CHRONICITY IN SCHIZOPHRENIA:
FACT, PARTIAL FACT, OR ARTIFACT?

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Abstract
It has generally been thought that the person with repeated episodes of schizophrenia could expect to have a chronic course with residual symptoms and deficits in functioning such as work, social relations, and self-care. However, new data from long-term follow-up studies as well as a review of historical evidence provide substantial challenges to these strongly-held expectations.

In the earliest work on the disorder, Kraepelin and Bleuler seem to have dealt with samples which were not representative of the entire population of patients with schizophrenia. These problems of biased sampling persist today in short-term caseloads. Contrary to expectation, even narrower diagnostic systems including the Feighner and DSM-III criteria have not ensured a poor long-term outcome.

Recent longitudinal research suggests a much different picture involving recompensation, significant improvement, and recovery as well as an occasional deteriorating course. Rather than uniformity, there is considerable heterogeneity in the long-term course of schizophrenia. These widely varying course trajectories have major implications for treatment and for understanding the factors which contribute to that process.
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There is a perplexing contradiction between day-to-day clinical experiences with the usual caseloads of schizophrenic patients and the research findings from recent long-term outcome studies. Clinical experiences often reflect a homogeneous portrait of persisting impairments while the outcome studies report heterogeneous levels of recompensation and change. Are the longitudinal research protocols methodologically so flawed that little reliable evidence can be produced from them, or are clinicians dealing with inadvertently-biased caseloads? Does the illness perhaps change over time? Is chronicity in schizophrenia a fact, a partial fact, or an artifact?

As representatives from three successive generations of clinical investigations, the authors have combined their efforts to analyze the puzzle and to suggest some possible answers. In this report, they provide an overview of research and clinical evidence of the complex biopsychosocial processes involved in the outcome of schizophrenia. These views of the disorder and the person struggling to recover carry strong implications for the patient, the clinician, the family, and the service delivery system, as well as guidelines for future biological and psychosocial research.
The Role of Clinical Experience and Training in the Perception of Persistent Impairment in Schizophrenia

**Description of Current Caseloads:** In each caseload there is a group of patients with schizophrenia for whom treatment does not seem to alter the downward trajectory of their course. These patients appear to be dependent, apathetic, emotionally-isolated individuals, generally dull and colorless with negative symptoms or erratically flamboyant with positive ones. They look slightly disheveled and barely survive with low standards of housing and finances. Many appear unable to benefit from learning new skills, fail to be employable in competitive work situations, and generally are considered to be unproductive citizens. Treatment often consists of maintenance on medication and low-contact modalities whose goals are stabilization at whatever level they can attain.

**A Description of Historical Caseloads:** This portrait of the chronic patient goes back to Kraepelin before the turn of the century (1). In 1896, as is well known, he combined a group of mental disorders into a single disease entity, dementia praecox, because of their relentless, deteriorating courses leading to uniformly poor outcomes. He adopted the system newly devised for classification of all disease entities. This system was based upon the concept of linear unfolding sequences of cause, onset, course, and outcome as specific inflexible natural histories of each disorder.

After initially reporting 13% recovery, Kraepelin later
revised his estimate to only 2.6-4.1% of patients who sustained lasting recovery (2). By 1899, poor outcome differentiated dementia praecox from manic-depression, which was thought to be marked by a good longitudinal course and expectations of recovery. Prognosis confirmed diagnosis as a self-fulfilling prophecy. If the person who had all the symptoms of dementia praecox improved, Kraepelin routinely considered the patient to have been originally misdiagnosed.

Just after the turn of the century, Eugen Bleuler (3) widened Kraepelin's concept of dementia praecox by shifting the overall focus from the course of disorder to that of differentiating primary and secondary symptoms as well as incorporating Freudian concepts of psychopathology. He postulated a group of psychoses called "the schizophrenias" which he declared never achieved "full restitutio ad integrum" at discharge (2,3). Rephrased, this statement appears to have become the adage, "once a schizophrenic, always a schizophrenic."

The Impact of Such Observations: The views of these seminal writers about the course and outcome of schizophrenia have been taught to generations of psychiatric trainees. The DSM III (4), accepted these views by stating:

"The most common course is one of acute exacerbations with increasing residual impairments between episodes."

and

"A complete return to premorbid functioning is unusual -- so rare, in fact, that some clinicians would question the diagnosis."

(DSM III [4], pg. 185)
These expectations of deterioration, defect, or deficit states (5) in schizophrenia have pervaded and guided clinical judgments (4,6), treatment programming (7-9), policy formulation (10,11), priority funding decisions (12) and stripped hopes of recovery from many patients and their families (13,14).

The Role of Recent Long-Term Studies in Providing Evidence for Heterogeneity in Outcome.

Methodological Problems in Early Studies: To confuse matters, both short- and long-term follow-up studies reported in earlier research eras have been contradictory (15-21). Some of these studies reported poor outcome, while others did not. Many reviews of the literature (2,22-24) outlined numerous reasons why such contradictions have existed (see Table 1).

-- Table 1 here --

Findings from Five Recent Studies: Within the last fifteen years, however, a number of more systematic studies investigating both short- and long-term outcomes in schizophrenia have addressed the range of methodologic issues mentioned above. All have found heterogeneity in outcome functioning the rule with marginal or deteriorated states as the exception.

The five very long-term follow-up studies reported since 1972 have produced such similar results that the confluence of evidence appears to override the differences in their designs (25). Each of these studies found that one
half or more of each cohort had significantly improved or recovered when assessed at twenty-, thirty-, and forty-year follow-up periods.

One of these studies was a prospective follow-along by a director of a hospital who devoted his full time to the care of his patients and their families. Manfred Bleuler (26-33) followed for 23 years 288 patients who were either first admissions or readmissions as a representative cohort admitted to Burgholzli Hospital in Zurich, Switzerland during 1942-3. He found that 66% of the first admissions were significantly improved or recovered at the end of the follow-up period. In examining the entire sample of both first admissions and readmissions he found only 53% recovered or improved (26). Apparently the readmissions were a residual portion of a cohort with poorer outcome because of the dropping out of better cases who were never readmitted. Bleuler wrote: "To assume a proband had recovered, it was essential that he could be fully employed in gainful work, and that he could resume his former role in society..." (26, pg. 191). Improvement meant a person was able to "maintain a sensible conversation... overt behavior is generally normal... (and) performs useful work." (pg. 191).

In the United States, the most recent long-term study has been a follow-along study across an average of 32 years by Brooks of a sample not composed of first admissions or readmissions collected in a year but of a cohort containing 269 very chronic subjects who had sifted out of the hospital admissions over time to the back wards. Brooks was the
Superintendent of Vermont's only state hospital with a tenure of 37 years who also cared for his patients and their families across generations (34-43). This study also includes an in-depth current assessment of the cohort which has just been completed and reported (25, 44-49). Brooks' subjects at the time of selection in the mid-1950's had averaged 16 years duration of illness, 10 years of total disablement, and six continuous years of hospitalization (43). At follow-up, one-half to two-thirds of all Vermont cohort subsamples (either alive or deceased and whether diagnosed for schizophrenia by either DSM III or DSM I criteria) achieved significant improvement or recovery as rated by the Global Assessment Scale (50) and Strauss-Carpenter Levels of Function Scale (51) as well as 13 other classic scales and schedules (25,48,49). It is surprising that the Brooks chronic cohort did nearly as well as Bleuler's first admissions.

The results of these two prospective studies are supported by three other very long-term studies which have involved cross-sectional assessments of cohorts selected retrospectively from old case records and then interviewed. A Swiss study, conducted by Ciompi and Muller (52) in 1976, assessed 289 subjects at an average of 36.9 years after first admission. This research team found that 53% of the study subjects were improved or recovered. Their definition of recovery was the same as Bleuler's, mentioned earlier.

The Bonn Study conducted in 1975 by the team of Huber, Gross, and Schütter (53) studied 502 subjects at an average
of 22.4 years after admission and found 57% recovered or significantly improved (54). After completion of the study, Huber and his team wrote: "Schizophrenia does not seem to be a disease of slow progressive deterioration. Even in the second and third decades of illness, there is still potential for full or partial recovery" (54, p. 595). Recovery meant social and psychopathological remission.

Finally, another study in the United States, "The Iowa 500" (55), also produced similar results. This investigation located 186 subjects who had been admitted between 1934 and 1944 to the University Psychiatric Hospital in Iowa City. Members of this sample had met the more narrow Feighner criteria for schizophrenia (6). At an average of 35 years later, 46% improvement and recovery was found in their schizophrenic sample (56).

Although each of these studies has certain methodological flaws, their rigor is improved substantially over that of their predecessors. The degree of similarity in outcome is striking. Together, they found that one-half to two-thirds of over 1200 subjects studied for longer than twenty years achieved recovery or significant improvement. See Tables 2 and 3 for overall summaries of these studies.

--- Tables 2 and 3 here ---

Recent Shorter-Term Studies: Among shorter-term studies, the work of Strauss and Carpenter (51,57-59) also indicated that outcome was not a unitary process but could better be conceptualized as a set of "open-linked" systems such as occupational functioning and social competence (58).
These "open linked" systems were found to operate semi-independently of each other and of symptoms and hospitalization history. Further work by the same team also found wide heterogeneity of outcome functioning even at the 5-year follow-up point (51). Similar variation across outcome domains has been found by many others (e.g., Bland and Orn [60] in a 14-year Alberta Hospital follow-up study; Gardos, Cole, and Labrie [61] in a Boston State Hospital study of 12 years follow-up; and cross-culturally in the WHO [62] International Pilot Study of Schizophrenia, [both two- and five-years follow-up]). Thus studies utilizing only a limited number of outcome measures (such as recidivism or whether or not the subject was symptomatic) might fail to discern improvements that had occurred in other important domains.

In addition to these studies of hospital admissions, there is a recent epidemiologically-based population study of all individuals diagnosed as having schizophrenia drawn from the county of Buckinghamshire, located 50 miles north of London. This catchment area of approximately 500,000 people utilizes a single mental hospital (63). With 99% of the entire sample (N=121) followed-up at the five-year point, 48% of the cohort, consisting of first admission and readmission schizophrenics, achieved a good outcome. Of the first admissions group, 58% had a good outcome.

The findings of heterogeneity in outcome in all of these studies represent a major challenge to the prevailing concept of outcome in schizophrenia as resulting only in marginal levels of functioning or a deteriorating course.
The question remains, then, "Why is there such a discrepancy between clinical experience and research results?"

The Question of Biased Sampling

**Historical Biases:** Until recently, few teachers or clinicians have ever questioned whether the original textbook descriptions of schizophrenia and the conclusions regarding such patients were based upon a balanced, representative sample of all those with the disorder (25,26). It is possible that both Kraepelin and Bleuler may have had biased samples from which they described their hospitalized patients. Before the turn of the century, Kraepelin's patients came into the hospital after varying duration of illnesses and for the most part remained thereafter in custodial care (64,65). "Once a label of dementia praecox had been affixed to a person, he became a case number awaiting the ultimate fate of deterioration" (66, p. 164). Thus the careful descriptions of downward course described only hospitalized samples with little reference to the patients that had been released or to factors at work in the long-term effects of such continuous hospitalization on the levels of functioning in patients (67-69).

Further bias might have been introduced by the strong possibility that Kraepelin included in his samples patients with tertiary syphilis and other organic disorders, for which tests were unavailable until 1911 and later (70).

During his long study of schizophrenic patients,
E. Bleuler appeared to have begun with some optimism about outcome but became more pessimistic over time. The courses of the schizophrenias were described by himself early in his career as varying considerably because an individual course could be "both qualitatively and temporally rather irregular. Constant advances, halts, recurrences, or remissions are possible at any time" (71). Freyhan states that Eugen Bleuler's "emphasis on range, variability, and most crucial, reversibility of schizophrenic manifestations, form the cornerstone of his concept" (71, pg. 770). In a follow-up study, E. Bleuler once found that 60% had achieved a state of only "mild deterioration" (i.e., capable of self-support), 18% moderate and 22% severe deterioration (71). However, these findings were generally dismissed by subsequent investigators as not surprising because the heterogeneity was to be expected given the inclusiveness of his diagnostic criteria and the difficulty in their reliable application.

In addition and in contrast to the German policy of custodial care, the Swiss developed strategies of early release and foster family placement as early as 1905 (26). Therefore, for E. Bleuler, the patient with better outcome may have been a case of "out of sight, out of mind." His son, Manfred Bleuler (26), attributes the development of his father's eventual pessimism regarding the outcome of schizophrenia to such a bias. He wrote the following description:
From 1886 to 1889, E. Bleuler dedicated himself completely to his community of schizophrenics as director of the remote psychiatric clinic of Rheinau, which was then an isolated, rural sector of Switzerland. Two decades later, during and after the First World War, he went back to Rheinau to visit about once a year, usually when the weather was fine during the summer. His former schizophrenic patients always greeted him warmly and enthusiastically. Much as these greetings pleased him, he usually made the painful observation, "Most of them did seem to have deteriorated." Then, depressed, he would ask, "Is there really nothing that can stop this disease?" If he spent all his life wrestling with the question whether there was an "organic process" at the basis of schizophrenia, it was mainly because of experiences like the above. But E. Bleuler did not know how many improved patients were out for their Sunday walks during his visits, and certainly not how many had been released and were living at home, recovered. Had he known, and if he had not continued to meet only the most severe cases among his old problem children, his assessment of the schizophrenias would have been strongly influenced. A number of generations of clinical psychiatrists had experiences similar to his.

(Bleuler, 26, pg. 413)

To summarize, the evidence points to the likelihood that Kraepelin's sample was culled selectively from those patients who remained continuously institutionalized, and the members of Bleuler's sample with a good prognosis were often lost to follow-up leaving only those who remained hospitalized to be studied. Both investigators also had samples which included those patients who would meet criteria for other diagnostic categories. Thus, the classical descriptions of course and outcome for schizophrenia upon which the bulwark of psychiatric thinking was built and which constitutes the foundations of current thinking were probably biased and not representative of the
complete range possible for this disorder.

Current Biases: Today, many clinicians are still exposed to a biased sampling of patients because of their predominantly cross-sectional, short-term caseloads. Perhaps only a certain segment of the entire population of people who once were diagnosed as schizophrenic continues to need and receive care over the long term and this is rarely noted. The group which clinicians continue to see and treat appears to them to represent the entire picture of schizophrenia. Cohen and Cohen in their article entitled "The Clinician's Illusion" have explained the statistical basis for this persistent problem (72). They show that the longer the duration of an illness the greater the chance for that subportion of the patient population to show up in clinical caseload. For example, they have calculated that 2% of the patients with the longest duration of illness will be in a caseload 64 times more often than 40% of those patients with the shortest version of illness (72 [p. 1179]). This holds true not only for schizophrenia but for other disorders as well.

Further, there is a prevailing dichotomous split in the understanding of illness processes by clinicians between acute vs. chronic status with no middle ground, such as a status that is temporarily prolonged but eventually remits. Therefore, if a particular patient enters a caseload and functions only marginally for five to ten years with repeated episodes, the tendency on the part of the clinician is to think that level will continue or even worsen. With
short-term caseloads, not enough additional time elapses to check that assumption. Such patients are often regarded as fairly unresponsive to early program efforts, and when they continue to be marginal, they are viewed as treatment failures in which the disorder has gotten the upper hand. If such a person drops out of the caseload, a busy clinician often assumes that the patient has simply transferred to another clinician's caseload across town or is living a marginal existence in a single room occupancy hotel. Rarely does the clinician assume a forward movement toward better functioning and reintegration into the community. There is no built-in systematic feedback to clinicians about eventual outcome successes. They receive only the negative messages signaled by the reappearance of those patients who do have a new episode.

However, there are clinicians, such as M. Bleuler at Burghölzli Hospital in Switzerland and G. Brooks at Vermont State Hospital who have stayed in one setting over decades. They have prospectively followed those patients in intact cohort who were also discharged to the community. These clinicians and others like them report that many formerly chronic patients significantly improve or recover across their life course.

The Findings from Biological Research

Current research has targeted the existence of numerous neurostructural and biochemical abnormalities which may be related to chronicity. Findings to date have been exciting,
but inconclusive and contradictory (73-76). Many organic abnormalities appear to cut across diagnostic categories (77), have little prognostic value (73), shift over time (78), or represent but small subgroups in the schizophrenic population (79). Thus, looking solely to biological answers as causes for chronicity in schizophrenia may prove to be elusive and has not sufficiently explained the fact of outcome heterogeneity.

Can Diagnostic Criteria Predict Long-Term Functioning?

Major objections to reports of the observed heterogeneity in outcome have centered upon using the outcome to validate the definition of who is really schizophrenic and who is not. Two types of strategies have been undertaken to clarify these issues. The first has been focused on narrowing the criteria to achieve a homogeneous group with "core", "nuclear", "process", or "true" schizophrenia, such as Feighner, et al. (6), Langfeldt (80), Schneider (81), the RDC by Spitzer, et al. (82), and the DSM III (4). A second strategy has been to change the diagnosis of schizophrenia to another category if subjects recovered or improved as did Kraepelin (1), or as in Langfeldt's schizophreniform psychosis (83), Jaspers' reactive psychosis (84), or Leonhard's cycloid psychoses (85).

Both strategies have been tested by targeting samples with these systems of diagnostic criteria and conducting outcome studies. In every case, where careful methodology was used, outcome was still found to be heterogeneous, with
half or more of the subjects displaying significant improvement while half did not (25,49,51,56,86-88). No matter what system is used, the diagnosis of schizophrenia has not been confirmed by association with outcome beyond a limited degree. In fact, empirical data tend to validate Vaillant's contention that traditional "prognosis and diagnosis are two different dimensions of psychosis" (see footnote, and also 88). Only premorbid personality seems to be related positively to outcome in a consistent manner across studies (89).

Evidence points to the fact that beyond "outcome" even the evolution of the course of schizophrenia is not a foregone conclusion. There appears to be a wide spectrum of possible courses which patients follow. Huber, for example, identified 73 courses and later reduced them to 12 composite forms (54); Ciompi (90) and Bleuler (26) have established a minimum of 8. Since not even the heterogeneity of outcome has been widely recognized until recently, work is just beginning which might provide an understanding of the determinants of the evolution of the disorder and improvement over time (91,92). As discussed in the succeeding pages, it seems likely that even if there were some tendency to a "natural history" for schizophrenia tending toward an expected outcome, the roles of patient personality and of the environment in aiding or interfering

with the expected outcome would be too powerful to permit uniformity.

Difficulties in Separating the Effects of the Environment from the Effects of Schizophrenia

As early as 1960, Brown (93) noted that the number of patients residing in hospitals over two years (the criteria for chronicity proposed by Kramer, et al. [94], in the classic Warren State Hospital study) had decreased from two-thirds in the 1920's to one-third in the 1930's. By the 1950's, in the United Kingdom, only 12-13% of schizophrenic patients were in the hospital over two years (93). From research on institutional effects, Wing (95) concluded that institutionalization in and of itself had contributed to the picture of disability for those who stayed. Patients were rarely reviewed for discharge after two years because their loss of social skills was perceived as persistent psychopathology when in fact it may have been a side effect caused by long-term hospitalization itself.

In 1971, Ludwig (96) studied a hospitalized sample and itemized a "code of chronicity" which vividly described how institutionalized people became socialized into a "good patient" role. His list included: "to be dull, harmless, and inconspicuous; to evade responsibility, minimize stress, ignore others, to retain the right to behave unpredictably and have a certain 'diplomatic immunity'." These acquired skills may have made life easier for both patients and staff as a compromise in an untenable situation, but were inimical
to social integration into the community.

Are these "skills" socialized responses or indigenous negative symptoms? It is difficult to separate out the two. To understand these characteristics, Strauss and Glazer (9) have described some of the processes in the chronic patient which can be differentiated. Rather than seeing chronicity as a single attribute, they noted four separate aspects: "1) chronicity of symptoms; 2) chronicity of dysfunction in occupational and relationship spheres; 3) chronicity of receiving treatment; and 4) the 'chronic attitude', a sense of hopelessness, of having given up, of having settled into being bizarre or disabled" (pg. 208).

In understanding this more complex picture of chronicity it has been difficult to separate the residual effects of the disorder (such as negative symptoms) (97,98), the effects from institutionalization (67-69,95,99), the socialization into the patient role (68,95,100), the lack of rehabilitation (101,102), reduced economic opportunities (103), lowered social status (104,105), the side effects of medication (106,107), the role of lack of staff expectations (43,108), self-fulfilling prophecies (109,110), and loss of hope (13). There is also the possibility that negative symptoms and other so-called residual effects of schizophrenia may be in reality a recrudescence of a person's premorbid personality after the end of the episode (111).

Given the many environmental factors contributing to chronicity and the fact that the group under treatment at
any time represents only a fraction of persons who have had episodes of schizophrenia, it becomes increasingly evident that the belief that chronicity is a necessary and inherent outcome of the disorder for most patients may not be tenable (26,47,111,112).

Discussion

This report began by emphasizing the discrepancy between the more pessimistic clinical experience and the more optimistic long-term research findings about the outcome of schizophrenia. Upon closer examination, it appears that biased sampling, both current and historical, as well as numerous psychosocial artifacts may influence judgments about deterioration or chronicity in schizophrenia. The numbers of chronic-appearing patients in a caseload are not a representative sample of the population affected with schizophrenia. The possible causes of chronicity may be seen to have less to do with any inherent natural outcome of the disorder but more to do with a myriad of environmental psychosocial factors interacting with the person.

The use of the label "chronic schizophrenics" glosses over the large heterogeneity of patient outcome types, the variety of courses of illness and recovery, as well as the actual shifts in composition and movements of groups of patients within society (113,114). As patients progress through illness, ever-widening degrees of heterogeneity in outcome functioning occurs. Schizophrenia, as a
longitudinal process, reveals that symptom configurations change over time (such as thought disorders [78]) as do predictors of outcome across different decades (115). Evidence that neuroanatomical lesions and dysfunctions are permanent remains scanty (73). Even for those patients who fit the classical picture of negative symptoms at one point in time, significant improvement or recovery is still possible decades later (26,48,49,112).

In view of the surplus meanings that the term chronic schizophrenia has accumulated, it might be advisable to substitute the term "prolonged schizophrenia". This term does not have the implications of relentless progressive deterioration, residual symptoms, deficits in functioning, and hopelessness which are commonly associated with the term "chronic". In place of the term acute schizophrenia, it might be well to substitute brief or short-term schizophrenia. Such terms might be more in keeping with the recent studies on outcome described in this paper.

A forthcoming paper will focus on alternative views of "the person behind the disorder" (26) in which the person is seen as an active participant in reshaping "an open life process" as suggested by Ciompi (99). The role of aging, multiple psychosocial factors, variability in vulnerability, premorbid personality which recrudescences when the episode ends, and complex person-illness-environment interactions are proposed as contributing significant effects on the trajectory of courses taken.
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<tr>
<td>1. <strong>Different samples selected because of different criteria for the diagnosis of schizophrenia.</strong></td>
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<td>2. &quot;Schizophrenia&quot; often not defined.</td>
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<td>3. Different length of follow-up periods.</td>
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<td>4. Outcome often defined only as &quot;recovered&quot; or &quot;unrecovered&quot;.</td>
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<td>5. Varying sources of data in follow-up (e.g., case records vs. actual interview).</td>
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<td>6. Lack of &quot;blindness&quot; in data collection procedure (e.g., that the investigators knew previous history of the subjects).</td>
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<td>University Psychiatric Hospital in Lausanne, Switzerland</td>
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<td>Investigators</td>
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