A VULNERABILITY MODEL OF CHRONIC SCHIZOPHRENIC STATES

by

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Introduction

This paper considers, from the point of view of vulnerability theory, the role of psychosocial factors (e.g., life events, social support, daily hassles) in the course and outcome of schizophrenic illnesses with a poor long-term prognosis. Specifically, we propose to look at chronic deficit states as one mode of adaptation to illness among highly vulnerable individuals. The thoughts outlined in this paper draw upon some preliminary findings from research into chronic schizophrenic states currently being carried out in our Biometrics Research unit at the Highland Drive VA Medical Center, Pittsburgh, PA.

We would like to acknowledge the effort of the project interviewers: Barbara Etzel, Teri Sobolik, Pamela Stiller and Jill Stockmal.
Vulnerability Theory

The vulnerability theory of schizophrenia has been described in detailed fashion in a number of previous papers (see, Zubin and Spring 1977; Zubin and Steinhauer 1981; Zubin, Magaziner and Steinhauer 1983; Zubin, Steinhauer, Day and van Kammen 1985; Day, Zubin and Steinhauer 1985) and only its essential components will be reviewed here.

Briefly stated, vulnerability theory is non-Kraepelinian in orientation. It starts out by calling into question the existence of an underlying, malignant disease process in schizophrenia. Instead, schizophrenic individuals are viewed as having a relatively permanent "liability" or "predisposition" to episodes of the disorder [1]. However, the possession of such a predisposition to illness does not make the occurrence of an episode inevitable. The probability that an individual will experience an episode of illness at some point in his life appears to be contingent upon at least three kinds of factors: (i) the level of the individual's intrinsic loading for the disorder, (ii) the stressfulness of the individual's sociocultural and physical environments and (iii) the impact of important buffering factors such as the supportiveness of the individual's social network or the effectiveness of certain features of his premorbid personality organization (i.e., premorbid levels of competence and learned coping skills).
Vulnerability theory hypothesizes that episodes of the disorder, characterized by positive psychotic symptoms (e.g., delusions, hallucinations, thought disorder), must be "triggered" by stressful life events. When they occur, such episodes are usually time limited, arising in the wake of life stress and abating when its aftereffects dissipate. Between episodes the individual returns to his premorbid level of personality functioning. Viewed in this way, schizophrenia becomes an episodic illness in the same sense as depression, epilepsy or allergy.

It has also been hypothesized that the pathogenic effects of life stress may be circumvented through the action of various buffering factors. For example, premorbidly learned coping skills or favorable social conditions may prevent stressful events from reaching the level of environmental challenge required to provoke an active episode of illness.

Perhaps, the most controversial feature of vulnerability theory has been the attitude taken towards the negative symptoms (e.g., affective flattening, slowness of thought and movement, poverty of speech, social withdrawal, underactivity, reduced motivation) that make up the clinical poverty syndrome (Zubin 1985). Previous investigators (Wing and Brown 1970; Wing 1978a, 1978b; Owens and Johnstone 1980; Crow 1985) have argued that important components of the clinical poverty syndrome are intrinsic features of the underlying disease process involved in
difficulties with their symptomatology. Both of these factors tend to give the impression that schizophrenia has a poor outcome for most patients. A more comprehensive and methodologically sound assessment of the outcome of schizophrenic disorders can be found in the long-term follow-up studies carried out by European investigators (Bleuler 1978; Ciompi 1980; Huber, Gross, Schuttler et al. 1980). Such lifetime studies avoid the kinds of difficulties mentioned above and suggest that it may be necessary to revise some of our taken for granted attitudes concerning the uniformly negative outcome of schizophrenic illnesses.

The Recidivism in Schizophrenia Project

In an effort to throw greater light on these matters, we have been studying schizophrenic disorders among Veterans Administration long-term outpatients in the Pittsburgh, Pennsylvania area. The Recidivism in Schizophrenia Project [HSR&D grant no.#] is a prospective study of socioenvironmental factors associated with relapse episodes of schizophrenia. The hospital outpatient population is screened for individuals under 56 years of age who meet the Research Diagnostic Criteria (Spitzer and Endicott 1975) for schizophrenia and show no evidence of current alcohol or drug abuse. After a baseline assessment covering mental state and psychiatric history, as well as current social network, continuing difficulties, and selected aspects of premorbid functioning, patients are interviewed every four weeks for two years using a structured clinical instrument. A
life event schedule is administered every twelve weeks, while
changes in continuing difficulties and the patients' social
networks are assessed annually [2].

The follow-up examinations with the clinical instrument
yield separate symptomatological ratings for each one of the
four preceding weeks. Patients are classified on a weekly basis
as falling into one of the following three clinical categories:

a. asymptomatic - no more than two non-psychotic
symptoms at a clinically significant level;

b. symptomatic, but non-psychotic - three or more non-
psychotic symptoms at a clinically significant
level, but no evidence of delusions, hallucinations
or thought disorder; or

c. psychotic - clear evidence of delusions, hallucina-
tions or thought disorder.

Test-retest reliability exercises demonstrated excellent
agreement in the rating of these clinical categories among all of
the interviewers involved in the study. Individual kappas for
each one of the four retrospective weeks were .89, .95, 1.0 and
1.0. The overall kappa for all weeks combined was .96.
Furthermore, all disagreements among the interviewers involved
asymptomatic versus symptomatic ratings, rather than symptomatic
versus psychotic ratings.

Additional clinical summary ratings were defined on the
basis of the above categories:

a. remission - A period of at least eight consecutive
weeks without evidence of psychotic symptoms (i.e.,
delusions, hallucinations, thought disorder). A
complete remission was classified as a period of at least eight consecutive weeks in an asymptomatic state. A partial remission was defined as never having achieved a period of eight consecutive weeks in an asymptomatic state.

b. relapse - A period of at least two consecutive weeks with psychotic symptoms (delusions, hallucinations or thought disorder) following a period of complete or partial remission. A patient must achieve a state of remission (a. above) before he can relapse. If a patient never achieved a state of remission he was classified "psychotic throughout the period."

The size of the study series is still small. Data covering the first six monthly follow-ups have been analyzed for only 25 patients. A total of 45 patients are currently being seen on a monthly basis and 85 patients have qualified for the study diagnostically. Our eventual goal is to collect 24 months of data on a series of 100 outpatients.

It should be kept in mind that the population of psychiatric patients served by the Veterans Administration is biased in at least three important ways. First, the patients are virtually all males. Second, the Veterans Administration serves an aging psychiatric population. We see only a few young, first episode cases. And third, the patients tend to be selected for poor outcome and chronic disabilities. As a general rule, patients who make an adequate social recovery tend to leave the system and become unavailable for study. These factors are reflected in the general characteristics (see Table 1) of the patients included in the project.
Pilot surveys of the hospital population carried out during the initial phase of the project indicated that two important groups of chronic schizophrenic patients could be identified: (i) a treatment resistant group of patients who were unwilling to submit to continuing community care and (ii) a more compliant group of patients who regularly attended the hospital outpatient clinic. The first group of patients, when compared to the second, were more likely to live alone and to be involved with alcohol or drugs. Clinical outcome also tended to be poorer among the treatment resistant group of patients. Given the need for periodic follow-up examinations, recruitment for the Recidivism in Schizophrenia Project focused on suitable subjects attending the hospital outpatient clinic.

Even though the outpatients recruited for this study are not from the worst overall outcome group, they still demonstrate considerable psychopathology. After the first six follow-up examinations (see Table 2), forty-eight percent of the outpatient series were classified as continuously psychotic throughout the period. Twenty-eight percent of the patients relapsed during the first six months of follow-up, while only twenty-four percent of the series remained in a state of remission throughout the period. The average score on the Global Assessment Scale for these patients was 40 after six months in the study - i.e.,
major impairment in several areas such as work, family relations or some impairment in reality testing or communication (Spitzer, Gibbon and Endicott 1978).

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INSERT TABLE 2 ABOUT HERE
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A majority of the outpatients recruited for this study have a rather poor clinical and social outcome. They are roughly comparable to the group of patients who make up the worst third of most longitudinal studies (WHO 1979). In other words, these patients are not so severely ill that they require constant institutional care, yet most of them still display continuing clinical and social disabilities at a level of severity usually associated with chronic illness states.

Preliminary Findings

Initially, the investigators were interested in identifying the kinds of life event stressors capable of "triggering" (Day 1981, 1985) the onset of relapse episodes in this series of patients. Past research with schizophrenic patients (Brown and Birley 1968; Birley and Brown 1970; Brown and Harris 1978; Day et al., in press) indicates that stressful life events have their effect during the two to three week period preceding the appearance of positive psychotic symptoms. Analysis of the VA data from the follow-up interviews showed that only one-quarter
of the recorded relapse episodes of illness resulted in the hospitalization of the patient. Among the group of relapsed patients, about two-thirds reported at least a single life event occurring in the three week period immediately preceding the appearance of positive psychotic symptoms.

Can it be said that these results demonstrate the hypothesized triggering effect in a majority of our relapsed patients? It is difficult to give an affirmative answer to this question for a number of reasons. First, many of these events appeared to be illness provoked - e.g., one patient was stopped by the police because of strange behavior on the street. In at least two cases, it was possible to identify a clear pre-psychotic exacerbation of the patient's symptomatology just prior to the occurrence of a life event. Second, several of the events preceding the onset of positive psychotic symptoms were of such an insignificant nature that it was difficult to credit them with a lot of influence on the timing of the patient's episode - e.g., another patient lost a small amount of money. And third, the same patients often reported life events of equivalent stressfulness that failed to be followed by the onset of an illness episode.

In fact, the relapse episode of only a single patient clearly fit a simple triggering model.

Patient No. 216 - A 46 year-old white veteran, married for the past seven years. The patient describes only a fair level of premorbid interpersonal functioning. He has completed some college and is able to work on an
intermittent basis. The patient has been hospitalized numerous times (10+) for his mental disorder.

The patient apparently makes his wife's life very difficult. Prior to his last hospitalization, for example, he ran away to another state and began trying to pass bad checks. He was arrested and held in a mental facility until his wife brought him back to Pittsburgh. This is not an unusual pattern for relapse episodes. The patient also shows open hostility towards his wife. He claims, for example, that she is illiterate and mentally retarded when this is not the case. Due to this behavior, he maintains very poor relations with her family.

During the initial follow-up interviews the patient reported a series of minor life events such as some major car repairs and a vacation to Florida. No effect was observed on his mental state which was classified as symptomatic, but non-psychotic. Then in the 34th week, he returned home to find that his wife had left him. Whatismore, his wife's relatives had backed a truck up to their apartment and taken all of the furniture, including the refrigerator and the stove. Things were in such a state of disarray that the patient was forced to take a motel room. Following this event, he became floridly psychotic, with delusions, hallucinations and rambling, incoherent speech. He was not, however, hospitalized.

Even in this case there remains some question whether the wife's exit was not provoked by the patient's history of difficult and abusive behavior. Just the same, there is also a common sense quality about this situation which suggests that this particular episode of illness probably would not have occurred at this time had not the patient's marriage collapsed. It is this quality of common sense causality that tends to be missing from the other cases. By way of illustration:

**Patient No. 256** - A 35 year-old white veteran. The patient describes a fair level of premorbid interpersonal adjustment. He dated occasionally, but never married. He completed two years of college and one year of Bible school. Despite his illness, he has worked regularly at the U.S. Post Office. The patient has been hospitalized twice for short periods of time.
The patient is periodically troubled by thoughts of violence which he cannot get out of his head. These thoughts concern hurting someone he knows, usually one of his workmates. These concerns may be followed by the development of psychotic symptomatology, including bizarre delusions, hallucinations with a religious content, and the like. He has tried to deal with these problems by isolating himself from his workmates and slipping down the employment scale into the least stressful kinds of jobs.

Besides a brief vacation in Florida, the patient reported few events in the early follow-up examinations. Clinically, the patient remained symptomatic but non-psychotic. Around the 22nd week, the patient began to complain about the stress at work and problems with thoughts about hurting his workmates. He began taking long automobile rides to try and get these thoughts out of his head. While on one of these rides, he received a speeding ticket involving a substantial amount of money. He described the experience as "discouraging, but no big deal." Shortly afterwards, he requested inpatient hospitalization due to the increasing severity of his symptomatology. A clinical interview carried out at this time indicated that the patient had indeed experienced a full blown relapse of psychotic symptoms.

These findings sent us back to the data to explore three additional hypotheses. First, we wanted to look at the possibility that the life events which trigger psychotic episodes have some kind of special characteristics or meaning for the patient. Second, we wanted to investigate the possibility that the patients' episodes may have been provoked by stressful circumstances other than major life events. Third, we wished to find out whether there was reason to conclude that buffering factors such as the supportiveness of the patient's social network helped to prevent or delay the appearance of positive psychotic symptoms.
Beyond the requirement that the patient adapt to undesirable social circumstances, we discovered few obvious commonalities between the events preceding the onset of relapse episodes of illness. There were various kinds of threats, disappointments, and losses, but similar events also occurred to other patients without the necessary appearance of positive psychotic symptoms. It did appear, however, that some patients suffered a series of minor undesirable events which may have had an additive effect over time on their mental state. Rather than a clearly defined triggering effect, this process suggested a progressive wearing down of the patient's resistance to psychotic processes. Similar findings emerged from consideration of what we earlier termed continuing difficulties. This category covers stress provoking interpersonal relationships and social circumstances which are a routine feature of the patient's everyday life (Brown and Harris 1978, Day, Zubin and Steinhauer 1985, Day 1985). Again, it was possible to identify various kinds of stressful situations that may have had an additive effect on the patient's mental state. Included here were hostile family members, stressful working conditions, a lack of financial resources, chaotic household situations, and the like.

The following case history illustrates the kind of situation described above:

**Patient No. 219** - A 31 year-old black male. He has been under continuous outpatient care for the past eight years. There have been four inpatient hospitalizations, each one lasting less than three months.

From the beginning, the patient was evasive and passive-aggressive, yet he continued to return for
follow-up interviews. The patient finished an Associate of Arts degree at a local college just prior to the first follow-up interview. He immediately started searching for a job. He sent out over 40 copies of his resume over succeeding weeks with few responses. One company in Connecticut asked him to interview, but after spending $200 of his own money on the trip, he was told there were no openings at the present time. The patient remained unemployed over the next two months, despite a number of local job interviews. All of this occurred against the background of serious family tensions and financial difficulties that prevented the patient from achieving his goal of an independent life.

Around the 22nd week the patient began to decompensate, talking sympathetically about a mass murderer who recently had been shot to death by the San Diego police. Within another month he had become frankly psychotic. He was not hospitalized.

The patient's continuing inability to find work, as well as the tensions and chronic frustration experienced in his living situation approximate what certain investigators have called "daily hassles" (Kanner et al. 1981; Lazarus and DeLongis 1983). These kinds of stressors have been defined in the following manner (Lazarus and DeLongis 1983:247):

...the irritating, frustrating, distressing demands and troubled relationships that plague us day in and day out. Some of these hassles are transient, others are repeated even chronic. These hassles should be distinguished from dramatic, change-centered life events.

The key problem was that many of these daily hassles seemed to be a product of the patient's chronic illness state. Peoples' negative attitudes and reactions often seemed to be conditioned or provoked by the patient's difficult behavior. In the above case, for example, it was impossible to determine the extent to which the patient's inability to find work was a due to his
aggressive behavior during job interviews. It was our impression that daily hassles were frequently confounded with the patient's psychopathology, a situation that has already been remarked upon by a number of investigators (Monroe 1983; Dohrenwend et al. 1984). This kind of confounding makes it difficult, if not impossible, to determine the direction of the causal link between daily hassles and symptomatology.

To summarize, it was possible to identify some kind of environmental stressor(s) - either life events or daily hassles - affecting almost all of the patients who displayed positive psychotic symptoms. This could only be done, however, through a process of retrospective examination of the project data. It is not presently clear to us whether this retrospective procedure can eventually be translated into a method for the prospective prediction of relapse episodes. Precise prediction of the timing of episodes is severely hampered by the fact that most of these patients appear to be relapsing in the face of commonplace circumstances and events that cannot be regarded as unduly stressful. This situation is made doubly difficult by the fact that identified stressors are often confounded with patient's illness-related behavior. Among such chronically ill patients, there does not appear to be a simple cause and effect relationship between these variables. It may be necessary in the future to consider more complex, perhaps circular, models to describe the onset of positive psychotic symptoms.
Evidence was also discovered indicating that active support received from members of the patient's social network could serve to delay — perhaps, indefinitely — the appearance of positive psychotic symptoms. The term "active support" implies more than simply a positive emotional attitude on the part of the network member. Here we are referring to the cases in which a parent, spouse or girlfriend actively intervenes to deal with crises or routine problems that the patient would otherwise have had to handle alone. One example concerns a young man whose long-term educational goals were frustrated, in part, through his own behavior and, in part, by the VA bureaucracy. He began to use amphetamines and showed brief periods of decompensation — i.e., micropsychotic episodes lasting a matter of hours to a couple of days. However, his girlfriend intervened in each case to insure that he received the food and rest he needed to avoid a full blown psychotic episode. Eventually, she became exasperated with the patient's behavior and left. Shortly afterwards, the patient became frankly psychotic. In the most extreme cases, as we shall see, the patient assumes a globally passive and dependent role, turning over all initiative and responsibility for coping with the outside world to a another family member.

The evidence presented in this section suggests that poor prognosis cases of schizophrenia may expected to remain ill or to eventually breakdown as consequence of the kinds of unexceptional hassles routinely dealt with on a daily basis by the vast majority of normal individuals. From a theoretical perspective, there is nothing about these findings which are
necessarily in conflict with vulnerability theory as outlined above. Two possible explanations can be put forward for the patients observed sensitivity to stress. Patients could be seen, on the one hand, as lacking in the essential coping skills required to buffer them against their stressful circumstances or they might be viewed, on the other hand, as the victims of an extreme intrinsic vulnerability to emergence of positive psychotic symptoms. In the present case, the latter explanation seems the more likely since premorbid adjustment was rated as "poor" among less than ten percent of these patients.

**Adaptation to Illness**

While reviewing these data, we also observed a relationship between the amount of time that the patient had been ill and a number of other factors such as negative symptoms, dependent attitudes and the complexity of the patient's social milieu. Further investigation suggested the possibility that these patients often undertake an adaptive process of social disengagement that permits them to come to terms with their extreme vulnerability to illness. In this connection, Mechanic (1978:290) has pointed out that chronically ill individuals routinely develop means of coping with the difficult demands of living, particularly those which "threaten distress and disruption." For the schizophrenic patient with a high level of vulnerability, the potential for further painful episodes of illness represents an objective "demand of living" with which he must try to come to terms. With few exceptions (e.g., Wing and
Brown 1970; Wing 1978a, 1978b), recent psychiatric theory has shown little concern for the manner in which schizophrenic patients react to their illness condition and construct adaptive strategies in an effort to minimize its effects on their lives. Yet, the development of such strategies appears to be a characteristic feature of chronic illness states, and one which may the have important implications for the management of long-term outpatients.

Many of the younger patients in our series appeared to be confronted by a contradiction involving their vulnerability to episodes of psychosis, on the one hand, and the goals valued by their family and friends on the other. These patients value education, work and independence, even though their background and training is limited. Unfortunately, their efforts to achieve these goals often leads them into the kinds of stressful situations that provoke further episodes of illness. In a number of these patients it was possible to trace what seemed to be a painful and destructive cycle of continued striving followed by frustration and multiple hospitalizations (cf. Patient No. 219, pp #).

Eventually, important changes begin to occur in the patient's relationship to his own values and ideals. These changes usually involve a clear reduction in the patient's striving to achieve his goals and a whole or partial withdrawal from the kinds of social settings previously experienced as
Navy. He received a medical discharge from the service and has been rehospitalized a further seventeen times.

The patient was married once for ten years; he has been divorced for the past ten years. He has a 20 year-old son. He was previously employed as an electrician and welder, but has not worked for the past five years. This withdrawal from employment was voluntarily undertaken by the patient. It appears that he could return to work if he wanted to. Currently, he lives with his parents. The patient refuses to leave the house alone, except for brief local trips. He owns a car but almost never drives. Most of his time is spent watching television or doing nothing at all. He has no regular household tasks and refuses reemployment or recreation when it is offered. He claims to be depressed because of his inability to do anything and worries what will happen to him if his parents should die.

At the present time, it is impossible to say which factors determine the rate and the extent of this negative adaptive syndrome. It is not clear, for example, why some patients achieve an equilibrium at an intermediate point in the process, while others continue on towards more serious states of impairment. One key issue obviously involves the extent to which this process is simply a function of the patient's level of intrinsic vulnerability to illness as opposed to the degree of causal influence properly assigned to external social factors. Only the development of an objective measure of the patient's level of vulnerability to illness can resolve this question.

**Implications for Vulnerability Theory**

Consider the following good outcome case history from the VA series. It serves to highlight a number of the points made in the preceding discussion of chronic schizophrenic patients.
Patient No. 291 - A 34 year-old white male. The patient graduated from high school and went on to earn 15 college credits. He described a good premorbid level of interpersonal adjustment, he had close friends and took part in organized activities, but did not date. He is married and has three children, he has known his wife since high school. His illness has caused him to miss no work over the past five years; he is a journeyman operator at a glass factory.

The patient successfully completed his term of service in the armed forces. His first contact with the mental health system was at the age of 27 when he was hospitalized for four months, followed by a long period of convalescence. He has attended the outpatient clinic since that time, although, at the time of entry into the study, he had not taken maintenance medications for the past 6 months.

The patient's wife complains that he can be moody and is often explosive with the children; he also refuses to take any responsibility for household chores. There is no evidence, however, that these problems are directly connected to the patient's past psychopathology. Instead, they seem to be long-term features of the patient's personality functioning. According to his wife, he has been the same way since he returned from the Army.

Although the patient denied specific difficulties he showed some non-psychotic symptoms (depression and worry) during the follow-up period. These symptoms were coordinated with reasonably high levels of stress due to union negotiations at his workplace which directly affected the patient's salary and position. Recently, the patient asked to placed back on maintenance neuroleptics.

Several elements of this case history deserve comment. This patient contrasts markedly with our poor outcome cases in that he is able to maintain an ongoing, realistic commitment to a normal range of social and economic roles (e.g., marital, parental and work roles) without periodically slipping back into episodes of psychosis. Several factors appear to be involved in his ability to avoid further episodes of illness. He clearly has a supportive family environment which avoids direct emotional confrontations
in determining the eventual course and outcome of their disorder. Moreover, the relative degree of the patient's loading for the disorder appears to be the critical or "primary" variable that determines the significance of other "secondary" factors (e.g., social support, coping skills, ecological niche) in the model.

For example, vulnerability theory has generally assumed that active episodes of the disorder must be triggered by environmental stressors [4]. In the past, this triggering effect has been associated with the occurrence of stressful life events. Our research with chronic outpatients has led us to deemphasize the necessity of life events in terms of identifiable crises or changes occurring in the patient's environment. Instead, these patients seem to be vulnerable to the kinds of minor hassles that are a commonplace aspect of the everyday life. Rather than one dramatic event that sets off an episode, we more often observe an ongoing accumulation of minor stressors that appear to wear away the patient's resistance to psychotic states.

Vulnerability theory has also has assumed in the past that schizophrenic patients return to premorbid levels of personality functioning between episodes of illness. This position conflicts with a Kraepelinian approach which views deterioration as fundamental biological component of the schizophrenic disease process. The preliminary findings reviewed in this paper indicate that it may be necessary to modify vulnerability theory in order to better describe the development of chronic schizophrenic states. Specifically, the hypothesized adaptive process outlined
above suggests that highly vulnerable patients may not, in fact, return to premorbid levels of functioning between episodes of positive symptoms. We observed a tendency in our subjects towards a progressive restriction of their instrumental goals, initiative and emotional range. Even though there does appear to be a growing poverty of functioning among these patients, we have questioned whether it is associated with an underlying biological disease process. We have suggested, instead, that this growing poverty of functioning may be the result of an adaptational process fueled by the patient's intrinsic vulnerability to illness.

It would appear that earlier versions of vulnerability theory focused primarily upon the dynamics involved in good prognosis cases of schizophrenia. The essential factor in such cases seems to be a moderate underlying loading (i.e., vulnerability) for the disorder. For such individuals, dramatic environmental crises may be necessary in order to trigger full blown episodes of the disorder. Similarly, the crucial role of secondary factors—such as premorbid coping skills and social support—in preventing stress from exceeding critical threshold levels seems obvious.

In the case of the highly vulnerable individual, however, the dynamics of the schizophrenic process may be quite different. Episodes of the disorder no longer approximate occasional crises followed by a return to premorbid levels of personality
functioning. Instead, psychotic symptoms remain continually present or threaten to return on a permanent basis. Dramatic life events are no longer required to trigger illness episodes since symptoms may be provoked (or maintained) by the stress involved in minor hassles of the kind that make up the routine texture of everyday life. The negative behavior associated with the patient's acute sensitivity to stress may progressively exhaust the supportiveness of relatives and friends, eventually leading to further isolation and withdrawal - except, perhaps, in the most extreme cases where the patient is permitted by other family members to assume a totally passive and dependent attitude towards the outside world. As part of this process, we have tried to describe how this morbid sensitivity to stress may lead these patients to undertake an adaptive process of social disengagement in an effort to avoid further painful episodes (or exacerbations) of illness. We have argued that the key feature of this adaptation to illness is a growing poverty of instrumental and emotional functioning that often approximates the traditional psychiatric concept of chronic deficit states.

Conclusion

The ideas put forward in this paper are admittedly speculative. It is not simply a matter that we have been working with a small sample size. Further evidence collected in the course of the Recidivism and Schizophrenia Project is unlikely to provide definitive proof for this model because we lack independent measures of the patients' underlying vulnerability to
illness. Without such independent measures, it is virtually impossible to (i) refine the various elements of our model and (ii) test its predictions against alternative theories of the origin of chronic deficit states in schizophrenia. By way of illustration, we hypothesized above that the patient's underlying vulnerability to illness was the primary factor in determining the course and outcome of the disorder. It may, in fact, be the case that what we have termed secondary factors (e.g., premorbid personality, social network, ecological niche) play a much more influential role that has been suggested here. Without an independent measure of the patient's underlying vulnerability to illness, however, it is practically impossible to formally test such questions. In other words, further progress in this area of psychosocial research appears stymied until additional significant findings are provided by biologically oriented investigators. It seems ironic yet wholly appropriate to conclude this paper with Kendell's (1984) observation that, "The future lies mainly - but not exclusively - in the hands of laboratory scientists."
NOTES IN THE TEXT

1. At this level, vulnerability theory is very close to the perspective of diathesis-stress theory as used by geneticists such as Rosenthal (1970) and Gottesman and Shields (1967, 1982).

2. Include here a formal list of the instruments used in the study.

3. It is possible to observe severe and painful exacerbations of positive symptomatology among patients who are technically psychotic through the follow-up period. This is the equivalent of deepening of the current episode of illness.

4. Include here a brief discussion of the implications of the term "internal life events" as used in several previous vulnerability theory papers.
**TABLE 1**

**VA PATIENT CHARACTERISTICS**

1. Total number patients .......................... 25

2. Average age (years) ............................ 38.2 (sd 6.9)

3. Mean age at first hospitalization (years) ...... 25.2 (sd 6.5)

4. Average years since onset of illness .......... 13.5 (sd 7.0)

5. Mean number of hospitalizations ............. 8.4 (sd 6.8)

6. Mean inpatient years ......................... 5.1 (sd 1.5)

7. Employment last five years

   none ......................... 11 (44%)

   up to 1 year .............. 3 (12%)

   up to 2 years .............. 3 (12%)

   up to 3 years ............ 2 ( 8%)

   up to 4 years ............ 1 ( 4%)

   up to 5 years .......... 3 (12%)

   unknown .................. 2 ( 8%)

8. Marital status

   single, never married .......... 13 (52%)

   married/cohabiting .......... 5 (20%)

   divorced/separated .......... 6 (24%)

   widowed .................. 1 ( 4%)

9. Education (highest level)

   grammar school .................. 3 (12%)

   high school/G.E.D. ............ 12 (48%)

   some college .................. 9 (36%)

   undergraduate degree ......... 1 ( 4%)

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TABLE 1 contd.

10. Premorbid adjustment (SADS-L)

   poor ........ 2 ( 8%)
   fair .......... 12 (48%)
   good .......... 9 (36%)
   very good ... 1 ( 4%)

11. Global assessment scale (GAS)

   mean at entry ........... 41.7 (sd 9.9)
   mean after 6 months .... 39.7 (sd 11.5)
**TABLE 2**

**PATIENT COURSE: SIX MONTHS**

*all patients (n = 25)*

- psychotic throughout (12)
- remitted (13)
  - complete (4)
  - partial (9)
    - relapsed (0)
    - relapsed (7)