SCHIZOPHRENIC RESPONSES TO THE PROVERBS TEST:
ABSTRACT, CONCRETE, OR AUTISTIC? 1

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Psychopathology was more effective in predicting autistic responses to proverbs of acutely ill schizophrenic patients than was intelligence as measured by the Wechsler Vocabulary subtest. Autistic responses decreased significantly from pre- to post-5 wk. of hospital treatment. There was no difference in the frequency of these responses between high and low verbal IQ groups, nor did level of IQ affect the decrease in autistic responses. These findings were contrasted with those of a previous study which showed that the traditional abstract and concrete scores of responses to proverbs were highly correlated with intelligence even with the effects of pathology statistically controlled, and did not improve with treatment except when IQ was above average. The present study further demonstrated that while autistic responses were negatively related to abstract scores, they were relatively unrelated to concrete scores. The overall findings were consistent with both earlier theoretical formulations and more recent empirical investigations regarding cognitive deficit in schizophrenia.

A recent study by Shimkunas, Gynther, and Smith (1966) demonstrated that concrete or literal interpretations of proverbs are poor predictors of psychopathology in schizophrenia. The findings cast doubt on the ability of proverbs to assess the purported loss of abstracting function in the thought disorder. These investigators found that intelligence, rather than degree of illness, was the primary correlate of both abstractness and concreteness in proverb responses. Furthermore, the study showed that only patients having average through superior IQs improved in abstracting ability over several weeks of hospital treatment, while patients with below average intelligence did not change on this measure.

These negative findings have suggested an abandonment of the abstract-concrete dichotomy with respect to proverb interpretation. Buss and Lang (1965), in reviewing many recent studies of the cognitive processes of schizophrenics, point out that it is not inability to abstract that is the critical factor in schizophrenia, but rather the verbalizations of deviant concepts. An example is Chapman and Taylor's (1957) demonstration that schizophrenics are overresponsive to inappropriate stimuli as compared with normals. Studies such as the latter and the conclusions of Buss and Lang (1965) suggest that autistic, tangential, and idiosyncratic responses would be a more fruitful approach to the study of schizophrenic thought disorder with reference to proverb interpretation. Yet Gorham's (1956a, 1956b, 1963) extensive work with the proverbs test has excluded this response category, and he has indicated that no research of autistic responses to proverbs has been done thus far. 2

The present study was undertaken in order to explicate the utility of autistic responses to predict psychopathology in schizophrenia. If autistic responses are useful, they should be positively related to degree of illness and relatively unrelated to intelligence. Furthermore, these responses should be positively related to a specific measure of schizophrenic pathology (i.e., Indifference to Environment). Also, clinical improvement with hospital treatment should be accompanied by a decrease in autistic responses to proverbs. Relations be-

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2 D. R. Gorham, personal communication, April 1965.
between autistic, abstract, and concrete scores will also be examined.

**METHOD**

**Subjects**

The subjects (5s) were 80 (36 males, 44 females) acutely ill schizophrenic patients, routinely admitted to Malcolm Bliss Mental Health Center (MBMHC) from May 1963 through March 1964. There were 37 white 5s and 43 Negro 5s. Mean age was 31.48 with a standard deviation of 7.84. Mean educational level was 10.15 years with a standard deviation of 2.59. Since it is the policy of MBMHC to admit only the indigent citizens of the St. Louis area, 5s were of low socioeconomic level. The 5s used were selected for a larger investigation, namely, the NIMH-Psychopharmacology Service Center (PSC) Collaborative Study of Phenothiazine Treatment in Schizophrenia. MBMHC was one of eight participating hospitals.

Patients were selected for the study by either two psychiatrists or one psychiatrist and one psychologist who used the following criteria: (a) primary diagnosis of schizophrenia; (b) manifestation within 1 month prior to admission of any one or more of the following symptoms or behavior: thinking disturbance, catatonic motor behavior, paranoid ideation, hallucinations, delusional thinking, blunted or inappropriate affect, disturbance in social behavior; (c) age between 16 and 50 at day of admission; and (d) unequivocal absence of the following: chronic or acute brain syndrome, epilepsy, mental deficiency (IQ < 70), drug addiction, chronic alcoholism, liver damage. It should be noted that nearly all patients selected had at least three of the symptoms enumerated under b above.

Of the 80 5s chosen for the study, 28 (35%) were untreatable at the pretreatment period due to belligerence, negativism, uncooperativeness, or confusion. Also, if a patient gave fewer than eight responses to the 12-item Proverbs Test, his data were not used. A number of patients did not return for follow-up evaluations, thus further limiting the amount of data available.

**Assessment Methods**

Since repeated measures were planned, Clinical Forms I, II, and III of the Gorham Proverbs Test (Gorham, 1956a) were used in counterbalanced fashion to reduce practice effects. The development of a scoring system for autistic responses to this test will be described below.

IQs were derived from the Vocabulary subtest of the Wechsler Adult Intelligence Scale (WAIS—Wechsler, 1955). Vocabulary was chosen because it has been demonstrated to be least sensitive of all subtests to intellectual impairment in schizophrenia (Rabin, King, & Ehrmann, 1955; Rappaport & Webb, 1950) and correlates highest with Full Scale IQ (Wechsler, 1955). Vocabulary scores were prorated to yield a Verbal IQ.

An estimate of degree of psychopathology was obtained by means of the Global Rating of Severity of Mental Illness, which had been successfully used in a previous NIMH-PSC Collaborative study (NIMH-PSC, 1964). This rating required the interviewers to place patients on a 7-point scale, ranging from "normal, not ill at all" to "among the most extremely ill patients."

In addition to the Global Rating, a factor of the Inpatient Multidimensional Psychiatric Rating Scale (IMPS—Lorr, Klett, McNair, & Lasky, 1962) derived from the NIMH-PSC study (NIMH-PSC, 1964) was used. This factor (Indifference to Environment) measures apathy and indifference, a basic aspect of the schizophrenic disorder, and has been shown to be quite sensitive to drug effects on schizophrenic pathology (Cole, Klerman, Goldberg, & Clyde, 1963; Goldberg, Klerman, & Cole, 1965). Two typical items in this factor are, "exhibit indifference or apathy towards such matters as his treatment, his release from the hospital or plans for the future?" and "apathy, indifference, or lack of response in feeling to a discussion of his own problems, of his family, or his surroundings?"

Each patient was described on the 78 IMPS items by two interviewers immediately after having been seen. It should be noted that these interviewers had no knowledge of patients' performance on proverbs, nor did the scorer of Proverbs Test protocols have any knowledge of patients' performance on the IMPS interviews. To improve reliability, the ratings of the two interviewers, on both Global Rating and IMPS, were summed and averaged, yielding mean scores.

**Scoring of Autistic Responses to Proverbs**

A pool of 220 responses to proverbs was available from surplus Proverbs Test protocols that were taken by the schizophrenic patients, but which were not used in the analyses to be reported here. This pool included a sampling of (a) correct, abstract interpretations; (b) concrete or literal translations; and (c) those responses thought to reflect bizarre, schizophrenic ideation. The 36 proverbs (12 from each of the three forms of the Proverbs Test), each followed by between 4 and 10 of the 220 responses, were presented to the Psychology Department staff (11 psychologists: 5 PhDs, 6 advanced clinical psychology graduate students) of MBMHC. The psychologists were asked to judge, on the basis of their clinical experience, which of the responses were bizarre, idiosyncratic, inappropriate, tangential to the meaning of the proverb, or in some other way suggest schizophrenic thinking. These judges were further instructed not to choose responses that were merely abstract or concrete.

As a check on interscorer agreement, the judgments of two of the authors (A. M. Shimkunas & M. D. Gynter) were compared. This procedure yielded high agreement between these judges as follows: Form I, 90%; Form II, 89%; Form III, 78%; all forms combined, 85%.
On the basis of the judgments of the 11 psychologists, a 3-point scoring system of autistic responses was established. A score of 2 was given for a response judged autistic by 82% or more of the clinicians. A score of 1 defined a marginally autistic response, judged bizarre by 45% or more but less than 82% of the clinicians. Any response eliciting less than 45% agreement was given a score of 0.

Proverbs Test responses that were to be used in this study were then scored according to a manual of examples of autistic and nonautistic responses, which was constructed on the basis of the agreements among the clinicians.

The following is an example of a proverb and response scores on the autistic dimension:

Don't swap (trade) horses when crossing a stream.
2-point score:
Don't hate religion when you got your own.
I can't go any further than you let me.
Don't go back where you came from. If you do, you're crazy.
1-point score:
When two horses are crossing a stream, they shouldn't rise up at each other.
0-point score:
If you get a good man, don't trade him for another.
You'll get drowned.
When you start something, follow it through.

Procedure

The Ss were evaluated by Proverbs Test, Global Rating, IMPS, and Vocabulary at four periods following admission, namely, pretreatment (which in most cases was within 24 hours and in no case later than 3 days after admission to the hospital), 5 weeks, 13 weeks, and 26 weeks. Close supervision of drug intake and patient management was only possible between pretreatment and the fifth-week periods since patients were generally discharged after 5 weeks of treatment. Due to this lack of control during the latter part of the NIMH-PSC study, results will be reported only on data gathered at pretreatment and 5 weeks (posttreatment).

Results

Nearly all patients obtained “severely ill” ratings on the Global Rating at pretreatment. Such a severe restriction of a distribution of scores reduces the efficiency and meaningfulness of the correlation coefficient. Also, correlations among the predictor and criterion variables were not significantly different between pre- and posttreatment. Due to these conditions, the major portion of the correlational analyses will be reported only for posttreatment data.

Prior to data analysis it was necessary to determine any possible sex or race differences on the variables under study. Statistical analyses revealed no significant sex differences for autistic, IQ, Global Rating, or Indifference-to-Environment scores. Sexes were therefore combined for subsequent analyses. A similar check between scores of Negroes and whites showed that white Ss obtained higher IQs than did Negroes (p < .01), but no significant race differences were found for autistic, Global Ratings, or Indifference-to-Environment scores. A further analysis, however, showed that correlations between IQ and other measures did not differ significantly between Negroes and whites, thereby allowing for the combination of these groups for all other analyses.

Two multiple-regression analyses based on all patients testable (N = 40) at posttreatment are presented in Table 1. The first analysis indicates that both product-moment and partial correlations of pathology (Global Rating) and autistic responses are somewhat higher than those of IQ and autistic responses. A variance interpretation of the partial correlations of -.34 and .41 indicates that pathology contributes 55% of the prediction of autistic responses and verbal intelligence 45%. Thus, verbal intelligence is clearly a factor with regard to autistic re-

<table>
<thead>
<tr>
<th>Variable</th>
<th>Autistic response</th>
</tr>
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<tbody>
<tr>
<td>Verbal IQ</td>
<td>-.30</td>
</tr>
<tr>
<td>Global rating</td>
<td>.37*</td>
</tr>
<tr>
<td>Partial verbal IQ*</td>
<td>-.35*</td>
</tr>
<tr>
<td>Partial global ratingb</td>
<td>.41**</td>
</tr>
<tr>
<td>Multiple R</td>
<td>.49**</td>
</tr>
<tr>
<td>Verbal IQ</td>
<td>-.30</td>
</tr>
<tr>
<td>Indifference to environment</td>
<td>.49**</td>
</tr>
<tr>
<td>Partial verbal IQ*</td>
<td>-.29</td>
</tr>
<tr>
<td>Partial indifference to environmentb</td>
<td>.49**</td>
</tr>
<tr>
<td>Multiple R</td>
<td>.55**</td>
</tr>
</tbody>
</table>

* Partial correlation between Verbal IQ and Proverbs Test scores with effect of Global Rating (Indifference to Environment) removed.
* Partial correlation between Global Rating (Indifference to Environment) and Proverbs Test scores with effect of Verbal IQ removed.
* p < .05.
** p < .01.
TABLE 2
MEANS AND STANDARD DEVIATIONS OF AUTISTIC RESPONSE SCORES OF HIGH AND LOW VERBAL IQ GROUPS AT BOTH TREATMENT PERIODS

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretreatment</th>
<th>Posttreatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>High verbal IQ</td>
<td>4.11</td>
<td>4.53</td>
</tr>
<tr>
<td>Low verbal IQ</td>
<td>3.22</td>
<td>3.98</td>
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</table>

responses to proverbs but its effects are slightly weaker than those of psychopathology.

The second analysis presented in Table 1 is similar to the first except that the measure of pathology (Indifference to Environment) is one that is more specifically related to schizophrenia. Indifference to Environment is significantly related to the Global Rating \((r = .47, df = 38, p < .01)\); however, the correlations between Indifference to Environment and autistic responses are higher, although not significantly, than those using the Global Rating. Also, the multiple correlation in this analysis is somewhat higher than the one based on IQ and Global Rating. Furthermore, this analysis indicates that verbal intelligence is not significantly related to autistic responses. A consideration of the partial correlations of this analysis indicates that Indifference to Environment contributes 65\% of the prediction of autistic responses and intelligence 35\%.

No significant relationships were found between IQ and the Global Rating \((r = .07, df = 38, p > .10)\) or IQ and Indifference to Environment \((r = .10, df = 38, p > .10)\). The finding that these predictor variables were not interrelated indicates that their separate effects on autistic responses to proverbs were relatively independent and did not artificially inflate the multiple correlations.

In order to determine the influence of intelligence on changes in proverb scores during treatment, all Ss testable \((N = 36)\) at both periods were used.\(^4\) Means and standard deviations of autistic response scores of both high \((\text{mean IQ} = 109.44, \text{SD} = 9.88)\) and low \((\text{mean IQ} = 82.0, \text{SD} = 9.61)\) IQ groups at both treatment periods are presented in Table 2. It should be noted that there were no significant differences between IQ groups initially with respect to degree of psychopathology (Global Rating) and that pathology scores of both groups decreased significantly \((p < .001)\) over treatment. These pre- and posttreatment autistic scores were analyzed by means of repeated measures analysis of variance (Edwards, 1960). The summary of this analysis given in Table 3 indicates that the B effect is highly significant, reflecting an overall decrease in autistic responses to proverbs between pre- and posttreatment. The analysis also indicates that there was no significant difference in autistic responses between high and low verbal IQ groups, and that IQ did not interact significantly with treatment with regard to these responses.

In order to determine whether the autistic score is independent from the conventional abstract and concrete response categories (Gorham, 1956a) of proverb interpretations, product-moment correlations were performed between these three variables at both treatment periods. Low but significant correlations were found between autistic and abstract responses at either treatment period (pretreatment IQ used when available). As a precautionary measure, chi-square analysis was performed to see whether race was proportionately distributed within the two intelligence groups. Results \((\chi^2 = 0.112, df = 1, p > .70)\) showed that whatever differences are to be found between IQ groups are not a function of race.

\(^4\) A portion of this sample \((N = 25)\) had available IQs at both pretreatment \((M = 93.60, \text{SD} = 17.46)\) and posttreatment \((M = 93.80, \text{SD} = 15.35)\). Since these pre- and posttreatment means were not significantly different \((t = 0.17, df = 24, p > .10)\), the sample of 36 Ss was divided at median IQ obtained.
sponses to proverbs at both pre- \((r = -0.30, df = 49, p < 0.05)\) and posttreatment \((r = -0.40, df = 38, p < 0.05)\). Concrete responses, on the other hand, were not correlated with autistic scores at pretreatment \((r = -0.03, df = 49, p > 0.10)\), and although this relationship increased at posttreatment \((r = 0.30, df = 38, p < 0.10)\) it was not significantly different from zero.

**DISCUSSION**

The present investigation provides a contrast to the findings of the previous study by Shimkunas et al. (1966). While the previous study failed to demonstrate a reliable correlation between psychopathology and proverb interpretation exclusive of intelligence, the present one has been somewhat more successful in demonstrating a pathology-proverb relationship. The critical difference between the two investigations involves the categorization of responses to proverbs. If proverb interpretations are scored in terms of the conventional abstract-concrete dichotomy, the likely result is that proverbs do little more than duplicate the function of an intelligence test. Thus, in the prior study, intelligence contributed 70% of the accountable variance toward the prediction of abstract scores and pathology only 30%. In the present study, on the other hand, the efficiency of these predictor variables (intelligence and pathology) was reversed, with intelligence contributing 35-45% of the accountable variance and pathology 55-65% toward prediction of autistic response scores.

Furthermore, a comparison of pre- and posttreatment abstract and concrete scores resulted in no change over all Ss in the prior study, while this investigation demonstrated a significant decrease in autistic scores over time. Also, the previous research demonstrated improvement in abstract and concrete scores over treatment only for patients with high intelligence, but no change for those of low IQ. The present research failed to show any significant differences in autistic response scores associated with level of intelligence, nor did intelligence affect the overall decrement of autistic responses over treatment.

The present results support Buss and Lang's (1965) contention that cognitive functioning in schizophrenia is characterized by verbalization of deviant concepts that may be "overinclusive" (Chapman & Taylor, 1957) with respect to the stimuli presented. Overinclusiveness may be regarded as similar to the tangentiality of the autistic response to proverbs. That is, the patient overabstracts elements of the proverb resulting in a response that, to normal individuals, appears to have little relation to the meaning of the proverb. For example, the patient responding to the proverb "Where there's a will, there's a way" with "Where there's a will, there's relatives to divide what's left," appears to be taking out of context one element of the proverb, and constructing a totally new meaning for it. This patient overincludes the meaning of "will," relative to its context. Similarly, Chapman and Taylor's (1957) patients would place into the category "fruit," not only concepts such as "apple" but also overinclude into this category such things as "carrot." This overinclusion occurs significantly more often in schizophrenics than in normals (Chapman & Taylor, 1957).

The results associated with the Indifference-to-Environment factor merit some discussion. One might argue that if a schizophrenic is extremely indifferent to his environment, he would be unlikely to verbalize at all. However, an inspection of this factor's item content (cf. Method section) indicates that these items refer to such characteristics as not caring about the future and about persons around him. In view of this, one might speculate that increasing indifference toward pertinent features of the patient's environment allows increasing amounts of his peculiar thought patterns to emerge as deviant verbalizations. It would follow from this line of reasoning that as the patient's indifference to his environment is decreased with treatment and he again becomes concerned about himself and others, the "opportunity" for deviant thinking may also decrease.

A final, and very important, issue involves a reconsideration of Goldstein's (1944) original formulation, in terms of our findings.

6 Recent research (Goldberg et al., 1965) has demonstrated that phenothiazine drug therapy significantly decreases Indifference-to-Environment scores over a 6-week period of hospitalization.
Goldstein hypothesized that there is an impairment of the "abstract attitude" as a result of both schizophrenia and organic brain disorder. The resulting concreteness is generally characterized by a stimulus-boundness in various cognitive tasks. However, Goldstein made a very important distinction between schizophrenic and organic "concreteness," which appears to have gone unnoticed by many later investigators (e.g., Benjamin, 1944; Gorham, 1956a). Goldstein (1944) says organic concreteness is marked by a disintegration toward the concrete which is of a simplified and inane form [while] the schizophrenic's performance suffers from similar deficiencies, but in addition to his perceptual concreteness the schizophrenic develops his own pattern . . . because his personal ideas enter and influence the performance [pp. 35–36; italics the authors']

Thus Goldstein insists that schizophrenic "concreteness" is marked by personalized thinking and associations, a deficit which appears to be quite similar to what we have called autistic responses.

Furthermore, our data are consistent with Goldstein's original assertion. Abstract scores on proverbs were negatively correlated with autistic scores on proverbs, suggesting that idiosyncratic thinking may reflect a loss in the "abstract attitude." The finding that concrete and autistic scores are relatively unrelated supports Goldstein's statement that these are independent dimensions, especially since the concrete measure is operationally defined (Gorham, 1956a) in terms of Goldstein's notion of organic "concreteness."

REFERENCES


Gorham, D. R. A proverbs test for clinical and experimental use. Psychological Reports, 1956, 2, 1–12 (Monograph Suppl. No. 1). (a)


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