Cognitive Deficits and Thought Disorder: II. An 8-Month Followup Study

by Philip D. Harvey, Nancy M. Docherty, Mark R. Serper, and Myrna Rasmussen

Abstract

Schizophrenic (n = 21) and manic (n = 19) patients were followed up an average of 8 months after an index assessment during an acute admission. These patients were tested at both assessments with laboratory tasks measuring distractibility and reality monitoring and were examined with clinical ratings of positive and negative thought disorder. For manic patients, none of the measures predicted the patients' clinical state of followup, while negative thought disorder, although rare, was temporally stable. For the schizophrenic patients, both negative thought disorder and distractibility were temporally stable, and more severe negative thought disorder was found at index assessment in patients who were psychotic at followup. The differential utility of laboratory and clinical indices for the prediction of overall clinical state is related to these data.

A number of recent studies (e.g., Cornblatt et al. 1985; Walker and Harvey 1986; Harvey et al. 1988) have suggested that distractibility and problems in identifying the origin of verbal information in short-term memory are associated with the severity of positive, but not negative, symptoms in schizophrenia. In contrast, other studies found that visual information-processing deficits measured with backward-masking paradigms (Green and Walker 1984, 1986), the continuous performance task (Nuechterlein et al. 1986), and the span of apprehension task (Nuechterlein et al. 1986) correlated with the severity of negative symptoms, but not with positive thought disorder. The data from these studies suggest that the two symptom dimensions have different laboratory correlates.

Longitudinal data suggest that clinical symptoms have different stability characteristics and prognostic implications. For example, numerous studies have found that positive and negative symptoms have different longitudinal stability, with schizophrenic patients' negative symptoms being more stable than positive symptoms in their severity during an acute admission (Harvey et al. 1984), across two consecutive admissions (Earle-Boyer et al. 1986), and at a consistent followup interval (Pogue-Geile and Harrow 1984, 1985). Furthermore, Andreasen and Grove (1986) reported that the severity of negative, but not positive, thought disorder predicted continued impairment at a 6-month followup in a mixed sample of psychiatric patients.

A previous report on this sample (Harvey et al. 1988) presented data on the cross-sectional correlation between clinical thought disorder and cognitive deficits, the short-term longitudinal stability of both the cognitive and linguistic variables, and the longitudinal ability of each domain of functioning to predict the other. Distraction task performance correlated cross-sectionally with positive thought disorder in both manic and schizophrenic patients, but failures in reality monitoring (i.e., the ability to identify the origin of information in short-term memory) were correlated cross-sectionally with positive thought disorder only in schizophrenic patients.

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patients. In manic patients, there were no short-term (i.e., 4-day) longitudinal relationships between either distractibility or reality monitoring and positive thought disorder, although positive thought disorder predicted distraction performance longitudinally. For schizophrenic patients, distractibility, but not reality monitoring, predicted positive thought disorder longitudinally. An obvious weakness of that design was that, since both cognitive and linguistic variables were stable at the 4-day retest interval, there was little variability in the criterion measures, possibly suppressing the longitudinal correlations.

In this report, we present data from an 8-month followup of a substantial portion of the subjects from the earlier 4-day retest study. The subjects were retested with the same measures and with a number of questions in mind. Patients were subdivided at followup on the basis of psychotic/nonpsychotic clinical status. The longitudinal stability of the linguistic and cognitive variables was examined, as was the utility of each of the variables at index for prediction of the clinical status of the patients at followup. Finally, the performance on the laboratory tasks and the severity of the clinical measures were compared across psychotic/nonpsychotic status at followup, to see if any of these variables appeared to be stable correlates of a schizophrenic or manic diathesis. All of these analyses were performed separately in manic and schizophrenic subjects, to identify any differential results in the two samples.

We expected distraction performance to be longitudinally stable in schizophrenic, but not manic, patients across clinical state at followup because distractibility may be a specific marker of vulnerability to the disorder (Harvey et al. 1981, 1986). Positive thought disorder was expected to be longitudinally unstable in both samples, because Earle-Boyer et al. (1986) had found it to be unstable in severity in both schizophrenic and manic patients across consecutive admissions. In contrast, negative thought disorder was expected to be longitudinally stable, in line with earlier results (Earle-Boyer et al. 1986), and it was further expected that more severe negative thought disorder at index would predict continued impairment at followup, in line with the data of Andreasen and Grove (1986).

**Methods**

**Subjects.** Manic and schizophrenic subjects were recruited from consecutive admissions to an acute treatment unit at a State psychiatric center. Newly admitted patients were approached within 10 days of their admission and asked to participate in studies of language and cognition. Diagnostic information was collected with the Schedule for Affective Disorders and Schizophrenia (SADS; Spitzer et al. 1978b) and diagnoses used DSM-III (American Psychiatric Association 1980) criteria. Patient records were used only for collection of demographic information and clarification of unclear information provided by the patients, and in no cases constituted the sole source of diagnostic information. Independent diagnoses were generated by two sources, a Ph.D.-level clinical psychologist and a group of clinical psychology graduate students. Diagnostic agreement on the initial sample was 0.82, k, and all disagreements were resolved by consensus. Descriptive data on the patient subjects, as a function of their clinical state at followup, are presented in table 1. A normal comparison sample was examined at index, but was not followed up at 8 months. The data from their index examination are presented in Harvey et al. (1988).

Diagnosis x status analysis of variances (ANOVAs) found no effects for age, the number of prior hospitalizations, or neuroleptic dose at index and followup. No followup status differences in lithium doses in the manic patients were found (by t test) at index or followup. There were also no differences in sex distribution or in the percentages of patients receiving anticholinergic at index or at followup, neuroleptics at followup, or in the percentage of manic patients receiving lithium at followup (by χ² analysis).¹

¹These patients were part of a total sample of 38 schizophrenic and 30 manic patients who had completed a full evaluation at least one time during an acute admission and are restricted to subjects who were reported on by Harvey et al. (1988). A followup involving linguistic assessment of a subset of the complete 68-subject sample was reported by Docherty et al. (1988). Of the patients reported on by Docherty et al., there was an overlap of 12 schizophrenic and 10 manic patients with the present sample. The reason for patients being in the Docherty et al. sample but not in the present one was either that they were examined only one time during their acute admission and hence were not subjects in the report by Harvey et al. (1988), or that they refused to consent to the laboratory assessment at the followup.
Table 1. Descriptive data on subjects

<table>
<thead>
<tr>
<th>Followup status</th>
<th>Schizophrenic patients</th>
<th>Manic patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diagnostic</td>
<td>Psychotic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(n = 10)</td>
</tr>
<tr>
<td>Age (at index)</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>% Female</td>
<td>50</td>
<td>58</td>
</tr>
<tr>
<td>Prior hospitalizations</td>
<td>4.6</td>
<td>2.8</td>
</tr>
<tr>
<td>Years of education</td>
<td>11.8</td>
<td>2.3</td>
</tr>
<tr>
<td>Neurleptic dose(^1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td>640</td>
<td>290</td>
</tr>
<tr>
<td>% Receiving at followup</td>
<td>680</td>
<td>320</td>
</tr>
<tr>
<td>Lithium dose(^2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Receiving at followup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticholinergic (% Receiving)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td>90</td>
<td>75</td>
</tr>
<tr>
<td>Followup</td>
<td>70</td>
<td>67</td>
</tr>
</tbody>
</table>

\(^1\)Chlorpromazine equivalents.
\(^2\)Based only on subjects receiving this medication.

Laboratory Assessment. The laboratory assessment of the patients was performed twice at the index admission. Since there were no significant differences in performance for either patient group on any variables across the two assessments, the data from the first assessment are used as the index data in the present report.

Digit span distraction tasks. Two digit span distraction tasks were created by randomly ordering the trials from the ‘short’ distraction and nondistraction trials used by Oltmanns and Neale (1975). Four distraction and four nondistraction trials were presented in each task and were recorded onto a separate tape. The distraction trials contained five target digits presented in a female voice, with four irrelevant digits presented in an opposite-sexed voice in the 2-second interval between the presentation of each target digit. In the nondistraction condition, six target digits were presented at the same rate in a female voice. The distraction and nondistraction trials were intermixed and presented in a fixed random order in a tape-recorded format. Each tape contained one practice example of a distraction trial and a nondistraction trial. To reduce practice effects, no trials on the two tapes were identical. Subjects were instructed to attend to the female voice only and to ignore any male voices. Subjects were given ordered recall instructions and responded verbally to the tester, who recorded their responses. The tester stopped the tape between trials until the subjects produced their recall of the stimuli.

Each subject was tested once with each tape at index session; the order
of presentation of the tapes was counterbalanced. The version used at followup was also counterbalanced across the subjects; as a result, half of the subjects were tested twice, 8 months apart, with tape 1, and half were tested twice with tape 2. The two sets of distraction (ND1 and ND2) and nondistraction (ND1 and ND2) tapes were equal in difficulty level and true score variance (TSV) in the normal sample (n = 25) at index (D1 mean = 0.93, TSV = 3.04; ND1 mean = 0.95, TSV = 4.61; D2 mean = 0.93, TSV = 2.53; ND2 mean = 0.97, TSV = 4.72), suggesting that they are similar in discriminating power. The dependent variables for the task are the proportion of digits correctly recalled in the distraction and nondistraction conditions. The index examination of the subjects revealed that both manic and schizophrenic patients were more distractible (performing more poorly in distraction than nondistraction) than the normal contrast group.

**Reality-monitoring task.** Subjects were examined for their ability to discriminate information that they had either said or thought. The stimulus materials were eight-word lists, selected from the 100 most common words in English (Thorn-dike and Lorge 1943). Two versions of the say-think task were created, with four lists of words in total. Two recognition sheets were created, each containing 16 target words (2 of the lists) and 8 recognition foils, also selected from the 100 most common English words. The target lists were randomly rotated throughout the conditions across subjects.

Subjects were presented lists of words, with the stimuli written individually on cards, with one list designated the “say” list and the other the “think” list. A tester presented the cards serially to the subjects, alternating “say” and “think” words. Subjects were instructed to read the “say” words aloud and to imagine themselves saying the “think” words. Presentation of the say words was terminated as soon as subjects read the word aloud, with presentation of the think words terminated after subjects provided an eye contact signal that they had finished processing the word. After the completion of presentation of the stimuli in each subtask, subjects were presented a recognition sheet with the 16 presented words and recognition foils in a randomly intermixed order. Subjects were asked to determine the origin of each word, indicating whether they had said it, thought it, or neither, guessing if they were unsure. As with the distraction task, there were two versions of the reality-monitoring task, counterbalanced across testing periods as described above.

There were two groups of dependent measures chosen for examination in the task, the discrimination ratios and error scores. The discrimination ratios (Foley et al. 1983) are the proportion, ranging from 0 to 1.0, of words correctly attributed to their source, divided by the total number of words correctly recognized as presented. The errors that were examined were “think-report-say” reality-monitoring errors, where subjects report that they said a word that was actually thought. Harvey et al. (1988) found that the combination of low discrimination scores and high numbers of “think-report-say” errors was the best cross-sectional predictor of thought disorder out of a number of different reality-monitoring variables. Raye and Johnson (1980) had previously reported that “think-report-say” errors were very infrequent in normal subjects, and the previous examination of this (Harvey et al. 1988) and other samples (Harvey 1985) found that manic and schizophrenic subjects made significantly more of these errors than normal subjects.

**Procedure.** At the index assessment, a trained interviewer collected a 15-minute nonclinical interview, explicitly avoiding any discussion of clinical topics, and then completed the SADS. The nonclinical interview was structured by the types of areas into which the interview steered the conversation (e.g., hobbies, recreational activities, and family factors). The nonclinical interview and the SADS were both tape-recorded to permit reliability assessment and clinical ratings. Subjects were examined within 2 days with the laboratory assessment and retested 4 days later with the other versions of the tasks, at which time another nonclinical interview was conducted.

Subjects were scheduled for the followup 8 months after their index assessment. Subjects were contacted at home, at the day-treatment center where they were monitored for medication, or at the hospital where they were readmitted. Patients were retested with the laboratory assessment and examined with the SADS-change version (SADS-C; Spitzer et al. 1978a), the Scale for the Assessment of Negative Symptoms (SANS; Andreasen 1983), and the Scale for
the Assessment of Positive Symptoms (SAPS; Andreasen 1984). Another tape-recorded open-topic interview was collected as described above. Patients who relapsed less than 6 months after the initial followup were not retested. The interviewers who examined the patients at the followup assessment were unaware of diagnostic and clinical information collected on the patients at previous assessments.

We were able to find and retest 22 of 26 schizophrenic patients (85 percent) and 19 of the 26 manic patients (73 percent). The reasons for attrition were refusal (1 schizophrenic and 3 manic subjects), death from natural causes (1 schizophrenic subject), early relapse (2 manic subjects), and inability to locate the patient before 12 months had elapsed (2 schizophrenic and 2 manic subjects). Therefore, the followup interval for all subjects ranges from 6 to 12 months, with a median of 8 months. Those patients from the Harvey et al. (1988) sample who were not retested did not differ from those who were retested on any demographic variables or on any of the cognitive or thought disorder variables at index.

Two raters who were not involved in the assessment of the patients independently rated their overall clinical state at followup, using all of the clinical information, including the SAPS, SANS, and SADS-C.

These ratings were performed without knowledge of the patients' diagnosis, their hospitalization status at reevaluation, and their performance on the thought disorder and laboratory indices. The raters designated patients as psychotic if they met DSM-III Axis-I criteria for the active phase of illness for any psychotic disorder. Patients who met no active phase Axis-I criteria were considered nonpsychotic. Ten of the manic patients (53 percent) were nonpsychotic at followup, as were 12 (55 percent) of the schizophrenic patients. The raters agreed on 36 cases, with consensus designations generated on the other 5. All of the patients who were psychotic at followup received the same Axis-I diagnosis that they received at entry into the study.

Clinical Ratings of Thought Disorder. Clinical ratings of thought disorder, made on the basis of the first nonclinical interview at index assessment and the followup nonclinical interview, were completed by trained raters who were not involved in any other aspects of the data collection or clinical evaluation of the patients, using the Scale for Assessment of Thought, Language, and Communication (TLC; Andreasen 1979a). Raters did not know the identities and diagnoses of the subjects or the order of collection of the speech samples. The nonclinical interviews were used to maintain blindness about diagnoses and to maintain consistency of interview content, since the SADS was administered in different forms at the two assessments. Raters generated ratings of five positive signs of thought disorder (Pressure of Speech, Derailment, Tangentiality, Incoherence, and Illogicality) and two negative signs of thought disorder (Poverty of Speech and Poverty of Content of Speech). Two raters evaluated each interview, with reliability calculated by comparisons with a randomly sampled 20 percent of all of their coding. The index and followup thought disorder scores were generated by different sets of raters. Incoherence and illogicality were very infrequent, so they were excluded from further examination. The reliability (k) of the ratings for the index assessment, including both assessments of the complete index sample, averaged 0.78. The reliabilities for the followup were as follows: Poverty of Speech, 0.91; Poverty of Content, 0.83; Pressure of Speech, 0.90; Tangentiality, 0.50; and Derailment, 0.75. The positive and negative thought disorders were then summed to generate composite scores, for which the means and standard deviations (SD) are presented in table 2. No manic patients received scores of greater than zero on poverty of speech, so their negative thought disorder scores are actually poverty of content only.

Results

Between-Group Analyses. We performed two sets of between-group analyses, using one set to determine

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1 Patients with an early readmission to the hospital were excluded to ensure that psychotic states observed at followup were, in fact, recurrences, developing after a period of remission. The two patients who reentered the hospital before 6 months were readmitted 3 and 6 weeks after discharge, respectively, suggesting to us that they had never had a period of remission.

2 These five thought disorders obviously do not account for all of the possible speech failures that could be considered "positive thought disorder." The ones that were selected here are the five used by Andreasen (1979a) to compare positive versus negative thought disorder in the initial presentation of the TLC.
Table 2. Language and cognitive variables in both groups at both assessments

<table>
<thead>
<tr>
<th>Followup status</th>
<th>Schizophrenic patients</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Manic patients</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Psychotic</td>
<td>Mean</td>
<td>SD</td>
<td>Nonpsychotic</td>
<td>Mean</td>
<td>SD</td>
<td>Psychotic</td>
<td>Mean</td>
<td>SD</td>
<td>Nonpsychotic</td>
</tr>
<tr>
<td>Positive thought disorder—Index</td>
<td>2.60</td>
<td>2.32</td>
<td>2.58</td>
<td>2.15</td>
<td>2.67</td>
<td>2.06</td>
<td>1.30</td>
<td>1.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive thought disorder—Followup</td>
<td>3.60</td>
<td>1.89</td>
<td>1.75</td>
<td>2.05</td>
<td>2.44</td>
<td>1.51</td>
<td>0.10</td>
<td>0.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative thought disorder—Index</td>
<td>2.30</td>
<td>1.70</td>
<td>0.33</td>
<td>0.49</td>
<td>0.11</td>
<td>0.33</td>
<td>0.40</td>
<td>0.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative thought disorder—Followup</td>
<td>2.00</td>
<td>1.33</td>
<td>0.58</td>
<td>0.67</td>
<td>1.00</td>
<td>1.32</td>
<td>0.70</td>
<td>1.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Say-think discrimination—Index</td>
<td>0.58</td>
<td>0.19</td>
<td>0.74</td>
<td>0.20</td>
<td>0.65</td>
<td>0.15</td>
<td>0.67</td>
<td>0.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Say-think discrimination—Followup</td>
<td>0.59</td>
<td>0.26</td>
<td>0.71</td>
<td>0.18</td>
<td>0.72</td>
<td>0.18</td>
<td>0.64</td>
<td>0.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Think-report-say errors—Index</td>
<td>2.90</td>
<td>1.96</td>
<td>1.67</td>
<td>1.23</td>
<td>2.11</td>
<td>0.78</td>
<td>1.50</td>
<td>1.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Think-report-say errors—Followup</td>
<td>1.80</td>
<td>1.23</td>
<td>1.75</td>
<td>1.49</td>
<td>2.00</td>
<td>1.89</td>
<td>1.22</td>
<td>0.97</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Group-Mean Similarity Over Time. None of the five three-way ANOVAs produced a significant main effect of Time of Assessment or an interaction involving Time of Assessment, suggesting no group-mean differences at followup.

Index Assessment Differences. Diagnosis × Followup Status ANOVAs were computed on the five clinical and laboratory variables at the index assessment. For positive thought disorder, there were no significant effects of Diagnosis, Status, or interactions of the variables. For negative thought disorder, the two-way interaction of Diagnosis × Followup Status was significant \( F = 6.45; \ degrees of freedom = 1, 37; \)
Figure 1. Distractibility in the 4 patient groups at index and followup assessments

<table>
<thead>
<tr>
<th>Difference of nondistraction and distraction performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment period</td>
</tr>
<tr>
<td>Index</td>
</tr>
</tbody>
</table>

p < 0.05). Simple effects tests revealed that schizophrenic patients who were psychotic at followup had more severe negative thought disorder at the index assessment than those who were nonpsychotic at followup (F = 8.19; df = 1, 37; p < 0.01). This difference was nonsignificant in the manic patients. For the distraction index, there was a significant main effect of Diagnosis, with schizophrenic patients being more distractible (F = 7.11; df = 1, 37; p < 0.01), but no significant effects of followup status or interactions of Diagnosis x Followup Status. For the reality-monitoring task, there were no significant main effects of Diagnosis or Followup Status and the two-way interaction of Diagnosis x Followup Status only approached significance (F = 3.50; df = 1, 37; p < 0.10). For think-report-say errors, the effect of Followup Status was significant, (F = 4.08; df = 1, 37; p < 0.05), but the main effects of Diagnosis and the two-way interaction of Diagnosis x Followup Status were nonsignificant.

Followup Analyses. The same five Diagnosis x Followup Status ANOVAs were computed on the followup assessment data. For positive thought disorder, the main effects of Diagnosis (F = 6.53; df = 1, 37; p < 0.05) and Followup Status (F = 6.04; df = 1, 37; p < 0.05) were significant, with schizophrenic and psychotic patients being more impaired. The two-way interaction of the variables was nonsignificant (F = 0.89; df = 1, 37). For negative thought disorder, the two-way interaction of Diagnosis x Followup Status was significant (F = 6.88; df = 1, 37; p < 0.05). Simple effects tests revealed that psychotic schizophrenic patients had significantly higher scores on negative thought disorder than did nonpsychotic schizophrenic patients (F = 9.53; df = 1, 37; p < 0.01), while the effect of Followup Status in manic patients was nonsignificant (F = 0.53; df = 1, 37). For the distraction index, the two-way interaction of Diagnosis x Followup Status was also significant (F = 8.55; df = 1, 37; p < 0.01). Simple effects tests revealed that the effect of status was nonsignificant in the schizophrenic patients (F = 1.00; df = 1, 37), while psychotic manic patients were more distractible than nonpsychotic manic patients (F = 9.91; df = 1, 37; p < 0.01). For both say-think discrimination and think-report-say errors, there were no significant effects of Diagnosis, Followup Status, or interactions of the two variables.

*Planned contrasts compared the normal sample from the index assessment of the sample and all patients at followup to examine possible “normalization” of performance. All schizophrenic and psychotic manic patients were more distractible than the normal subjects, with the nonpsychotic manic patients not differing from the normal subjects. For the reality-monitoring task, only psychotic schizophrenic patients were more deviant than normal subjects on say-think discrimination, with no groups more deviant than normal subjects on think-report errors.
Correlational Analyses. The correlational analyses examined the longitudinal rank-order similarity of the clinical and laboratory variables. These analyses were computed across followup clinical status to examine rank-order similarity across clinical state. Pearson product-moment correlations were computed between each variable at index and followup. These correlations were computed within each diagnostic group and are presented in table 3.

For the schizophrenic patients, the longitudinal correlations for negative thought disorder and the distraction index were significant. For the manic patients, the only significant correlation was negative thought disorder.

Discussion

In this followup study, it appears as if negative thought disorder and distractibility are stable traits of schizophrenic patients, by virtue of manifesting both rank-order and group-mean similarity over time. In addition, those schizophrenic patients who were psychotic at followup had higher scores at the index assessment on negative thought disorder. This relationship was not present in the manic patients and did not hold up for positive thought disorder. It should be noted that negative thought disorder was generally absent in manic patients, weakening the predictive ability of our analyses and increasing the likelihood of artificial findings. Andreasen and Grove (1986) found that more severe negative thought disorder predicted continued impairment at a 6-month followup of a sample of affective and schizophrenic subjects. The present data suggest that negative thought disorder has short-term prognostic utility even within samples of schizophrenic subjects. Longer-term outcome data, such as those from the followup studies of Knight et al. (1979, 1986) also point to the utility of negative symptoms for the prediction of outcome. By inference, laboratory deficits that are more strongly related to negative than to positive symptoms, such as backward masking deficits (Green and Walker 1986), and continuous performance test failures (Nuechterlein et al. 1986) would seem to be more suitable candidates for the prediction of outcome than the tasks of the present report, which were previously demonstrated to correlate with positive thought disorder.

In the present study, distractibility was not associated with psychotic/nonpsychotic status in schizophrenic patients at followup, in contrast to the manic sample, and distractibility manifested rank-order similarity within the schizophrenic sample. Some have suggested that auditory distractibility is a marker of vulnerability to schizophrenia, in that children at risk for the disorder manifest substantial distractibility (Harvey et al. 1981). The present data are consistent with that finding, since nonpsychotic schizophrenic patients are also distractible. Because we have no premorbid data on the subjects of this study, however, we cannot conclusively demonstrate the marker status of this deficit. It is also worth noting that although the difference of distraction and nondistraction performance was stable over time, both of the individual scores were stable as well. As a result, it may be that both susceptibility to distraction and short-term memory problems, in general, manifest similar characteristics in schizophrenic patients over time.

The reality-monitoring variables, like the distraction index, did not differ significantly at followup as a function of status in the schizophrenic patients, but those variables also did not manifest rank-order similarity over time. Think-report-say errors were higher at index in patients who were psychotic at...
followup, but the lack of rank-order similarity over time of that variable weakens the validity of its prediction of outcome.

The longitudinal cognitive and clinical performance of manic patients measured with laboratory tasks and clinical assessments, although numerically similar at index to that of schizophrenic patients, is different in a variety of ways. Distractibility, apparently a stable trait of schizophrenic patients across states, seems state-related in mania. Poverty of content of speech was stable over time in manic patients, although very low in average severity, suggesting that those manic patients with this negative thought disorder manifest it consistently over time, although it does not function as a predictor of outcome.

The conclusions of this study must be tempered by the sample size, which did not permit the examination of the stability of symptoms and cognition within the Diagnosis × Followup Status subgroups. Another issue is the variability of thought disorder scores, particularly positive thought disorder, across samples of subjects. When the results of the present study are compared to those of Docherty et al. (1988), a partially overlapping sample from the same institution, there is variability in the severity of thought disorder. For example, the Docherty et al. sample had higher positive thought disorder scores in both manic and schizophrenic samples. In addition, negative thought disorder in manic patients was much less stable in that sample. The negative thought disorder scores for the schizophrenic subjects were functionally identical, however. These data underscore the variability of positive symptom indices and their correlates both within and across samples, and they also highlight the problems in interpretation of correlations based on variables (e.g., negative thought disorder in manic subjects) that have low frequencies and base rate severities.

Medication was passively examined in this investigation and is likely to have substantial effects on clinical and cognitive variables. For example, the stability of distraction task performance could conceivably be a function of the fact that the schizophrenic patients received medication, which influences distractibility, at both assessments. Also, the distribution of remitted and psychotic subjects at followup is undoubtedly determined in part by medication response. Future studies of cognition and positive symptoms will benefit from systematic pharmacological manipulations oriented toward understanding the medication responsiveness of cognition and clinical symptoms in schizophrenia.

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