The Early Course of Schizophrenic Thought Disorder

by Martin Harrow, Joanne Marengo, and Cathleen McDonald

Abstract

The current investigation studied the early course of positive thought disorder and its relationship to other aspects of schizophrenic outcome. Forty-eight schizophrenics diagnosed using the Research Diagnostic Criteria (RDC), 51 psychotic nonschizophrenics, and 67 nonpsychotic patients were studied at index hospitalization and at a 1.5-year followup. Most thought-disordered schizophrenics and other psychotic patients showed some reduction in thought pathology between index hospitalization and followup (p < .02). A larger percentage of schizophrenics than other psychotic and nonpsychotic showed thought disorder at the acute phase and at followup assessment (p < .05), although only a subgroup of 27 percent of the schizophrenics showed severe thought disorder at followup. At followup, severely thought-disordered schizophrenics showed residual signs of psychosis and poor functioning in other areas. Positive thought disorder in schizophrenics at followup most often occurred within the context of an unremitted illness and was less frequently due to a new, acute episode of disturbance. Continuously thought-disordered schizophrenics exhibited more severe impairments in life adjustment at 1.5-year followup than did episodic or nought-disordered schizophrenics (p < .02). The results suggest that severe thought disorder is a persistent characteristic in a subgroup of early schizophrenics.

The present investigation was designed to study the longitudinal course of positive thought disorder in early schizophrenia and to examine its relation to life adjustment. The course of symptoms is of major importance in formulations about the nature of schizophrenia. Longitudinal research tracking the course of schizophrenia and its associated symptoms, however, remains rare. In particular, recent theory has raised questions about the frequency, course, and prognostic significance of positive thought disorder and other positive symptoms in schizophrenia.

Initial research studying positive thought disorder during the acute, in-hospital phase has provided a first step toward defining the course of positive thought disorder in schizophrenia. Hospitalized schizophrenic patients who are in acute states of disorder have shown more severe and pervasive thought pathology than nonschizophrenics in the form of overinclusive thinking, bizarre-idiiosyncratic thinking, derailment, neologisms, autism, and other types of deviant verbalizations (Buss and Lang 1965; Chapman and Chapman 1973; Arieti 1974; Harrow and Quinlan 1977, 1985; Andreasen 1979; Johnston and Holzman 1979). More than 50 percent of hospitalized, young adult schizophrenics assessed at acute phases of disturbance show severe positive thought disorder (Marengo and Harrow 1985).

By contrast, studies of the early course of schizophrenia that compare acute phases of disorder with periods of partial recovery (5 to 7 weeks after hospital admission) suggest a reduction in positive thought pathology as acute disorganization diminishes (Shimkunas 1970; Adler and Harrow 1974; Harrow et al. 1982). These data suggest that the acute phase of schizophrenic disorders is associated with the...
severity of the thought disorder observed (Harrow and Quinlan 1977). Decreases in disturbed thinking between acute and partial recovery phases have not always been significant, however, and either some or many schizophrenics continue to evidence positive thought disorder during the partial recovery period (Adler and Harrow 1974; Harrow et al. 1982).

Our followup research on young schizophrenics studied early in the course of disorder has subsequently extended the assessment of thought-disorder symptoms into posthospital periods ranging from 11 months posthospital admission to 3 years after discharge (Harrow et al. 1973; Harrow and Silverstein 1980; Harrow, Silverstein, and Marengo 1983). The results of this research begin to suggest that while many schizophrenics do not show severe thought pathology during the posthospital or less active stages of the disorder, severe positive thought pathology may be found in a subgroup of young schizophrenics at followup. This phenomenon of a subgroup with severe positive thought disorder within the larger group of schizophrenics during a postacute phase underlies the reports of significant schizophrenic-nonschizophrenic differences in thought disorder over time (Adler and Harrow 1974; Harrow, Silverstein, and Marengo 1983). As the mixed data at the phase of partial recovery also indicate, however, a large proportion of schizophrenics may not be thought disordered after the acute phase.

These results begin to raise questions regarding differences in the course of thought pathology within schizophrenia over time. The research just reported leads to the hypothesis that for a certain percentage of schizophrenics, positive thought disorder is a permanent part of their thinking; for others, severe thought pathology is more strongly associated with periods of acute psychosis and disorganization (Harrow and Quinlan 1977; Holzman 1978). It has not been determined, however, whether the schizophrenics who show severe thought disorder during posthospital followup are reexperiencing severe thought pathology in conjunction with a new, acute illness episode (i.e., remission, followed by relapse, leading to acute disorder and possibly hospitalization) or whether such symptoms appear at followup within the context of a more permanent, unremitting course. Given that views regarding the episodic versus chronic nature of positive schizophrenic symptoms have been increasingly advanced (Strauss, Carpenter, and Bartko 1974; Bleuler 1978; Zubin, Magaziner, and Steinhauser 1983), more careful assessments of within-group thought disorder patterns over the early course of schizophrenia are needed.

In addition, most of the published research on thought disorder in schizophrenia has used a broad concept of schizophrenia rather than modern, narrow concepts, such as those of the Research Diagnostic Criteria (RDC) (Spitzer, Endicott, and Robins 1978) and DSM-III (American Psychiatric Association 1980). Documenting the course of thought pathology in schizophrenics defined according to modern, narrow concepts of this disorder and studying differences in the course of thought pathology between RDC/DSM-III schizophrenics and other psychotic disorders would seem timely. Recent research has suggested that pervasive and severe thought disorders may be particularly characteristic of manic patients at the acute, in-hospital phase (Andreasen and Powers 1975; Andreasen 1979; Harrow et al. 1982; Resnick and Oltmanns 1984). More diverse groups of nonschizophrenic psychotic patients have not been focused upon, however, and differences in the longitudinal course of positive thought disorder symptoms of RDC/DSM-III schizophrenics and a wide range of other psychotic patients have not been documented.

The current article presents the 1.5-year followup results of a multidimensional, longitudinal study of the early course of positive thought disorder in schizophrenia and other types of psychoses. Using a new and larger population of schizophrenics than has been assessed in prior studies, this research examined the course of positive thought disorder in young schizophrenic patients between an acute-phase hospitalization and a followup assessment 1.5 years after hospital discharge. Employing RDC and DSM-III criteria in the diagnosis of schizophrenia and comparison groups, other psychotic and nonpsychotic patients were also followed up to assess the specificity of thought disorder patterns over the early course of disturbance. Thought disorder was examined within the context of other aspects of the schizophrenic course, and rehospitalized and community-dwelling patients were compared to assess the contribution of acute psychiatric conditions to the severity of disturbed thinking at followup.

The primary research questions were as follows:

- Are there differences in the presence and severity of positive thought disorder among RDC/DSM-III schizophrenic, other psychotic, and nonpsychotic patients at the acute phase of hospitalization and at followup; and is positive thought disorder more persistent in
schizophrenia than in other psychiatric disorders?

• Does thought pathology occur in schizophrenia as part of a persistent, unremitting course of illness during the posthospital period or as part of a new episode of illness?

• What is the relationship between the course of positive thought disorder and life adjustment at followup in schizophrenia?

Method

Patient Setting and Population. The present sample, derived from the Chicago Followup Study, consisted of 166 patients admitted to two Chicago area facilities—Michael Reese Medical Center (MRH) and the Illinois State Psychiatric Institute (ISPI)—and then followed up 1.5 years later. The overall goals of this longitudinal research program were to (1) study schizophrenic thought disorders, psychosis, and outcome on a longitudinal basis over different phases of the schizophrenic disturbance (Harrow and Silverstein 1977; Harrow et al. 1978; Harrow, Silverstein, and Marengo 1983; Pogue-Geile and Harrow 1984) and (2) to explore mechanisms that may be involved in schizophrenic thought pathology and psychosis (Harrow and Prosen 1979; Harrow and Miller 1980; Harrow et al. 1983; Lanin-Kettering and Harrow 1985).

The Research Diagnostic Criteria (RDC) were used for the primary classification of diagnostic groups (Spitzer, Endicott, and Robins 1978). The sample included 48 RDC schizophrenic, 51 psychotic nonschizophrenic, and 67 nonpsychotic patients. DSM-III classifications of the same patient sample yielded 40 schizophrenics, 59 psychotic nonschizophrenics, and 67 nonpsychotic patients. For this reason, psychotic patients were defined in terms of the presence of delusions and/or hallucinations. To avoid circularity in the current study of pathological thinking, the presence of positive thought disorder in the absence of delusions and hallucinations was not used as a criterion to label patients as psychotic at index hospitalization.

Information for RDC and DSM-III diagnoses were obtained from standardized interviews using a modified version of the Schedule for Affective Disorders and Schizophrenia (SADS) (Endicott and Spitzer 1978) and the Schizophrenia State Inventory (SSI); a tape-recorded, semistructured research interview obtained shortly after index admission (Grinker and Holzman 1973); and from detailed information on the patient’s clinical picture and previous history obtained at hospitalization. Further diagnostic information relating to schizophrenic and comparison samples is presented in table 1.

Patient Characteristics. Patients were assessed early in the course of their disorders to minimize the potential contaminating effects of long-term hospitalization and/or years of chronic illness. All patients ranged from 17 to 32 years of age at index hospitalization (mean = 22.7 years, SD = 3.7 years). Fifty-four percent of the patients were first hospital admissions, and a total of 77 percent of them had no or only one previous admission at index hospitalization.

Fifty-four percent of the sample was female and 46 percent was male. Using the 5-point Hollingshead and Redlich (1958) system to assess socioeconomic class, 59 percent of the sample fell into higher socioeconomic classes (categories 1, 2, 3) and 41 percent clustered into lower socioeconomic classes (categories 4 and 5). Seventy-five percent of the patients were white, 24 percent were black, and 1 percent was composed of other groups. The mean educational level of the sample was 12.9 years of schooling (SD = 2.1), and the mean level of intelligence, using the Wechsler Adult Intelligence Scale (WAIS) Information Test, was 11.0 (SD = 2.9), falling within the

Table 1. Diagnoses of patient population

<table>
<thead>
<tr>
<th>Sample</th>
<th>RDC diagnosis</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenic</td>
<td>Paranoid</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Undifferentiated</td>
<td>25</td>
</tr>
<tr>
<td>Psychotic nonschizophrenic (other psychotic)</td>
<td>Major depressive disorder</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Manic disorder</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Schizoaffective depressed</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Schizoaffective manic</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Unspecified functional disorder</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Drug abuse disorder, psychotic</td>
<td>3</td>
</tr>
<tr>
<td>Nonpsychotic</td>
<td>Major depressive disorder</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Minor depressive disorder</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Manic disorder</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Hypomanic disorder</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Bipolar affective disorder, mixed type</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Other (other psychiatric disorders—labile personality, etc.)</td>
<td>16</td>
</tr>
</tbody>
</table>
Average Range of Intelligence (Wechsler 1955).

One-way ANOVA revealed that the schizophrenics had completed significantly fewer years of education than the psychotic and nonpsychotic patient groups ($F = 4.76, df = 2, 163, p < .01$). However, 72 percent of the schizophrenics had completed at least 12 years of education. Within the schizophrenic sample, the severity of disturbed thinking showed no significant relationship to years of education. In addition, in the subsequent analyses of the results, analysis of covariance was conducted to control for any possible effects of education on thought disorder.

Eighty-three percent of the schizophrenic, 67 percent of the psychotic nonschizophrenic, and 23 percent of the nonpsychotic patients were receiving neuroleptic medications at index assessment. At posthospital assessment, 52 percent of the schizophrenic, 36 percent of the psychotic, and 13 percent of the nonpsychotic patients were receiving neuroleptic treatment. Data on the relationship between medication status and thought disorder are presented in the "Results" section.

Assessment of Thought Disorder.

The term positive thought disorder has been applied to various types of disordered cognition and has been used to describe disordered thinking that is loose, bizarre, incoherent, idiosyncratic, illogical, and/or peculiar (Chapman and Chapman 1973). Current use of the terms thought disorder and disordered thinking is based on a comprehensive measure of positive types of thought disorder (see Fish 1962, for a discussion of positive vs. negative types of thought disorder). This comprehensive measure of bizarre- idiosyncratic thinking or positive thought disorder, which has been used successfully in previous research, is based on an overall score derived from three cognitive tests (Harrow et al. 1982; Harrow, Silverstein, and Marengo 1983).

These three tests, administered at index and followup assessments, are the Goldstein-Scheerer Object Sorting Test (Goldstein 1944), the Gorham Proverbs Test (Gorham 1956), and the Social Comprehension Test of the WAIS (Wechsler 1955). Each of these tests provides a separate measure of bizarre-idiosyncratic thinking. Patients' responses to each of the tests were scored "biind" by raters who were not informed of patient diagnosis or whether they were rating inpatient or followup records; and they were scored without knowledge of the specific hypotheses being investigated.

The individual proverb and comprehension test responses were scored for bizarre-idiosyncratic thinking along 4-point scales ranging from no bizarre thinking to severe bizarre or idiosyncratic thought.

An example of a response with clear bizarre-idiosyncratic features follows:

(Q) Rome was not built in a day.
(A) It's love. I think of it as love. I have to work towards love and love has to work towards me. And this has to gradually come.

A response example with very severe bizarre-idiosyncratic features follows:

(Q) The wife is the key to the house.
(A) Faults are true, equal, the same. The wife is equal to the husband only in name. But if names are not the same, it cannot be true.

This index of bizarre-idiosyncratic thinking encompasses many of the classic qualities of thought disorder considered important by diverse theorists. It also encompasses almost all the positive types of thought disorder described in the RDC and DSM-III diagnostic manuals as symptoms that can be used as partial criteria for a diagnosis of schizophrenia. These types of thought disorder include incoherence, marked loosening of association or derailment, marked illogical thinking, and neologisms. Other examples of bizarre responses have been presented in previous reports (Harrow et al. 1982; Harrow et al. 1983) and in a detailed manual (Marengo et al. 1985). Recent interrater reliabilities of $r = .84$ to $r = .93$ were obtained for the scoring system.

The individual Object Sorting Test responses were scored for positive thought disorder along a 3-point scale, according to a continuum from none to severe, bizarre, or idiosyncratic features. The final score represents the sum of a patient's individual bizarre responses. The specific criteria for the current system of assessing object sorting items have been outlined in an earlier scoring manual (Himmelhoch et al. 1973). Satisfactory interrater reliability ($r = .87$) has been obtained for the scoring system, and the current system has been used in recent reports (Harrow and Silverstein 1980; Harrow, Silverstein, and Marengo 1983).

The total scores from each of these three tests were categorized into five major levels of bizarre-idiosyncratic thinking, varying from no thought disorder to severe thought disorder, as follows: (1) no bizarre-idiosyncratic thinking, (2) minimal to mild levels, (3) moderate levels, (4) severe levels, and (5) extremely severe levels of bizarre-idiosyncratic thinking. Even level 3 reflects definite signs of abnormal thinking. The combined number of patients at levels 3
through 5 gives the percentage of thought-disordered patients. The grouping of patients at levels 4 and 5 provides an index of severely thought-disordered patients.

The major measure of thought disorder used in the current research is the composite or overall index of bizarre-idiiosyncratic thinking. This overall index is based on patients’ scores from the three separate measures of thought disorder. For this overall index, each patient was assigned to one of the five categories, or levels, ranging from no bizarre-idiiosyncratic thinking (level 1) to very severe disturbance (level 5) according to the highest level achieved on any of the three tests. This classification system categorizes patients according to whether they show any bizarre-idiiosyncratic thinking, given three separate opportunities to do so. The overall score encompassed a broad sample of patients’ behavior and is more comprehensive than indices that include only one or two tests.

Assessment of a New Episode or Course of Continuing Illness in Schizophrenia Between Index and Followup Assessments. Positive thought disorder at followup was also related to the course of schizophrenia during the period between index hospitalization and followup. The course of disturbance between index and followup assessment was assessed to determine if, at followup, thought disorder symptoms were associated with (1) a new, acute episode of illness; (2) a continuing, unremitting condition; (3) a course of continuing psychosis but adequate social and work functioning; or (4) a remission in the disturbance or illness.

The course of disturbance during the year between hospital discharge and followup was assessed in a structured functioning interview (Harrow et al. 1978), and by the modified SADS (Endicott and Spitzer 1978). These two followup interviews assessing functioning involved detailed evaluations of the following: (1) social, work, and family functioning; (2) intellectual functioning; (3) patients’ use of medication, psychotherapy, and other posthospital treatment; (4) anxiety, depressive, and psychotic symptoms; and (5) rehospitalization.

Each patient’s functioning in the year before followup was compared with their prehospital functioning and to their clinical condition at index hospitalization to determine the course of illness between hospitalization and followup assessment.

At followup, patients whose functioning was adequate (i.e., they had returned to work or school, were able to maintain household duties, or showed increasing social relations) and whose symptom picture was similar to their premorbid state were judged to be in remission from their index episode. Patients were judged to be in a new episode of illness at followup if their symptom and symptom picture indicated a remission for 6 months or more in the year following hospital discharge but reflected a deterioration in work and social functioning and a return of psychosis at the 1.5-year followup.

In general, ratings for continued illness were based on the patient’s having continuous low levels of functioning and adjustment throughout the followup year and also showing continuing symptoms (usually psychotic symptoms but, in some cases, severe anxiety or depressive symptoms). The fourth category (adequate functioning but psychotic) was reserved for the rare patient who was psychotic but who managed to be self-supporting and engaged in some social activities. For the purposes of this research studying pathological thinking, assessments of the course of illness were independent of and did not include thought disorder ratings.

Satisfactory agreement between two raters was obtained when the 49 schizophrenics were classified into one of these four groups using the above criteria ($\text{Kappa} = .87$).

Assessment of Instrumental Adjustment at Followup. Thought disorder courses were compared to outcome states at 1.5-year followup in each of the patient groups. Two scales of overall adjustment were used: (1) an overall scale based on work and social functioning, life disruptions, self-support, symptoms, suicide, relapses, and rehospitalization (Levenstein, Klein, and Pollack 1966); and (2) an overall measure that included four individual scales covering work functioning, social functioning, rehospitalization, and symptoms (Strauss and Carpenter 1972). The presence of psychotic and affective symptoms was assessed using a modified version of the Schedule for Affective Disorders and Schizophrenia (Endicott and Spitzer 1978) and the Katz Adjustment Scales (Katz and Lyerly 1963).

Procedure. All patients were tested during the acute phase of disturbance within the first 2 weeks of index hospitalization. Followup assessments took place an average of 1.5 years after hospital discharge. Patient protocols were scored for positive thought disorder by research assistants who were blind to diagnosis and other outcome data. Information regarding medication use, sociodemographic characteristics, and instrumental adjustment were obtained at the time of assessment.
Results

Thought Disorder at the Acute Phase of Disturbance. The initial assessment of positive thought disorder was conducted within the first 2 weeks of psychiatric hospitalization. Previous research suggests that this represents an acute phase of disorder for most patients.

Tables 2 and 3 present data on positive thought disorder in the three major RDC diagnostic groups at index hospitalization and at followup. A one-way ANOVA of the data in Table 3 on the severity of bizarre-idiiosyncratic thinking at index admission across the RDC patient groups showed significant diagnostic differences ($F = 12.62, df = 2, 163, p < .001$). Analyses (ANOVA) controlling for the possible effects of educational achievement and first-admission status on the severity of thought disorder showed similar results ($F = 7.03, df = 2, 161, p < .001$). Post hoc comparisons (Neuman-Keuls) indicated that schizophrenics showed more severe thought pathology than psychotic nonschizophrenic and nonpsychotic patients at the index hospitalization ($p < .05$). No significant differences in bizarre-idiiosyncratic thinking emerged between the psychotic nonschizophrenic and nonpsychotic patient groups, although there were trends toward more severe thought disorder in psychotic nonschizophrenic patients ($p < .10$).

Similar diagnostic differences in severity of positive thought disorder at in-hospital assessment were demonstrated in patients classified according to DSM-III criteria ($F = 13.23, df = 2, 163, p < .001$). Post hoc comparisons of the DSM-III groups yielded significant differences in disordered thinking between schizophrenic and both groups of nonschizophrenic patients ($p < .05$) and between psychotic nonschizophrenic and nonpsychotic patients ($p < .05$). Larger differences in thought disorder severity emerged between DSM-III psychotic nonschizophrenic and nonpsychotic patients than between RDC psychotic nonschizophrenic and nonpsychotic patients. A number of severely thought-disordered RDC schizophrenics were categorized as having other types of psychotic disorders in DSM-III, increasing the mean thought disorder score of DSM-III psychotic nonschizophrenic patients (compared with RDC psychotic nonschizophrenic patients) and resulting in greater group differences between DSM-III psychotic nonschizophrenic and nonpsychotic patients. In the DSM-III system, psychotic nonschizophrenics fell midway between, and were significantly different from, schizophrenic and nonpsychotic patients in the severity of their disordered thinking.

Diagnostic differences were partly a function of the presence of severe positive thought disorder in over 50 percent of the schizophrenic patients (Table 2). This portion of schizophrenics showing severely disordered thought can be contrasted with a significantly lower frequency (only 23 percent) of severe thought disorder in the combined sample of nonschizophrenic patients ($x^2 = 17.3, df = 1, p < .001$). Other data of ours indicate that in addition to the severe thought pathology shown in schizophrenics at the acute phase, manic patients are also severely thought disordered at acute phases of disturbance and show significantly more thought pathology than other psychotic patients (Harrow et al. 1982; Marengo and Harrow 1985).

The data indicate that thought disorder is not unique to schizophrenia and that moderate signs of cognitive disruption appear across all diagnostic groups at the in-hospital phase. While psychotic nonschizophrenic patients tended to show more positive thought disorder than nonpsychotic patients, not all psychotic patients were thought.

### Table 2. Distribution of patients on thought disorder at index hospitalization and at followup

<table>
<thead>
<tr>
<th>Patient group</th>
<th>Level of thought disorder at index hospitalization</th>
<th>Level of thought disorder at followup</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No thought disorder (scores: 1 or 2)</td>
<td>Signs of abnormal thinking (score: 3)</td>
</tr>
<tr>
<td>Schizophrenic ($n = 48$)</td>
<td>19%</td>
<td>25%</td>
</tr>
<tr>
<td>Psychotic ($n = 51$)</td>
<td>43%</td>
<td>28%</td>
</tr>
<tr>
<td>Nonpsychotic ($n = 67$)</td>
<td>58%</td>
<td>24%</td>
</tr>
</tbody>
</table>
positive thought disorder in schizophrenia showed significantly more followup in RDC schizophrenic, psychotic, and nonpsychotic patient groups. The severity of disordered thinking at followup was assessed using modern diagnostic systems, reaffirming this finding. Schizophrenic-nonschizophrenic differences in early, young patients are primarily confined to the most pathological end of the thought disorder spectrum, and more schizophrenic than nonschizophrenic patients are severely thought disordered. Overall, the results reveal persistent differences between early schizophrenic and nonschizophrenic patient groups at followup. Severe positive thought disorder is persistent, however, in only a subgroup of early schizophrenics after the acute phase.

Table 3. Means and standard deviations of the three patient groupings on thought disorder at index admission and followup.

<table>
<thead>
<tr>
<th>Patient group</th>
<th>Thought disorder at index hospitalization</th>
<th>Thought disorder at followup</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Schizophrenic (n = 48)</td>
<td>3.54</td>
<td>1.22</td>
</tr>
<tr>
<td>Other psychotic (n = 51)</td>
<td>2.92</td>
<td>1.13</td>
</tr>
<tr>
<td>Nonpsychotic (n = 67)</td>
<td>2.46</td>
<td>1.07</td>
</tr>
</tbody>
</table>

* Range: 1 (no thought disorder) to 5 (very severe thought disorder).

Thought Disorder at Followup: Schizophrenic Versus Other Psychotic and Nonpsychotic Patients. Followup assessments took place 1.5 years after hospital discharge. Severe positive thought disorder is not only a function of psychosis (Marengo and Harrow 1985). In addition, schizophrenic patients are distinct from other psychotic and nonpsychotic patient groups in that a larger percentage of schizophrenics exhibit severely disordered cognition at acute phases of their disorder.

Neuroleptic Treatment During the Acute and Posthospital Phases. A 3 X 2 ANOVA (diagnostic group by medication status) on followup thought disorder yielded no significant differences between medicated and unmedicated patients. The interaction between diagnosis and medication status, however, was significant ($F = 3.00, df = 2, 160, p < .05$). Medicated schizophrenic and nonpsychotic patients were slightly more thought disordered than their unmedicated counterparts. In contrast, unmedicated, psychotic nonschizophrenic patients were more thought disordered than the medicated psychotic nonschizophrenic group.

Cautions should be exercised in interpreting these results, since patients were not administered neuroleptic medication on a random basis. Rather, the administration of neuroleptics was based, in part, on the severity of symptoms. Those patients experiencing psychotic symptoms were more likely to receive neuroleptic treatment than patients who were not psychotic or not symptomatic. A study that randomly assigns patients...
treatment conditions and monitors posthospital treatment carefully is needed to assess adequately the effects of neuroleptic medications on thought disorder during the followup period.

Does Thought Pathology Occur in Schizophrenia at Followup as Part of a Persistent, Unremitting Course of Illness During the Posthospital Period or as Part of a New Episode of Illness? One factor that may be involved in the observed schizophrenic-nonschizophrenic differences in positive thought disorder at followup is that the schizophrenic sample may include a substantial proportion of patients who are still or again in an acute phase of illness. This possibility would suggest that many of the schizophrenic patients who are experiencing thought pathology at followup are in an active, acute phase of disorder and are experiencing thought disorder concomitant with acute psychosis or rehospitalization. The differences in the prevalence of bizarre-idiosyncratic thinking between schizophrenic and nonschizophrenic groups, according to this view, would be due to a greater relapse rate, and perhaps rehospitalization, in the schizophrenic group. This possibility was examined, and our analyses are now presented.

Positive thought disorder in relation to a new episode of illness in schizophrenia or to a continuing course of disturbance. We assessed the subsample of schizophrenics with severe thought pathology at followup using data on other aspects of their functioning during the year preceding followup to examine whether these patients showed severely disturbed thinking as part of a continuing course of disturbance during the posthospital period, as part of a new episode of illness, or as an isolated symptom in an otherwise healthy patient. The posthospital course of disturbance in these patients was also compared to the posthospital course of schizophrenics who exhibited no or only moderate signs of abnormal thinking at followup assessment. The data that emerged from this analysis are presented in table 4.

For the schizophrenic sample, severe positive thought disorder did not occur in isolation from other aspects of disturbance. Severely disordered thinking occurred as part of either a larger picture of continuing illness or a new acute episode of disturbance. The most prominent finding in this area was the co-occurrence of severe thought disorder with residual signs of schizophrenia and poor functioning in other areas. Evidence of psychosis (i.e., delusions and/or hallucinations) accompanied severe thought disorder signs in all but one of the severely thought-disordered schizophrenics at followup assessment. Severe signs of positive thought disorder and abnormal thinking most often occurred within the context of a chronic, unremitting illness during the followup period.

Table 4. Thought disorder in schizophrenia at followup as a function of continual illness or a new episode of illness

<table>
<thead>
<tr>
<th>Status of schizophrenic illness at followup</th>
<th>Adequate functioning</th>
<th>In new episode</th>
<th>Continual illness</th>
</tr>
</thead>
<tbody>
<tr>
<td>No thought disorder (n = 27)</td>
<td>29%</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>Signs of abnormal thinking (n = 8)</td>
<td>13%</td>
<td>12%</td>
<td>0%</td>
</tr>
<tr>
<td>Severe thought disorder (n = 13)</td>
<td>0%</td>
<td>8%</td>
<td>15%</td>
</tr>
<tr>
<td>Total sample (n = 48)</td>
<td>19%</td>
<td>6%</td>
<td>4%</td>
</tr>
</tbody>
</table>

More of the nonthought-disordered schizophrenics were in remission in other areas of functioning than was the case for the severely thought-disordered schizophrenics ($x^2 = 4.67$, df = 1, $p < .05$). Despite a small subgroup of schizophrenics who were in remission in all areas, however, the majority of both thought-disordered and nonthought-disordered schizophrenics showed a course of continuing dysfunction during the year following hospital discharge (see table 4). This was especially prominent for the schizophrenics who were severely thought disordered at followup. None of these 13 severely thought-disordered schizophrenics were in complete remission in other areas during the followup period, in contrast to a 29 percent remission rate among the 27 schizophrenics with minimal or no thought disorder at followup.

While the thought disorder of most of these young schizophrenics fit into a more general picture of chronic, unremitting illness during the followup period, there also was a much smaller group of schizophrenics whose thought disorder seemed to be part of a new episode of disturbance.
were back in the hospital for a followup, the sample was divided into three groups: (1) patients who had been hospitalized during the year between index and followup but who were not in the hospital at followup; and (3) patients who had not been hospitalized in the past year. At followup assessment, 8 schizophrenic, 7 psychotic nonschizophrenic, and 4 nonpsychotic patients were in the hospital for psychiatric disorders. Twenty-two schizophrenics, 13 other psychotic patients, and 19 nonpsychotic patients had been rehospitalized since index admission but were not in the hospital at followup assessment.

A 3 × 3 ANOVA (diagnostic group × hospital status) of followup thought disorder revealed no significant main effect for hospital status and no significant interaction. Schizophrenic patients who were currently hospitalized, however, showed a tendency to be more thought disordered than currently hospitalized psychotic nonschizophrenic and nonpsychotic groups (F = 4.43, df = 2, 18, p < .05). Currently hospitalized schizophrenics tended to have more severe positive thought disorder than schizophrenics not hospitalized at followup (t = 2.14, df = 45, p < .05).

Is There a Reduction in Positive Thought Disorder at Followup? The current research assessed positive thought disorder at two points over the early course of schizophrenic and nonschizophrenic disorders. The prospective nature of this investigation afforded an opportunity to assess changes in positive thought disorder over time, as patients moved from acute to postacute phases of disturbance.

A two-way repeated measures ANOVA (diagnosis × phase of disorder) of the data in table 3 on the severity of positive thought disorder at acute and followup phases showed significant remission in thought disorder for the total sample (F = 27.82, df = 1, 163, p < .01), with no significant interactions.

Positive thought disorder, on average, decreased from the acute phase to followup in each diagnostic group, although some select patients showed more severe levels of thought disorder at followup. This remission in positive thought disorder between index and followup assessments was significant in schizophrenic (t = 3.60, df = 47, p < .001), psychotic nonschizophrenic (t = 2.48, df = 50, p < .02), and nonpsychotic patients (t = 2.70, df = 66, p < .009).

Some earlier views had suggested that there is severe thought disorder in acute schizophrenia and that further deterioration in schizophrenic thinking occurs over time. The current data indicate that most early young schizophrenics show evidence of disordered thinking at the acute phase but do not show further deterioration in positive thought disorder during the early posthospital period; they even tend to show some reduction after the acute phase.

Does the Presence of Thought Disorder at the Acute Phase Predict Subsequent Thought Disorder at Followup? The acute phase of the disorder is in some ways the least stable phase of disturbance. Thus, the question has been raised of whether schizophrenics (as well as patients from other diagnostic groups) who initially show signs of thought disorder at the acute phase are more likely to show thought disorder at followup compared with patients who do not show initial evidence of disordered thinking.

Table 5 presents data bearing on whether positive thought disorder at the acute phase is predictive of...
Table 5. Relationship between positive thought disorder at hospitalization and at followup

<table>
<thead>
<tr>
<th>Patient group</th>
<th>Thought disorder at Index hospitalization</th>
<th>n</th>
<th>Percent of patients with thought disorder at followup</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No thought disorder</td>
</tr>
<tr>
<td>Schizophrenic</td>
<td>Absent</td>
<td>9</td>
<td>89%</td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>39</td>
<td>49%</td>
</tr>
<tr>
<td>Other psychotic</td>
<td>Absent</td>
<td>22</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>29</td>
<td>62%</td>
</tr>
<tr>
<td>Nonpsychotic</td>
<td>Absent</td>
<td>38</td>
<td>84%</td>
</tr>
<tr>
<td></td>
<td>Present</td>
<td>29</td>
<td>59%</td>
</tr>
</tbody>
</table>

thought disorder at followup for each diagnostic group. Schizophrenics who were thought disordered at the acute phase showed significantly more thought disorder at followup than did schizophrenics who did not have acute phase thought disorder ($t = 2.44, df = 46, p < .02$). Twelve of the 39 schizophrenics who showed evidence of thought disorder at the acute phase showed severe thought disorder at followup, and an additional 8 of these 39 showed signs of abnormal thinking at followup.

All patient groups showed overall reductions in thought disorder at followup. From among the patients who showed signs of thought disorder at the acute phase, however, a significantly larger percentage of schizophrenics showed severe thought disorder at followup than was the case for nonschizophrenic patient groups ($\chi^2 = 7.91, df = 1, p < .01$). Overall, the presence of thought disorder for schizophrenics at the acute phase was predictive of thought disorder at followup, although it was not a powerful predictor.

The data derived from two phases of the disorder in psychotic nonschizophrenic patients showed surprising inconsistency in the course of positive thought disorder. This group showed the greatest variation in thought pathology from the acute phase to followup. There were no significant or near-significant differences in thought disorder at followup between psychotic patients who were initially thought disordered and those who were not ($p > .40$). Almost two-thirds of the other psychotic patients who were thought disordered at the acute phase showed remissions in cognitive symptoms at followup. On the other hand, 41 percent of the other psychotic patients who were not thought disordered initially showed thought disorder at followup. Nine of the 22 psychotic patients who were not thought disordered at the acute phase showed at least some signs of positive thought disorder at followup. Included among these nine other psychotic patients were four psychotic depressed patients, two schizoaffective patients, one patient with unspecified functional psychotic disorder, and two drug abuse patients.

No specific diagnostic constellation characterized these psychotic patients who showed increases in positive thought disorder over time. Overall, the other psychotic patient group showed the greatest heterogeneity in terms of their thought pathology, with the suggestion that they show a different clinical course than that of schizophrenics. Some or many of these other psychotic patients may be vulnerable to future thought disorder and/or other psychotic symptoms.

In general, the presence of acute phase thought disorder did suggest a greater potential for thought disorder at followup for the schizophrenics, but this relationship did not hold among the other psychotic patients. These data suggest that despite the potential instability of acute phase thought disorder, it does tend to predict subsequent thought disorder at followup for schizophrenics. The relationship, while significant, is only a modest one.

The Early Course of Thought Pathology: Subgroups of Patients With Reductions and With Persistent Thought Disorder and Their Life Adjustment. An alternate way of looking at the data at the two early phases of disorder is by focusing on subgroups of patients defined according to their course of thought pathology. One of the goals is to determine whether the course of thought disorder, especially for schizophrenia, differentiates patients in terms of other aspects of their adjustment at followup. Table 6 presents data on the frequency of
Table 6. Frequency of four courses of thought disorder between index hospitalization and followup

<table>
<thead>
<tr>
<th>Patient group</th>
<th>Not thought disordered at index hospitalization</th>
<th>Thought disordered at index hospitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>And not thought disordered at followup</td>
<td>But thought disordered at followup</td>
</tr>
<tr>
<td>Schizophrenic (n = 48)</td>
<td>17%</td>
<td>2%</td>
</tr>
<tr>
<td>Other psychotic (n = 51)</td>
<td>25%</td>
<td>18%</td>
</tr>
<tr>
<td>Nonpsychotic (n = 67)</td>
<td>48%</td>
<td>9%</td>
</tr>
</tbody>
</table>

1 Patients were rated as thought disordered if clear signs were present: composite index scores = 3 to 5.

Each type of thought disorder course for schizophrenics and for the other groups of psychotic and nonpsychotic patients.

A larger percentage of schizophrenics than nonschizophrenics showed signs of thought disorder at both the acute phase and the followup assessment ($\chi^2 = 8.74$, $df = 1$, $p < .01$). More than 40 percent of the schizophrenics showed at least some signs of positive thought disorder during both these early phases of disorder, as contrasted with about 20 percent of the other patients. While a larger percentage of schizophrenics who were thought disordered at the acute phase again showed signs of thought disorder at followup, almost none of the small subgroup of schizophrenics who did not show evidence of thought disorder at the acute phase showed evidence of thought disorder at followup (see table 6). A course of illness characterized by no signs of positive thought disorder at either the acute phase or followup was not common in schizophrenia and was found in only 17 percent of the total schizophrenic sample.

As expected, nonpsychotic patients were the least likely to show cognitive disorder over time. About half of the nonpsychotic patients showed no evidence of abnormal thinking at either acute phase or followup assessment.

As a group, the other psychotic patient group showed the most variation in the course of positive thought disorder over time. Thus, a larger percentage of the other psychotic patients showed episodic patterns, in terms of either a reduction or an increase in thought disorder, as they moved into the posthospital phase. Fewer of them showed the same level of thought disorder at both phases of disorder.

As we have already noted, one of the goals of assessing thought disorder at two points in time, the acute phase and followup, is to determine whether particular thought disorder courses are associated with other aspects of functioning or psychosis at followup. The current research is among the first to explore subtypes of psychopathology based on longitudinal assessment of thought disorder. Of particular interest were comparisons of life adjustment among patients demonstrating (1) no thought disorder at either hospitalization or the first followup, (2) episodic patterns of cognitive disturbance between index and followup assessment (patients showing thought disorder either at hospitalization or followup but not at both), and (3) evidence of thought disorder at both index and followup assessment.

The longitudinal assessment of cognitive symptoms for the overall sample was strongly associated with outcome. Three X 3 ANOVAs (diagnosis X course of thought disorder) of life adjustment at followup indicated a significant main effect for diagnosis. Most important, the ANOVAs also showed significant main effects for the course of cognitive disturbance on overall outcome ($F = 4.21$, $df = 2$, 158, $p < .02$); work functioning ($F = 6.57$, $df = 2$, 158, $p < .002$); delusions ($F = 11.28$, $df = 2$, 158, $p < .001$); and hallucinations ($F = 6.37$, $df = 2$, 158, $p < .002$).

The course of thought disorder between the acute phase and 1.5 year after hospital discharge was not significantly related to social functioning at followup.

Table 7 presents data on adjustment and psychosis for the schizophrenic subgroups defined according to the course of their thought disorder. Within the schizophrenic sample, nonthought-disordered patients exhibited a significantly better overall adjustment than did either continuously thought-
disordered schizophrenics or those showing episodic thought disorder patterns \( (F = 4.09, df = 2, 46, \ p < .03) \). Schizophrenics with episodic patterns of cognitive disturbance often showed outcomes that fell midway between the relatively better adjustment of schizophrenics who were not thought disordered and the poorer adjustment of the continuously thought-disordered group.

The outcome distributions of the schizophrenic patients who showed signs of thought disorder at both the acute phase and at followup indicate a higher frequency of dysfunction in a variety of adjustment areas compared with those of other schizophrenics. Schizophrenics with thought disorder at both phases of disorder showed more severe impairment in terms of a 70 percent rate of rehospitalization and a 79 percent rate of unemployment. In addition, 53 percent showed hallucinations and 63 percent showed delusions at followup.

Similarly, continuously thought-disordered, psychotic nonschizophrenic and nonpsychotic patients showed trends \( (p < .15) \) toward more impaired adjustment and continuing psychosis than the nonthought-disordered patients and patients who showed episodic thought disorder.

### Discussion

**Positive Thought Disorder and Schizophrenic Vulnerability.** The current research examined the frequency and severity of positive thought disorder in schizophrenia between the acute and posthospital phases over the early course of patients' disorders. The course of positive thought pathology in schizophrenia was compared with that of other psychotic and nonpsychotic disorders to assess potential differences between these patient groups. Some older beliefs center on the view of positive thought disorder as a permanent, traitlike feature in most schizophrenics. More recent views have proposed that positive thought disorder and positive symptoms remit after the acute phase. In particular, Strauss, Carpenter, and Bartko (1974) and Crow (1982; Crow et al. 1982) have proposed that positive thought disorder is likely to be episodic or to resolve after the acute phase of schizophrenic disturbance.

The current data on the course of positive thought disorder after the acute phase bear directly on views about schizophrenic vulnerability. Zubin and colleagues and, more recently, Neuchterlein and Dawson and Strauss and colleagues have succeeded in alerting the field to, and drawing attention to, a major issue involving the nature of schizophrenic vulnerability and whether schizophrenics are vulnerable to discrete episodes or a continuous disorder (Zubin and Spring 1977; Zubin, Magaziner, and Steinhauer 1983; Neuchterlein and Dawson 1984; Strauss et al. 1985).

### Table 7. Outcome functioning at followup in schizophrenics categorized by the course of thought disorder

<table>
<thead>
<tr>
<th>Course of thought disorder</th>
<th>Overall adjustment(^1) in the past year</th>
<th>Employment(^2)</th>
<th>Social adjustment(^3)</th>
<th>Percent with psychosis at followup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenics with no thought disorder at either assessment ((n = 8))</td>
<td>4.25 ( \pm ) 3.15</td>
<td>2.50 ( \pm ) 1.51</td>
<td>2.75 ( \pm ) 1.58</td>
<td>13%</td>
</tr>
<tr>
<td>Schizophrenics with thought disorder at one assessment only ((n = 20))</td>
<td>5.85 ( \pm ) 1.63</td>
<td>1.45 ( \pm ) 1.61</td>
<td>3.30 ( \pm ) 1.08</td>
<td>35%</td>
</tr>
<tr>
<td>Schizophrenics with thought disorder at both assessments ((n = 20))</td>
<td>6.53 ( \pm ) 1.43</td>
<td>.84 ( \pm ) 1.17</td>
<td>3.30 ( \pm ) 1.34</td>
<td>68%</td>
</tr>
</tbody>
</table>

\(^1\) Lower score = better outcome (scale = 1 to 8) on scales used by Levensteln, Klein, and Pollack (1966).

\(^2\) Higher score = better outcome (scale = 0 to 4) on scales used by Strauss and Carpenter (1972).
proposed that what is continuous in schizophrenia is the vulnerability to episodes, rather than the episodes themselves being permanent or sustained. Recent data of ours on psychotic symptoms (Harrow, Carone, and Westermeyer 1985) and other data of ours on the potential persistence of thought disorder in schizophrenia (Marengo and Harrow 1984) have led us to propose a modified view in which schizophrenics show a vulnerability to a disorder or illness that is a more severe or sustained one with a longer period after the acute phase of persistent, but less intense and less disruptive, positive symptoms. To help analyze this issue on schizophrenic vulnerability and to shed further light on the context in which we found thought disorder after the acute phase of schizophrenia, we also analyzed the presence of thought disorder during the followup period to determine whether it occurred as part of a new episode of illness or as part of a persistent, unremitting course of illness.

Overall, the current data present a mixed picture on views of schizophrenic vulnerability. On one hand, the data indicate that most thought-disordered schizophrenics showed at least some remission of thought pathology as they moved from the acute phase to the followup period, although a number of schizophrenics still showed evidence of positive thought disorder but at a reduced level. This reduction confirms more recent evidence of ours indicating that severe positive thought disorder is not a permanent feature for all schizophrenics.

The evidence suggests, however, that during early phases of disorder, the majority of schizophrenics fit a model involving vulnerability to a more sustained disorder. Thus, of most importance, the data in table 4 begin to suggest that the severe positive thought disorder that was found among a subgroup of schizophrenics at followup was associated with a continual illness involving poor posthospital functioning during the followup period, rather than part of a new episode, for all but a few of these thought-disordered patients. Even among the other schizophrenics who did not show severe positive thought disorder at followup, about 70 percent of these schizophrenics also showed evidence of continuous illness or continuous malfunctioning during this early followup period; a portion of them also showed evidence of some degree of psychotic activity at followup (Harrow, Carone, and Westermeyer 1985).

One can begin to build a composite picture of postacute adjustment, based on various aspects of the data presented in this report on thought disorder at followup, and the presence of a continuous disorder during the followup period for many schizophrenics, as well as other data of ours on psychosis, cognition, and outcome (Harrow et al. 1978; Marengo and Harrow 1979, 1984; Harrow, Carone, and Westermeyer 1985). They suggest an overall picture in which early young schizophrenics are vulnerable to a severe, acute psychotic disorder leading to hospitalization, with aspects of the disorder continuing at a reduced intensity after the most acute phase and into the posthospital period for a number of years. The aspects of the disorder that persist into the posthospital period include some positive symptoms (but at a reduced level) for many schizophrenics, limited deficits in cognitive and motor performance, and an overall reduced level of work functioning for most schizophrenics. At this first followup, only a minority of schizophrenics showed complete remission in every area. In addition, the schizophrenic continues to be vulnerable to future severe, acute psychotic breaks.

**Does Severe Thought Disorder Persist in Schizophrenia?** When we turn from the broad question of schizophrenic vulnerability and focus on specific issues concerning the persistence of severe thought disorder, we can note that the current data did provide some degree of support to the hypotheses that early young schizophrenics show a reduction in thought disorder after the acute phase. The evidence also suggests, however, that even severe positive thought disorder is a relatively persistent characteristic for a subgroup of early schizophrenics, since the data showed a subgroup of early schizophrenics who were initially thought disordered at the acute phase also evidencing severe positive thought disorder at followup.

Our previous research on a smaller group of patients, with a measure derived from one test only, had indicated that thought disorder exists at followup in a subgroup of DSM-II schizophrenics. The present results indicate that in this particular area of disturbed cognition, DSM-III schizophrenics show some similarity, with 20 to 35 percent of these patients displaying severe thought disorder at followup. In the current sample of early young patients, positive thought disorder was significantly more frequent at followup among the schizophrenics than among nonschizophrenics. The significant schizophrenic-nonschizophrenic differences in extent of positive thought disorder found in the early posthospital period was in good part a function of a subgroup of schizophrenics with severe positive thought disorder at followup, rather than for
all schizophrenics. This subgroup may be an important cohort of schizophrenics. The data indicated that this subgroup of schizophrenics with severe positive thought disorder showed poorer posthospital functioning and more psychosis at followup than other subgroups of schizophrenic and nonschizophrenic patients.

Is Positive Thought Disorder in Schizophrenia Related to the Course of the Patient's Illness and to a Poor Prognosis? As we have noted, the data also shed some light on the context in which thought disorder at followup occurs, in terms of thought-disordered schizophrenics' early clinical course and functioning in other areas. The results indicate that for the subgroup of young schizophrenics who were severely thought disordered at followup, their positive thought disorder was not a case of strange and eccentric thinking in individuals who could function adequately in other areas. Rather, the positive thought disorder that occurred in this subgroup was present along with an overall picture of persistent, and perhaps chronic, dysfunction during the entire followup year.

In most instances it would be difficult for a severely thought-disordered person to function well at work and in other areas, with the thought disorder interfering with functioning and possibly leading to poorer overall adjustment. The positive association between thought disorder and both psychosis and instrumental adjustment, however, suggests that the very poor functioning of almost all the thought-disordered schizophrenics was part of a larger clinical picture. We would propose that underlying features associated with schizophrenia contribute to both severe thought disorder and to psychosis and poorer adjustment in other areas during the course of the followup period.

Recently, the issue of positive versus negative symptoms in schizophrenia has been of theoretical interest. It has been proposed by some that negative symptoms in schizophrenia are associated with poor outcome, but that positive symptoms represent more benign types of symptoms and may not be as closely associated to poor outcome. The current data, and other results we have reported (Harrow, Silverstein, and Marengo 1983; Pogue-Geile and Harrow 1984, in press), could suggest that when positive thought disorder is found in the posthospital phases of schizophrenia, it may also indicate a poor prognostic picture. Thus, the subgroup of schizophrenics with severe positive thought disorder could be a subgroup of poor-outcome nuclear schizophrenics, and we are currently investigating this possibility.

Schizophrenics Versus Other Psychotic Patients: The Presence and Severity of Positive Thought Disorder. The results showing more severe positive thought disorder in schizophrenics than in other psychotic patients at the acute phase and at followup confirm other recent results of ours. These data suggest that thought disorder is not unique to schizophrenics but is more severe in them than in other types of psychotic patients except for manic patients, and that it may also be more persistent than in other types of psychotic patients.

Thought disorder is not just a function of psychosis, since in the current research and in other recent research of ours, schizophrenics showed more thought disorder than other types of psychotic patients (Marengo and Harrow 1985). Psychosis and factors associated with psychosis may have an influence on thought disorder. It is not the only one, however, since the other psychotic patients did not show the severity of persistence of thought disorder found among the schizophrenics. Although many of the other psychotic patients showed signs of thought disorder at either the acute phase or followup assessment, a significantly smaller percentage of them than of the schizophrenics showed signs of positive thought disorder at both assessments ($\chi^2 = 4.64, df = 1, p < .05$).

The course of thought disorder among the group of other psychotic patients was less uniform than among the schizophrenics. In the present research some of the other psychotic patients who were not initially thought disordered at the acute phase showed subsequent thought disorder at followup; other psychotic patients who were not initially thought disordered remained free of thought disorder at followup. A larger percentage of the initially nonthought-disordered other psychotic patients than of the initially nonthought-disordered schizophrenics showed an increase in thought disorder at followup.

These data could suggest that once a patient is psychotic, he or she shows the potential for subsequent thought disorder and for other types of positive symptoms, such as delusions and hallucinations. It is possible that the other psychotic patients have the potential for positive thought disorder, and their psychosis at the acute phase is one indication that they have the potential for thought disorder later. Other data of ours also suggest that the other psychotic patients may have a greater potential for posthospital delusions than do
patients who are not psychotic at the acute phase (Kettering et al. 1982). We are presently engaged in further followups of these psychotic patients over a longer period of time to provide additional evidence on this issue.

In contrast, the course of positive thought disorder was more consistent for the schizophrenics. Thought disorder was more likely to be found in schizophrenics who also exhibited cognitive pathology at index hospitalization, and it showed a relationship to other aspects of functioning and to the course of illness during the followup period. In the current sample, about half the hospitalized schizophrenics who showed moderate or severe thought disorder at the acute phase of illness also showed some type of residual cognitive impairment in the early posthospital period, although their posthospital cognitive impairment was at times less severe than at the acute phase.

Factors That May Influence or Play a Role in Positive Thought Disorder.

In previous research we have proposed a model in which a number of factors, rather than only one factor, are influential in severe positive thought disorder (Harrow and Quinlan 1985). We have proposed and produced evidence about two such factors. One is an intermingling of personal material from one's own past or recent experiences into one's verbalizations and thinking at inappropriate times (Harrow and Prosen 1979; Harrow et al. 1983). The other is impaired perspective about the social appropriateness of one's thinking and behavior, such that thought-disordered patients have difficulty in effectively using long-term knowledge about which behaviors are appropriate and resourceful for a given social situation (Harrow and Miller 1980; Harrow and Quinlan 1985). At present it is still not clear whether these factors are more important in the thought pathology found in schizophrenics than in that found in nonschizophrenics who are thought disordered.

In addition, in previous research we have suggested that a third factor associated with the acute phase of both schizophrenic and nonschizophrenic pathology can be a contributor to positive thought disorder (Harrow and Quinlan 1977, 1985), and the current data bear on this hypothesis. This third factor, involving the acute phase of disturbance for schizophrenics and for other types of patients, appears to be based on the anxiety, turmoil, acute upset, and disturbance present at the acute phase, which can lead to disorganization, cognitive arousal, and cognitive pathology.

The current results, indicating severe thought pathology for the schizophrenics at the acute phase and a significant decline in positive thought disorder at followup, would fit in with this formulation. In addition to the significant decline in positive thought disorder for the schizophrenics, the significant decline in positive thought disorder at followup for each of the other two groups of nonschizophrenic patients studied could be viewed as further evidence about these disruptive factors at the acute phase. Thus, for all types of patients, including both schizophrenics and nonschizophrenics, the acute upset and turmoil had diminished by followup; and at the followup assessment all patient groups showed significantly less thought disorder.

Considered from the preceding standpoint, anxiety, acute upset, turmoil, and severe general disturbance—all of which can increase patients' level of disorganization—could be viewed as factors that the three patient groups experienced at the acute phase. This constellation of factors could be viewed as contributing to the thought disorder found at the acute phase for at least some patients from each diagnostic group in the current research. This constellation would not, however, be seen as the only factor contributing to thought disorder for any of the three groups. For schizophrenics it appears unlikely to be the main factor associated with their thought disorder, since a number of patients in the current research also showed some degree of thought disorder at followup, which is a less acute phase. In addition, other evidence of ours has suggested that even during the acute phase, when most psychotic patients are experiencing anxiety, acute upset, turmoil, and severe general disturbance, schizophrenics and manic patients tend to show more positive thought disorder than other psychotic patients (Marengo and Harrow 1985). Nevertheless, the current data, with the significant reduction from the acute phase to followup, suggest that factors associated with the acute phase for both schizophrenic and nonschizophrenic patients are additional and important contributors to thought disorder.

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