The common denominator of most etiological models of schizophrenia is the assumption that each of us is endowed with a degree of vulnerability to mental disorder which under suitable circumstances will express itself in an episode of illness. A process of great relevance to vulnerability is adaptation, the ability of an individual to respond adequately and appropriately to life's exigencies. Lois B. Murphy (1974) has distinguished several components of adaptation: (1) reflexes (built-in mechanisms) and instincts (broader built-in patterns); (2) coping efforts to deal with situations not adequately managed by reflexes; (3) mastery resulting from effective and well-practiced coping efforts; (4) competence as the congeries of skills resulting from cumulative mastery achievement.

Because reflexes and instincts do not go far in dealing with life's exigencies, man is required to engage in coping. In turn, the coping process may lead to direct solutions of the presented problems or to circumventions via defense mechanisms. A further distinction can be made between two types of coping: (1) everyday coping and (2) the capacity to retain internal equilibrium despite disturbances. It is the breakdown of the second type of coping that leads to an episode.

In simpler environments, the meeting of traumatic stress-producing events was routinized by cultural sanctions and practices which rarely led to deviant coping or, if they did, such deviations could be contained by proper institutional forms. In our culture, responses to catastrophic life events are not always easily channeled into institutionalized forms. Thus, some vulnerable individuals do not always find suitable coping strategies and this is where an episode might develop.

The coping effort is not to be confused with competence. Coping is the attitudinal motivational stance that a person assumes when faced with a task. Competence, on the other hand, refers to the accumulated cognitive abilities and skills needed for solving a problem. In a sense, coping represents the motive power of the organism, while competence represents its capacities.

We might now raise the question as to which of the four components of adaptation falters when an episode of schizophrenia develops. It is
unlikely that reflexes and instincts and competence are lost, since both of these components are maintained in their original effectiveness both during and after the episode. Mastery is not really a component of adaptation since it is the mechanism through which competence is built up.

This leaves the coping effort as the likely candidate for disruption when an episode develops. Unfortunately, we have no direct access to measuring coping ability and must judge it via performance which involves the other two components.

The switch from normal coping with the exigencies of everyday life to coping with catastrophic situations may mark the beginning of an episode. We do not know whether catastrophic coping is a continuation, albeit in an exacerbated form, of routine coping, or whether it represents a totally different type of coping effort reminiscent of Kurt Goldstein’s catastrophic reactions.

Relation Between Vulnerability, Life Event Stressors, and Adaptation. Life stressors will produce an episode, if the stress intensity surpasses the tolerance threshold of the individual. The appeal of life-event investigations rests on the fact that they are naturally occurring incidents and are important in determining health and disease. If the parameters of the ecological niche are the factors that influence health, the life-events occurring in these niches are good nets for capturing the effect of these parameters, for the responses to these common life events are conditioned by all the socio-cultural-physical forces that characterize and make up the ecological niche.

Competence and Vulnerability. Competence, in general, is assumed to be orthogonal to vulnerability for several reasons. First, there are but few data available and, until more adequate data are brought forth, it is best to adopt the null hypothesis. Second, the evidence for interdependence stems largely from measures of competence based on socioeconomic status. The typically negative correlation between SES and rates of schizophrenia is not found in all studies, e.g., in those based on smaller towns. Furthermore, it is not clear whether the correlation is due to the downward drift of schizophrenics on the SES scale, rather than to a causal relationship between SES and schizophrenia. In addition it is not at all certain that occupational level is negatively related to schizophrenia. Nearly two-thirds of premorbid schizophrenics are employed before hospitalization, a figure only 20 percentage points lower than that for the general population. Furthermore, 70 percent of these patients are employed at skilled manual levels or higher, a proportion similar to that in the general population (Spring & Zubein, 1975). One should bear in mind also that if we were to include schizophrenics at large who do not reach the hospital, a less distorted relation between competence and vulnerability would emerge, probably in the direction of eliminating all patient-nonpatient differences. Moreover, low SES patients tend to remain in the hospital longer, often for reasons independent of the persistence of the episode.

These facts tend to throw considerable doubt on utilizing advent of hospitalization as an index of the onset of an episode and discharge from the hospital as an index of offset of the episode. There is also some evidence that low competence, rather than psychotherapy, is often the basis for admission to mental hospitals. Thus, Meyers and Bean (1968) noted that lower class patients often exhibited less psychopathology than upper class patients, even though the lower class patients had more frequent admissions. Individuals who are unmarried, living alone, unemployed, or of the lowest SES, all of which reflect poor competence but not necessarily psychopathology, show higher rates of seeking and receiving mental health care than would be expected from the overall prevalence of symptoms of psychopathology in these demographic groups in the community (Fischler et al., 1975a, b). Christensen (1974) found that in a follow-up of a cohort of admissions, the rehospitalized patients had a better employment record but a more severe level of psychopathological disturbance at follow-up than their peers who were not rehospitalized. Thus, occupational level seemed to be no protection against rehospitalization. The generally accepted belief that only the poor copers and incompetents fill our hospitals is not a well-founded belief.

Coping Effort and Vulnerability. The normative coping characterizing (Continued on page 17)
Zubin (Continued)
a person, like his competence, is independent of his vulnerability. High copers are found among individuals in either extreme of vulnerability. However, the coping involved in traumatic or catastrophic events is related to vulnerability. Those whose coping effort is not adequate to meet the threat of the life event stressor succumb and develop an episode. The inadequate coping may consist of either giving up or of persistent but unsuccessful efforts towards mastering the problem.

Just why some patients adopt the strategy of generally lowering their coping efforts under severe stress while others either persist or even increase their efforts, albeit inadequately and inappropriately, is one of the questions that needs to be answered. Perhaps the key to this problem lies in the premorbid personality of the patient.

Coping Efforts and Life Events. The relation between coping effort and life events is dependent upon the intensity of stress induced by the life event as shown in Figure I. Automated activities of the reflex variety which are evoked by simple life events elicit much less coping effort than more demanding problem-solving situations. The relationship may be linear up to a point. The occurrence of a life-threatening event produces a break in the smooth relationship between coping ability and induced stress by forcing a shift from the normative to the catastrophic coping. This will tend to lower their coping efforts (C). The problem we face is locating point P in the behavior of our patients so that we can mark the events. Adaptation on the reflexive level to illumination changes require but little coping effort. As the complexity of the life event increases, more coping effort has to be exerted, and we could assume tentatively that there is a linear relationship between coping effort and increase in the demands for adaptation. Upon reaching point P, which varies from person to person, the stakes have become threatening enough to cause a disruption in the relationship between the induced stress and the resulting coping effort. A normal person of low vulnerability (A), when faced with a catastrophic life event, either will continue to increase coping effort at the same rate as before, or may have to alter his coping effort to readjust. For example, bereavement may produce grief or temporary withdrawal from one's usual daily schedule, but, in the end, the individual will readjust to the changes brought on by the catastrophe. Highly vulnerable individuals will also try to find strategies for coping with their stress, but will not find suitable appropriate strategies (B) or will tend to lower their coping efforts (C). The problem we face is locating point P in the behavior of our patients so that we can mark the beginning of the episode and later determine when the episode ends by noting the return of the coping effort to its premorbid level.

Episodic Nature of Schizophrenia. We have postulated that schizophrenia is not a continuous condition leading to a chronic state of either deterioration or unremitting impairment and that the persistent characteristic of the schizophrenic is his vulnerability, not his disorder. In fact, a survey of recent studies of schizophrenia (Spring & Zubin, 1975) indicates that the evidence for the chronic and unremitting nature of all schizophrenic illness is rather sparse. World-wide hospital statistics indicate that the average duration of hospitalization has dropped from several years in the custodial period before the mid 50's to some 37 days in 1975. However, the readmission rate has increased considerably. Many of these readmissions probably represent new episodes. Most of the chronic cases in our hospitals have been admitted as long as 20 years ago and probably reflect the iatrogenic influences of long-term incarceration, rather than the course of the disorder itself. More recently, randomly selected experimental brief therapy groups lasting only four weeks have shown as good results or better than those groups consigned to long-term therapy. Reports from England (Leff, 1974) indicate that the relapse rate of patients returned to hostile home environments is far greater than those returned to benign home environments. Thus, the relapse rate of patients, if not the rate of new episodes, may be a function of their illness, but of the niche they occupy in life. Notably, M. Bleuler's (1974) follow-up of 208 schizophrenic probands disclosed that only 10 percent showed the type of disease course described as typical in Kraepelin's and E. Bleuler's early work. Bleuler (1974) puzzled over why his father's generation's outlook on schizophrenia was so much more dour than his own. He concluded that his father's cross-sectional follow-ups were limited to patients who remained or returned to his clinic, while
his own work was longitudinal. Thus, only the failures and partial successes were available to the elder Bleuler.

Even the 10 percent of unremitting cases are products of the custodial care era and might not persist in their episode in today's more benign treatment milieu. Actually, Hawk et al. (1975) applied Schneider's (1959) first-rank symptoms. Langfeldt's (1939, 1956) criteria and Carpenter et al.'s (in press) discriminating signs to schizophrenic patients at intake, but could not find any nuclear types and were entirely unsuccessful in predicting outcome. To their great surprise, 40 percent of the schizophrenic patients had the best outcome when compared to other psychiatric patients. In summary, it seems that chronic unremitting schizophrenics, certainly those of the catastrophic variety, are becoming increasingly rare, and our assumption regarding the possibility that what is permanent about schizophrenia is not the episode, but the vulnerability, seems highly tenable.

Furthermore, the hypothesis of the episodic nature of schizophrenia is consistent with two well-known characteristics of schizophrenics: (1) Schizophrenics do not exhibit schizophrenic behavior all the time and, even when they are in the hospital, they are not always in their episode; (2) schizophrenics who exhibit good premorbid adjustment tend to recover. Perhaps, at the end of the episode, the patient returns to his premorbid coping efforts. However, when a poor premorbid's episode ends, and he returns to his premorbid status, it is difficult to recognize that he has actually been freed from his episode.

While a certain proportion of our general population is expected to consist of poor copers regardless of psychopathology, it is quite possible that the occurrence of an episode may decrease coping ability to a much lower level than the pre-existing premorbid level. Some individuals who never experience psychopathological episode may, nevertheless, have their coping ability reduced by becoming isolated in the community. Thus, both intrapsychic and sociogenic forces may decrease coping ability and, consequently, the competence of members of the community.

Explanatory Value of the Vulnerability Hypothesis. A good deal of controversy has been engendered by attacks on the model that considers mental disorders as diseases. Because, in some cases, therapeutic intervention has to be exerted despite the patient's unwillingness, it is alleged that his civil rights are abrogated, and that labeling him as mentally ill tends to dehumanize the patient. By shifting our view of a person as suffering from a continuing mental disorder to suffering from a temporary episode, and further by regarding him as vulnerable rather than as diseased, much of this controversy ought to become superfluous.

There are several other baffling problems which the vulnerability hypothesis can help explain. The apparently spontaneous recovery of long-standing patients falls into this category. The staff's recognition of a patient's emergence from his episode may occur suddenly and the recovery, consequently, may be regarded as miraculous. Some patients

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may even increase their competence and coping efforts under the protective environment of the hospital.

Another problem which the vulnerability hypothesis can help resolve is an explanation of why only 10 percent of the schizophrenics have affected parents, although, theoretically, parents and offspring share 50 percent of their genetic make-up. It is possible that the familial genes of the chronic patients set the vulnerability threshold so low that ordinary life events, despite their minimal stress impact for the average person, are sufficient to trigger an episode in the biological relatives of chronic patients. On the other hand, the low rate of concordance in the blood relatives of acute schizophrenics may be due to the higher threshold of vulnerability in their families. Thus, unless the life histories of parents and their schizophrenic offspring and of schizophrenic probands and their relatives indicate that they have undergone similar severe stressful incidents, one would not expect high concordance for schizophrenia in these groups.

Indexing the Onset, Duration and Offset of an Episode. Since the patient does not come to our attention until he is in a full-blown episode, it is too late to determine indices of onset. We could collect a wealth of information regarding competence and coping during the episode. Regarding the actual ending of the episode, we are in greater difficulty, since as long as the patient is in the hospital, there is no way to determine whether his coping efforts have returned to their premorbid level unless he is exposed to significant contexts in which his coping efforts and resulting competence are exercised.

The only recourse we have to getting indexes of onset and offset at the present time is to monitor the mini-episodes which may appear during the hospital stay. A good example of the onset and offset of a mini-episode rather than a full-blown episode is afforded by Sachar et al. (1968) with regard to the rise and fall of corticosteroids in reactive depression. Another approach might be to utilize behavior analysis model stemming from behavior modification theory. Goldsmith and McFall (1975) have experimented with simulated interpersonal contexts to evaluate the effectiveness of patients' social coping strategies. If we had knowledge of the patient's premorbid coping efforts, it would be relatively simple to determine his coping effort at any subsequent time to see if the premorbid level has been recovered postmorbidly. Weissman (1975) has recently reviewed fifteen scales available for assessing performance in occupational, marital, extended family and community roles, and these may serve the purpose of probes for determining the change occurring during hospitalization in coping efforts as measured by level of observed competence. Finally, mild mini-episodes may also be engendered by biochemical challenges, although the ethics of such experimental procedures have to be investigated carefully.

Proposed Research for Developing Indexes of Vulnerability and Episodes' Beginning and End. Those indexes which characterize the patient only during the episode may eventually turn out to be good markers of the onset and offset of the episode. Those which characterize the person, regardless of the presence of an episode, may turn out to be vulnerability markers, while those characteristics which result from the illness may help in screening the population for study purposes. Indexes that mark the vulnerable individual, regardless of the presence of an episode, may be discovered from studies of identical twins and sibling studies. If both the proband and his non-affected monozygotic twin or his non-affected siblings and relatives have the characteristic in question, it is a good candidate for becoming a vulnerability index. If the proband who is in an episode has the characteristic but his monozygotic discordant twin or blood relatives do not, the trait in question is a good candidate for marking the beginning and end of episodes. Markers for the onset and offset of episodes and for vulnerability are to be sought in the variety of objective techniques that differentiate schizophrenics from normals in line with the variety of etiological models that we have presented. We are looking for techniques in which the patient excels over normals so that poor motivation and attention cannot explain the difference. Our research suggests the utility of measures of sensory integration, auditory thresholds reaction time, and pupillography (Zubin et al., 1975).
Summary of the Vulnerability Model. Our vulnerability model of schizophrenia is highly speculative and controversial, but it has the virtue of not yet being contradicted by the data. According to our findings, the schizophrenic is drawn from the entire range of human variation with regard to intelligence, competence, coping, achievement and all other aspects of the human condition. The one common feature of all schizophrenics is not the ever presence of the disorder, but their vulnerability to the disorder.

The degree of vulnerability seems to be independent of competence, coping effort, social class, or any other human attribute. The episode develops when the stress induced by life-event stressors exceeds the threshold of vulnerability, but these episodes are not life-long; they terminate sooner or later, even without therapeutic intervention. The majority of schizophrenics spend the major part of their life in the community, self-supporting, and indistinguishable from the rest of the population except in the eyes of those who have labeled them. For those who appear to be chronically ill, it is debatable whether their chronicity is endogenous or induced by iatrogenic or custodial factors.

At the onset of an episode, the patient loses his coping efforts towards adapting adequately to life’s exigencies and his competence declines. At the end of the episode, his coping ability and competence return and he resumes his former place in society more or less at about the same level from which he started. The generally assumed negative relationship between vulnerability and competence is an artifact of our limited information regarding the full spectrum of schizophrenic illness and of the mistreatment meted out by society to the highly vulnerable whose coping and competence are worn down by attrition. Our information is colored by the fact that many brief episodes in low vulnerable patients do not come into our statistics on the one hand, while those who fill our hospitals and clinics are largely the highly vulnerable relapsing patients. Consequently, we get the impression of schizophrenia as a chronic disorder when, in fact, only the vulnerability is chronic; the episodes pass.

Regarding therapeutic intervention, we have no knowledge of how to engage in primary prevention except to devote ourselves to the prevention of future episodes in those who have already suffered one or more episodes. Accepting vulnerability to life-event stressors as the basis for the elicitation of episodes, therapeutic interventions can take one of two avenues: either reduce vulnerability through psychopharmacological intervention or reduce the threatening nature of life event stressors through psychological intervention. It is likely that psychopharmacological intervention might prove to be more effective for the highly vulnerable, while psychological intervention might be more effective for the low vulnerable. Since the high vulnerable are near the ceiling of the distribution in vulnerability, there is ample opportunity to reduce vulnerability from its high level to lower levels. It is much more difficult, however, to reduce the threatening nature of their life events because even very slight stressors will elicit an episode. On the other hand, the low vulnerable have very little chance to reduce their vulnerability but can reduce the threatening nature of life-stressors considerably. In this regard, we might begin to spend less time and effort on those more fortunate patients who have a good premorbid personality and are of low vulnerability, and who will most likely recover and return to their good premorbid levels. They do not need long-term expensive intervention, since they will recover anyhow and even those who are highly vulnerable can be provided with therapies that will reduce the threatening impact of future life events.

It is the poor premorbids who should concern us. Drugs may reduce their vulnerability, but even when these patients are not in an episode, they cannot adapt to life’s exigencies. For them, re-education and retraining to uplift their coping efforts and competence is needed. The challenge of the 70’s is not to find a cure for schizophrenia! Episodes of schizophrenia are mostly self-curing! Rather, the challenge is to find ways of improving the coping abilities and competence of the vulnerable poor premorbids so that when an episode occurs, they will have something to come back to when the episode passes!

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Footnotes

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2. Whether this endowment is genetic, the result of early developmental processes, or an interplay of both is not clear.