
4. Markedly inadequate, inappropriate, rigid, or dull
affect. Emotional life expressed is at odds with the
behavior or strikingly inappropriate. Little reaction
to stimulation of any strength.

- Q. Hebephrenic Symptoms

Extreme indifference, complete divorce between
ideas and affect; extreme carelessness in appearance
and reaction with untidiness; in some cases, silly
behavior, often silly laughter with appropriate
stimulation.
0. Not as above
1. Mildly as above
2. Moderately as above
3. Markedly as above

- R. Ideas of Influence

Patient feels that someone or something is direct-
ing his actions, thoughts, or speech. Some outside
influence forces him to do things even against his own
will.
(Rate 0–4 as in scale Q.)

- S. Physical Interpretation of Delusions

The patient has certain feelings (possibly halluci-
nations) that are linked up with definite delusional
ideas; for instance, that there is a snake in his stom-
ach, that food passes right through his body, that
someone is passing electric currents through his
body, that the food he eats is poisoned, etc.
(Rate 0–4 as in scale Q.)

- T. Atypical Symptoms

Manic or depressive features mixed with the schizo-
phrenic picture. Display of appropriate affect, over-
talkative, distractive, facetious, display of interest in
other patients, desire to help humanity in general,
depression, feelings of sin or guilt, psychomotor
retardation, anxiety, crying.
0. Very markedly atypical picture, shows many of the
above features with considerable strength of affect.
1. Markedly atypical picture.
2. Moderately atypical picture, less intensity of fea-
tures shown.
3. Mildly atypical picture, unusual features minimal
or lacking in intensity.
4. Lacking atypical features.

If data utilized in filling out scale have been derived
mainly from interview with patient, rate (0–4) the
following:
1. Degree of patient cooperativeness
2. Reliability of information
3. Process reaction

Appendix B
The Phillips Scale of Premorbid
Adjustment in Schizophrenia
(Modified with descriptive criteria by Farina and
Garmezy for use with male and female patients)

I. Premorbid history

A. Recent Sexual Adjustment

(Note.—Score as sexual contact; when information
is not explicitly given, use inference to get at this
actual sexual behavior.)
1. Stable heterosexual relation and marriage ...... 0
2. Continued heterosexual relation and marriage
but unable to establish home ......................... 1
3. Continued heterosexual relation and marriage
broken by permanent separation ..................... 2
4. (a) Continued heterosexual relation and mar-
riage but with low sexual drive .................... 3
   (Note.—If only informant is mother,
don't score sexual adjustment. Prorate
from rest of Premorbid History section.
Look here for evidences of frigidity, dis-
taste, avoidance, infrequency. Don't score
on matters of technique.)
(b) Continued heterosexual relation with deep
emotional meaning but emotionally unable
to develop it into marriage ....................... 3
   (Note.—This must involve actual phys-
ical contact. Petting behavior is acceptable
here. Mutuality of feeling is not necessary,
but sexual behavior is, i.e., no adoration
from afar.)
5. (a) Casual but continued heterosexual rela-
tions, i.e., “affairs” but nothing more ...... 4
   (Note.—“Casual” here implies lack of
emotional meaning, although sexual
behavior is consistent and regular.)
(b) Homosexual contacts with lack of or
chronic failure in heterosexual experiences
4
6. (a) Occasional casual heterosexual or homo-
sexual experiences with no deep emotional
bond .................................................. 5
(Note.—This differs from 5(a) on the dimension of frequency. Contacts less often here.)

(b) Solitary masturbation with no active attempt at homosexual or heterosexual experiences ........................................ 5

7. No sexual interest in either men or women ...... 6

B. Social Aspects of Sexual Life During Adolescence and Immediately Beyond

1. Always showed a healthy interest in the opposite sex—with a "steady" during adolescence 0
   (Note.—"Steady" implies the exclusiveness of the dating relationship [neither partner dates anyone else] as well as frequency and emotional attachment.)

2. Started dating regularly in adolescence .......... 1
   (Note.—This implies twosomes, pairing off into couples, as distinguished from 3, below.)

3. Always mixed closely with boys and girls ...... 2
   (Note.—This involved membership in a "crowd"—interest in and attachment to others, but without the initiative factor for males, the selection factor for females.)

4. Consistent deep interest in same sex attachments with restricted or no interest in opposite sex .............................. 3

5. (a) Casual same sex attachments with inadequate attempts at adjustments to going out with opposite sex ................... 4
   (Note.—This differs from 4 on the basis of the consistency and meaningfulness of the same sex attachment.)

   (b) Casual contacts with boys and girls ............ 4
   (Note.—This differs from 3 in that the person was not a regular member of a crowd and just associated with others on occasion.)

6. (a) Casual contacts with same sex, with lack of interest in the opposite sex .................... 5
   (b) Occasional contacts with opposite sex ...... 5

7. No desire to be with boys and girls; never went out with opposite sex ............................................. 6

C. Social Aspects of Recent Sexual Life—Below 30 Years of Age

1. Married, living as a family unit, with or without children ................................................................. 0

2. (a) Married, with or without children, but unable to establish or maintain a family home 1
   (b) Single, but engaged or in a deep heterosexual relationship (presumably leading toward marriage) ................. 1

3. Single, has had engagement or deep heterosexual relationship but has been emotionally unable to carry it through to marriage ....... 2

4. Single, consistent deep interest in attachments to persons of either sex .................................................. 3
   (Note.—This implies a habitual interest in object relations, a consistent desire for human intimacy, but has never settled into a meaningful, continued relationship with one partner in particular.)

5. Single, casual relationships with persons of either sex .............................................................. 4
   (Note.—Has dated more often than implied by 6 below, less often than implied by 4 above. Differentiate on the basis of frequency, regularity of social-sexual activity.)

3. Has been married and had children but permanently separated ......................................................... 2

4. (a) Married, but considerable marital discord 3
   (b) Single—has had engagement or deep heterosexual relationship but was emotionally unable to carry it through to marriage ............................... 3

5. Single, with short engagements or relationships with the opposite sex which do not appear to have had much emotional depth for both partners, i.e., affairs ........................................ 4

6. (a) Single, has dated some, but without other indications of a continuous interest in the opposite sex .................... 5
   (Note.—Implication here is that person has dates every once in awhile but that this behavior is not habitual—doesn't play an important part of his/her life, i.e., take-or-leave attitude.)

   (b) Single, consistent deep interest in same sex attachments, no interest in opposite sex ........................................ 5

7. (a) Single, occasional same sex contacts, no interest in opposite sex ............................. 6
   (b) Single, interested in neither men nor women ............................................................. 6

C. (continued) Social Aspects of Recent Sexual Life—30 Years of Age and Above

1. Married and has children, living as a family unit ................................................................. 0

2. Married and has children but unable to establish or maintain a family home ......................... 1
6. Single, has dated a few persons casually, but without other indications of a continuous interest in object relationships .................. 5
   (Note.—Dating here the exception rather than the rule. Person has had occasional social-sexual contact, but doesn't actively seek out other persons. This behavior not consistent, nor an important part of his life. His contacts have been solely casual, i.e., with prostitutes to satisfy sex drive; no warmth or capacity to establish human relationships.)

7. (a) Single, never interested in or never associated with either men or women; asocial ..... 6
   (b) Antisocial; destructive, belligerent acting out against others .......................... 6

D. Personal Relations: History
   (Note.—Score here is determined by the time of life at which person withdraws, narrows his range of social contacts. The earlier this occurs, the higher the score will be.)

1. Always has been a leader, and has always had many close friends ................................ 0
   (Note.—Score for “closeness” if record states close friends, or describes frequent contact, shared activity.)

2. Always has had a number of close friends but did not habitually play a leading role ........... 1
   (Note.—From childhood until breakdown, person had extensive social contacts.)

3. (a) From adolescence on had a few close friends ........................................... 3
   (Note.—This may involve a drop in the number of close friends after adolescence, but person has retained relationships involving mutual give-and-take with several people through this period.)
   (b) From adolescence on had a few casual friends ........................................... 3
   (Note.—Person maintains relationships with several persons, even though these relationships may lack real emotional depth. Throughout life he has kept up contact with others.)

4. From adolescence on stopped having friends ................................. 4
   (Note.—Cultivated human relationships during childhood, but has withdrawn since puberty.)

5. (a) No intimate friends after childhood ...........
   (Note.—Withdrawal began earlier—before puberty.)
   (b) Casual, but never any deep, intimate, mutual friendships .............................. 5
   (Note.—Implies no close friends, even during childhood, but did maintain contacts on a superficial level, as distinguished from 6 below.)

6. Never worried about boys or girls; no desire to be with boys and girls .......................... 6

E. Recent Adjustment in Personal Relations
   (Note.—Score here the period prior to the noticeable change in behavior which preceded symptoms and hospitalization. Any changes noted within 6 months to a year prior to hospitalization will constitute a “change” by this definition. Score period prior to these changes.)

1. Habitually mixed with others, was usually a leader ................................. 0
   (Note.—Again, this involves extensive social contacts.)

2. Habitually mixed with others, but not a leader .................................. 1

3. Mixed only with a close friend or group of friends ................................. 3
   (Note.—Distinguished from 4 below on the basis of consistency and frequency of contacts.)

4. No close friends or very few friends or had friends but never quite accepted by them ...... 4

5. Quiet or aloof or seclusive or preferred to be by self ................................... 5

6. Antisocial, actively avoided contact, acted out against others .............................. 6

Acknowledgment

The preparation of this paper was supported by USPHS Research Grant MH-06170, a USPHS Research Career Award, MH-K6-14914, and a grant provided by the Graduate School of the University of Minnesota.

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