Response Set of Pulmonary Tuberculosis Patients.

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RESPONSE SET OF PULMONARY TUBERCULOSIS PATIENTS

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ABSTRACT

Human responses frequently differ from chance expectancy in unstructured situations. These sets or modal responses are known to be stable and there appears to be a relationship between sets and personality characteristics; when those responses which deviate from the mode are used as personality measures the relationship is higher. Recent evidence has shown that various personality groups can be identified by the frequency and/or pattern of deviant responses in noncritical areas of behavior. It has not been shown, however, that persons afflicted with chronic physical disease, and known to display certain symptoms of disturbance, also will show deviant response patterns in an area of behavior not ordinarily considered symptomatic of personality deviation. The design of this investigation was the criterion group method, hence, relative response sets were investigated, with the group under study operationally defined as tuberculous. The affliction of these subjects with tuberculosis was verified. Set was defined as the predisposition of an individual to respond in a given direction in a relatively unstructured situation. Set was elicited by the Perceptual Reaction Test. The data for comparison with the tuberculous groups were obtained from earlier studies of response set. The frequency of responses of each group was
tabulated for each of the options of the Perceptual Reaction Test. The difference in proportion of two groups selecting a particular option was tested for significance. A deviant response was defined as one which was significant at the one per cent level of confidence. The responses of the tuberculous groups were scored on several scales, and the differences in mean score between these groups and the cross-validation groups were tested for significance.

The tuberculous groups differed significantly from normal, schizophrenic, and adolescent groups in frequency and/or pattern of deviant responses. Male patients of the "far advanced" stage of tuberculosis gave significantly more deviant responses than the "moderately advanced" group, and the former group appeared more disturbed. Similar significant differences were not found in the female tuberculous group. The tuberculous males defined as of "higher" occupational level and of more education gave significantly fewer deviant responses than those defined as of "lower" occupational level and of less education, respectively, and in this sense the latter groups appear more disturbed. No significant difference in frequency of deviant responses between the more educated and less educated tuberculous females was obtained. Tuberculous female subjects differed significantly from the schizophrenic, mixed abnormal, and psychotic cross-validation groups. Similarly, the male tuberculous subjects differed significantly from schizophrenic,
character disorder and mixed abnormal cross-validation groups. Male tuberculous subjects did not differ significantly, however, from the male psychotic group in frequency and/or pattern of deviant responses. The tuberculous subjects did not differ significantly from the respective cross-validation groups of the masculinity-femininity scale.

Moderate negative correlations were obtained for the tendency of male tuberculous patients to respond in a schizophrenic manner and also as persons with a character disorder, and tendency to respond in the typically masculine manner in deviant response pattern. A lack of relationship was obtained for tendency of tuberculous female subjects to respond like a schizophrenic and to respond in a typically masculine manner in deviant response pattern.

Subjects of a known deviant personality group displayed deviant behavior in other than symptom areas. Thus, the response pattern of the tuberculous groups tended to be general as predicted from Berg's Deviation Hypothesis. Further evidence is given to this unifying principle for predicting behavior in one area from behavior in another area.
INTRODUCTION

In view of recent research, it seems highly probable that a relationship exists between set and personality. The problem of set is an old one and it has been studied by various German writers under the term Einstellung. Doll (1916) found a significantly higher frequency of left-handedness among the mentally retarded as compared to normal persons. Stagner (1937) mentioned that set and personality may be regarded as identical. Voth (1947) was able to distinguish mental hospital patients of various diagnostic categories by the degree of apparent movement of a stationary light in a dark room. The concept of set is discussed by Gibson (1941), and by Cronbach (1946, 1950) particularly in regard to test responses. The literature in this area is summarized by Berg (1953, 1955, 1959). Set is defined for purposes of this paper as predisposition of an individual to respond in a given direction.

The following quotation is from Berg (1955):

... As an initial step in dealing with the problem of the relationship of set and personality, the emphasis is taken from the manifestation of the set itself and placed upon responses which deviate from an established pattern of a normal or general group, (p. 62).

Berg's (1957) Deviation Hypothesis has two aspects, the first of which is stated as follows:

Deviant response patterns tend to be general; hence those deviant behavior patterns which are significant
for abnormality (atypicalness) and thus regarded as symptoms (earmarks or signs) are associated with other deviant response patterns which are in noncritical areas of behavior and which are not regarded as symptoms of personality aberration (nor as indicators, signs, earmarks), (p. 159).

The second aspect of the Deviation Hypothesis is stated by Berg (1957) as follows:

Stimulus patterns of any type and of any sense modality may be used to elicit deviant response patterns; thus particular stimulus content is unimportant for measuring behaviors in terms of the Deviation Hypothesis, (p. 160).

To quote further from Berg (1955):

To test the hypothesis stated above, it is necessary only to identify the common or modal responses to any suitable series of stimulus patterns and predict that those subjects whose responses rather consistently go against the modal preferences will be deviant in the sense of exhibiting symptom patterns associated with abnormal states, (pp. 62-63).

Recent evidence has shown that various deviant groups can be identified by the frequency or pattern of deviant responses in noncritical areas. Barnes (1954) demonstrated that several psychopathological groups could be identified by their deviant responses on Berg and Hunt's (1949) Perceptual Reaction Test (hereafter referred to as the PRT). On this basis, Barnes developed scales on which schizophrenic, psychotic, mixed abnormal, and character disorder patients can be distinguished from normal subjects and from each of the other groups. Harris (1958) also showed that schizophrenic patients could be differentiated from normal persons by the frequency of their deviant responses. Roitzsch (1958) found that neurotic persons could be discriminated from
normal subjects by the frequency of their deviant responses, but that neurotic groups were essentially similar in this respect to adolescents. Adams (1959) demonstrated that auditory as well as visual stimuli can be used to distinguish schizophrenic patients from normal adults by their deviant response sets.

Berg (1959) found different modes of response to be characteristic for males and for females and constructed a masculinity-femininity scale on the basis of deviant responses. Immaturity may be identified by frequency and/or pattern of deviant responses in noncritical areas as was shown by Hesterly (1957).

It has not been shown, however, that persons afflicted with chronic physical disease may be identified by frequency and/or pattern of their deviant responses in noncritical areas. One would expect such deviant response patterns to exist in the latter individuals as it is known that physical disease of long duration, such as tuberculosis, is associated with personality and behavioral deviations.

In this connection, the study of the personality of tuberculous patients has been a prolific area of investigation. A relationship between personality characteristics and tuberculosis has been suspected for more than two thousand years. The importance of such factors in this disease was noted by early Greek scholars. In more recent times over a
hundred professional journal articles have appeared as well as a number of books concerning the personality and behavior of tuberculous patients. Some of these articles report experiments that were carefully designed and executed, while some are subjective evaluations of a small number of cases. The early views as well as the current research are summarized by Conlogue (1940), Merrill (1953), and Wittkower (1956).

The search for a typical tuberculous personality has waxed and waned. In general, the literature clearly supports the view that tuberculous patients differ from normal persons in various aspects of their behavior, but there is considerable disagreement as to what factors are typically involved.

Animal experiments concerned with the relationship of behavior and tuberculous are rare in the literature. Tobach and Block (1955) carried out one such study of the behavior of rat and mice strains. The animals were infected with tubercle bacilli and certain rat and mice strains were significantly more susceptible to the infection. Also a significant correlation was found between the susceptibility of individual animals and their behavior.

In his review of the literature on emotional factors in tuberculosis, Shultz (1942), concludes, "The sanatorium population is more emotionally maladjusted than the general population. These emotional deviations differ tremendously
in kind and degree," (p. 262). He further concludes that many modern authors "... take the view that tuberculosis merely accentuates what emotional maladjustments were present before the onset of the disease," (p. 263).

The present study was designed to test empirically one prediction from Berg's Deviation Hypothesis. The prediction to be tested is as follows: chronically ill persons who are known to display symptoms of personality disturbance also should display deviant response patterns in a non-critical area of behavior.

General Hypothesis:

Deviant response patterns tend to be general; hence a group of subjects afflicted with chronic physical disease, such as pulmonary tuberculosis will differ significantly from normal groups and from certain other disturbed groups in frequency and/or pattern of deviant responses in an area of behavior which usually is not considered symptomatic of personality disturbance.

Sub-hypotheses:

1. Tuberculous subjects will differ significantly as a group from a group of normal subjects in frequency and/or pattern of deviant responses on the PRT.

2. Tuberculous subjects will differ significantly as a group from groups of deviant subjects classified as
schizophrenic, mixed abnormal, character disorder, and psychotic in pattern of deviant responses on the PRT.

3. Tuberculous subjects will differ significantly as a group from a group of schizophrenic patients in frequency of deviant responses on the PRT.

4. Tuberculous subjects will not differ significantly as a group from a group of adolescent subjects in frequency of deviant responses on the PRT.
METHOD

The subjects of the present investigation consisted of 200 white, pulmonary tuberculosis patients. One hundred of these subjects were females and 100 were males. All of these subjects were patients in state sanatoriums in Louisiana and Mississippi, except seven of the female patients who were from the midwestern United States. As indicated in Table 1, the females ranged in age from 18 to 61 years with a mean age of 34.37 years and a standard deviation of 10.19. The males ranged in age from 20 to 60 years, with a mean age of 46.04 years and a standard deviation of 10.86. As Table 2 shows, the education of the females ranged from 2 to 18 years, with a mean of 10.35 years of education with a standard deviation of 3.00. The education of the males ranged from 0 to 20 years with a mean of 8.00 years and a standard deviation of 3.99 years. All of these subjects knew that they had tuberculosis.

The data from normal subjects that were used for comparison with the tuberculous subjects were obtained from an earlier study by Barnes (1955), which used the PRT. These data were obtained from 500 males and 350 females. The data of 50 female and 49 male schizophrenic patients obtained from Harris (1958) were used for comparison with the
tuberculous patients. Roitzsch's (1958) data on 150 male and 150 female adolescent subjects were used for comparison of the tuberculous patients with that group.

The PRT was used to elicit response set. This test consists of a series of abstract geometric designs of no obvious meaning but to which the subject is required to respond by marking one of four alternatives, namely, "Like much," "Like Slightly," "Dislike Slightly," or "Dislike Much." Although the subject was instructed to mark each item, he could omit an item, thus giving five options for his response to each item. The tuberculous subjects were tested in the hospital ward or unit. Whenever possible more than one patient was tested at one time. The subjects recorded their answers directly in the PRT booklet.

Basic biographical and occupational data were obtained for each subject. The hospital medical staff's rating of the stage of disease was obtained on each patient, that is, a rating of "minimal," "moderately advanced," or "far advanced." The design of this investigation was the criterion group method. A deviant response was defined as one which differed significantly from the responses of the criterion group at the one per cent level of confidence. Thus, relative response sets were studied. The data were coded on International Business Machine cards to facilitate analysis. The data from the male and from the female patients were
tabulated separately in all cases as it has been noted by Berg (1959) that male and female subjects differ in their characteristic modes of responding on the PRT. A frequency count was made of the number of tuberculous subjects responding to each of the five options for each of the 60 test items, or for a total of 300 options. The data for the schizophrenic and adolescent groups were tabulated in a similar manner, and the data for the normal groups was provided in this form from earlier work by Barnes (1955). The percentages of each group responding to a given option were calculated.

Separate comparisons were made, of the percentages of the groups who responded to each option, between the tuberculous male group and each of the following groups: normal males, schizophrenic males, and adolescent males. Similar comparisons were made between the tuberculous females and each of the following groups: normal females, schizophrenic females, and adolescent females.

A test was made of the significance of the difference between the proportion of a tuberculous group who chose a certain option and the proportion of the criterion group also choosing that option. This was done for each option of the 60 items of the PRT. A total of 300 significance determinations were made in each group comparison. The one per cent level of statistical significance was used to
evaluate all differences in this investigation. When applicable, a contingency test published in table form by Mainland and Murray (1952) was used to evaluate the significance of the difference in frequency. When such tables could not be used as with grossly unequal samples or in the case of a difference in frequency the significance of which was of questionable size, then a test of the significance of a difference between two percentages was carried out by means of the following formulas listed by Garrett (1953, pp. 236-237):

\[
P = \frac{N_1 P_1 + N_2 P_2}{N_1 + N_2}
\]

where \( P_1 \) and \( P_2 \) are independent determinations of the common population parameter \( P \).

The standard error of the difference between two uncorrelated percentages was obtained by:

\[
\sigma_{P_1 - P_2} = \sqrt{PQ\left[\frac{1}{N_1} + \frac{1}{N_2}\right]}
\]

where \( Q = 1 - P \).

The critical ratio was obtained by the following formula:

\[
CR = \frac{(P_1 - P_2) - 0}{\sigma_{P_1 - P_2}}
\]

The hypothesis tested was that the two groups have been randomly drawn from the same population, with respect to
their responding to the PRT.

Once the deviant responses were determined in a particular group comparison, it then became necessary to test whether the number of the deviant responses were greater than chance frequency. The Poisson table was used for this purpose, based on the expansion of the binomial \((p - q)^n\), where \(p\) is equal to the probability of occurrence, \(q\) is equal to \((1-p)\), and \(n\) is equal to the number of possible outcomes.

The PRT of each tuberculous subject was scored on the following scales: schizophrenic (called Sigma by Barnes), general abnormal (called Delta by Barnes), psychotic (called Psi by Barnes), and the masculinity-femininity. In addition the PRT of each tuberculous male was scored on the character disorder scale (called Chi by Barnes). The mean and standard deviation of the scores of the male group and the female group were calculated for each of Barnes' scales referred to above. The difference between the tuberculosis group mean scores and the mean scores of Barnes' cross validation groups were tested for statistical significance by Fishers "t" test using the following formula given by Guilford (1956, p. 220):

\[
t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sum X_1^2 + \sum X_2^2}{N_1 + N_2} - \frac{N_1 \cdot \bar{X}_1}{N_1 \cdot N_2} - 2}}
\]
Where \( M_1 \) and \( M_2 \) = means of the two samples
\[ \sum X^2_1 \] and \( X^2_2 \) = sums of squares in the two samples
\( N_1 \) and \( N_2 \) = number of cases in the two samples.

A Pearson product-moment correlation coefficient was calculated between the scores of the tuberculous males on the schizophrenic scale and their masculinity-femininity scores and between the male tuberculous subjects scores on the character disorder scale and their masculinity-femininity scores. Also a product-moment correlation coefficient was obtained between the scores of the tuberculous females on the schizophrenic scale and their masculinity-femininity scores.

The data were analyzed separately for the male and female tuberculous subjects in terms of disease severity for the categories "moderately advanced" and "far advanced." The "minimal advanced" tuberculous cases were not analyzed separately because the number of cases in this category was so small as to preclude the use of appropriate statistical tests. The "moderately advanced" and "far advanced" groups were compared to the normal groups of the same sex.

The data were analyzed on the basis of education and occupational level. The tuberculous male subjects were separated into two groups with respect to amount of education: those subjects with an eighth grade education and
above and those with a seventh grade education and below. The tuberculous female subjects were separated into the following two groups: those with an eleventh grade education and above and those with a tenth grade education and below. The male tuberculosis patients were separated into a "higher" occupational group and a "lower" occupational group. The "higher" occupational group was designated to include the following categories: professional and managerial, clerical and sales, and the skilled occupations. The "lower" occupational group was designated to include: the service occupations, agriculture, fishery and forestry, the semi-skilled and unskilled occupations. The data from the tuberculosis females were not analyzed by occupational groups as the numbers in each group exclusive of the housewife category was so small as to preclude statistical significance.
RESULTS

Sub-hypothesis 1 was supported. As may be determined from Table 3, both the tuberculous male and female groups differed significantly from the normal male and female groups, respectively, in frequency and/or pattern of deviant responses as measured by the PRT. The tuberculous males differed significantly from the normal male group on 73 out of the 300 options and the tuberculous females differed significantly from normal females on 31 out of the 300 options. No significant difference in frequency of deviant responses as measured by the PRT was found between the tuberculous females diagnosed "far advanced" and those diagnosed "moderately advanced," as shown by Table 4. The male "far advanced" group differed significantly in this respect from the "moderately advanced" group, however, as revealed by Table 5. Table 6 shows that the difference in frequency of deviant responses between tuberculous females with an 11th grade education and above and those with a 10th grade education and below was not significant. The group of male tuberculous patients with an education of eighth grade and above gave significantly fewer deviant responses than the group of male tuberculous patients with seventh grade education and below as shown in Table 7. The male tuberculous group of generally "higher" occupational level gave significantly fewer deviant
responses than the generally "lower" occupational group, as indicated by Table 8.

Sub-hypothesis 2 was partially supported by the data obtained in the present investigation. As Table 9 indicates, the tuberculous females differed significantly from Barnes' cross-validation groups in mean score on the several female scales as follows: schizophrenic, mixed abnormal, and psychotic. Table 10 reveals that the tuberculous males differed significantly in mean score from the following of Barnes' male cross-validation groups: schizophrenic, character disorder, and mixed abnormal. The above findings were predicted. The mean score of the male tuberculous patients on the psychotic scale was not significantly different from Barnes' cross-validation group. This latter finding was not predicted, hence, this sub-hypothesis did not stand in that respect.

Neither the male nor the female tuberculosis group differed significantly in mean score from the respective mean scores of Berg's cross-validation normal groups on the masculinity-femininity scale of the PRT as Tables 9 and 10 show.

A Pearson product-moment correlation coefficient of -.60 was found between the schizophrenic scale scores of the tuberculous male subjects and their scores on the masculinity-femininity scale, as Table 11 reveals. The character disorder
scores of the tuberculous males correlated -.48 with their masculinity-femininity scale scores. For the female tuberculous subjects a correlation coefficient of -.08 was obtained between the schizophrenic scores and the scores of these subjects on the masculinity-femininity scale.

Sub-hypothesis 3 was supported as shown in Table 3. Thus, groups of tuberculous males and females differed significantly from schizophrenic male and female groups respectively, in frequency and/or pattern of deviant responses on the PRT.

Sub-hypothesis 4 was not supported; that is, as can be determined from Table 3, the tuberculosis male and female groups differed significantly from adolescent male and female groups, respectively, in frequency and/or pattern of deviant responses on the PRT.

The general hypothesis was supported by the evidence of this investigation. Groups of pulmonary tuberculosis subjects differed significantly from normal subjects and from certain other disturbed groups in an area of behavior which is usually not considered symptomatic of personality disturbance.
DISCUSSION

It was hypothesized that groups of tuberculous patients would differ significantly from groups of normal subjects in response set, and this was borne out by the results of this investigation; the implication is that tuberculous patients are a deviant personality group. This finding is in substantial agreement with much of the literature on the personality of tuberculous patients. In this regard, Derner (1953) found a wide range of disturbed behavior in his tuberculous group. Benjamin, Coleman and Hornbein (1948) found a high incidence of psychopathology among tuberculous subjects. Wittkower (1956) also found evidence of disturbance in tuberculous patients. Mühl (1929), Schaffle (1937), and Strecker, Braceland and Gordon (1938) have indicated that tuberculosis patients are a deviant personality group.

No significant difference in frequency of deviant responses was found between female tuberculous patients diagnosed as "moderately advanced" and those diagnosed as in the "far advanced" stage of the disease. Significantly more deviant responses were elicited, however, from the male tuberculous group diagnosed as "far advanced" as compared to the "moderately advanced" group. Breuer's (1935) finding is
contradictory to the present results for the female tuberculous patients, in that a higher proportion of severe tuberculosis in the more disturbed individuals was found by that author. The present results for male tuberculous patients are contradicted by the findings of Platt, (1953), who concluded that his evidence was not indicative of greater maladjustment among the more serious tuberculous cases. The research findings are, thus, somewhat at variance with respect to this point. The findings of the present study concerning the disturbance of tuberculous patients are two stages of the disease are partly in agreement and partly in disagreement with earlier research.

The male tuberculous patients with an eighth grade education and above gave significantly fewer deviant responses than those patients with a seventh grade education and below. This suggests that the more educated tuberculous males are less disturbed. A contaminating factor or factors is possible, however, as for example, the possible effects of stage of the disease were not controlled in this particular analysis. Tuberculous females with an education of 11th grade and above did not give significantly more deviant responses than female tuberculous subjects with an education of 10th grade and below. This evidence stands in contrast to the findings for the males in this regard and suggests that there is no significant difference in degree of disturbance between the higher and lower educational female groups.
The male tuberculous group defined as of "higher" occupational level gave significantly fewer deviant responses than the group defined as of "lower" occupational level. This suggests that the "higher" occupational group is less disturbed by the disease, although the possibility of a contaminating variable or variables cannot be disregarded. This finding suggests several explanations, and among them are the following possibilities. The individuals of the occupations defined as of "higher" level may be less disturbed originally, or the disease may be most disturbing to those subjects who, in general, have less economic security. For these latter individuals the onset of tuberculosis may represent an even more severe crisis than would usually be the case, and this factor may contribute to their disturbance.

The female tuberculous group differed significantly in mean score from all the female cross-validation groups of the PRT scales except for the masculinity-femininity scale. This finding was predicted for the several disturbed group scales. The male tuberculous patients also differed significantly in mean score from all male cross-validation disturbed groups, as predicted except for the psychotic group from which the male tuberculous group was not significantly different in mean score. The latter finding was not predicted, but suggests that the male tuberculous group is
seriously disturbed and there appears to be a gross simi-
laritiy in their deviant response pattern on the PRT to that
of psychotic males. The male tuberculous subjects did not
differ significantly in mean score from Berg's cross-
validation male group on the masculinity-femininity scale
and this indicates that these tuberculous males were typically
neither more nor less masculine in response pattern than
normal males.

A correlation coefficient of -.60 was obtained be-
tween the male tubercular subjects schizophrenic scale scores
and the scores of these subjects on the masculinity-
femininity scale. Hence, a moderate tendency was noted for
male tuberculous patients who responded in the typically
masculine direction on the PRT to be low on the schizophrenic
scale. The correlation coefficient between the scores of the
male tuberculous subjects on the character disorder scale and
their scores on the masculinity-femininity scale was -.48.
This indicates that there was a tendency for the male tu-
berculous subject who responded to the PRT in the typically
masculine direction to be low on the character disorder scale.
For the female tubercular subjects a correlation coefficient
of -.08 was obtained between the schizophrenic scale score and
masculinity-femininity score, indicating a lack of relation-
ship between these variables.

Both male and female tuberculous groups were signifi-
cantly different from the respective schizophrenic groups in
frequency and/or pattern of deviant responses on the PRT. Wittkower (1956) refers to the higher incidence of tuberculosis in schizophrenic patients. In this regard he concludes that the incidence of tuberculosis increases with length of hospitalization and that with the time factor ruled out the occurrence of tuberculosis in schizophrenic patients is no higher than that in other disturbed behavioral states.

Much of the literature has indicated that neurotic personality traits are frequently found in tuberculosis patients. Roitzsch (1958) demonstrated that neurotic subjects are not significantly different from adolescent subjects in frequency of deviant responses on the PRT. Therefore, it was hypothesized that tuberculous subjects would be not significantly different from adolescent subjects in this respect. The results of this study did not support this hypothesis, however, since both male and female tuberculosis subjects differed significantly from the respective adolescent groups in frequency and/or pattern of deviant responses.

The general hypothesis was supported by the evidence of this investigation. A group of chronically diseased subjects, known to display symptoms of personality disturbance, have been shown to respond in a deviant manner in an area of behavior not usually considered symptomatic of
personality aberration. Hence, it can be concluded that, for the subjects of this study, response patterns tend to be general, as predicted from Berg's Deviation Hypothesis.
CONCLUSIONS

1. A group of subjects afflicted with tuberculosis and known to display certain symptoms of personality disturbance, also displayed deviant response patterns in an area that is not usually considered symptomatic of personality disturbance. The hypothesis that response patterns tend to be general, and that disturbed persons display deviant behavior in other than symptom areas was supported.

2. Tuberculous subjects differed significantly from normal subjects in frequency and/or pattern of deviant responses on the PRT.

3. Male patients diagnosed as of the "far advanced" stage of tuberculosis gave significantly more deviant responses than a similar group diagnosed as "moderately advanced." The former group, thus, appeared more disturbed.

4. No significant difference was found in frequency of deviant responses given by female patients diagnosed as of the "far advanced" stage and by those diagnosed as "moderately advanced."

5. The female tuberculous group of more education did not differ significantly from the less educated female
group in frequency of deviant responses on the PRT. There appeared to be no difference in degree of disturbance of these groups.

6. The male tuberculous group of more education gave significantly fewer deviant responses than did the less educated male group, and in this sense the latter group appeared more disturbed.

7. The male tuberculous group defined as of "higher" occupational level gave significantly fewer deviant responses than the group defined as of "lower" occupational level, and in this sense the latter group appeared more disturbed.

8. The female tuberculosis group differed significantly in mean score from the cross-validation groups on the following female scales: schizophrenic, mixed abnormal, and psychotic. These subjects did not differ in mean score from the cross-validation females on the masculinity-femininity scale.

9. The male tuberculosis group differed significantly in mean score from the cross-validation groups on the following male scales: schizophrenic, character disorder, and mixed abnormal. The male tuberculosis group did not differ significantly in mean score from the cross-validation
group on the psychotic scale. Thus, there was a gross similarity between the deviant response patterns of the male tuberculous patients and male psychotics. The tuberculous male group did not differ significantly in mean score from the male cross-validation group on the masculinity-femininity scale.

10. Moderate negative correlations were found between the tendency for male tuberculous patients to respond in a typically masculine direction and tendency to respond in a direction similar to schizophrenic or character disorder subjects on the PRT.

11. Both male and female tuberculous patients differed significantly in frequency and/or pattern of deviant responses from the respective schizophrenic and adolescent groups on the PRT.
REFERENCES


Berg, I. A. Measuring deviant behavior by means of deviant response sets. Paper presented at the Symposium on Experimental Clinical Psychology at the University of Virginia School of Medicine, Charlottesville, April, 1959.


<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>46.04</td>
<td>10.86</td>
<td>20-60</td>
</tr>
<tr>
<td>Females</td>
<td>34.37</td>
<td>10.19</td>
<td>18-61</td>
</tr>
</tbody>
</table>

Table 1

Age of Tuberculosis Patients in Years
Table 2

Years of Education Completed by Tuberculosis Groups

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>8.00</td>
<td>3.99</td>
<td>0-20</td>
</tr>
<tr>
<td>Females</td>
<td>10.35</td>
<td>3.00</td>
<td>2-18</td>
</tr>
</tbody>
</table>
Table 3

Significant Differences in Frequency of Responses to the Various Options of the Perceptual Reaction Test Among Tuberculosis Groups and Several Criterion Groups

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Total Deviant Responses</th>
<th>Second Order Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tuberculosis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males 100</td>
<td>Normal Males 500</td>
<td>73</td>
<td>.01</td>
</tr>
<tr>
<td>Females 100</td>
<td>Normal Females 350</td>
<td>31</td>
<td>.01</td>
</tr>
<tr>
<td>Males 100</td>
<td>Schizophrenic Males 49</td>
<td>73</td>
<td>.01</td>
</tr>
<tr>
<td>Females 100</td>
<td>Schizophrenic Females 50</td>
<td>26</td>
<td>.01</td>
</tr>
<tr>
<td>Males 100</td>
<td>Adolescent Males 150</td>
<td>39</td>
<td>.01</td>
</tr>
<tr>
<td>Females 100</td>
<td>Adolescent Females 150</td>
<td>16</td>
<td>.01</td>
</tr>
</tbody>
</table>
Table 4

Significant Differences in Frequency of Responses to the Various Options of the Perceptual Reaction Test Between Female Tuberculosis Patients at Two Stages of the Disease and Normal Females

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Total Deviant Responses</th>
<th>Second Order Sig.</th>
<th>Sig. of Difference in Deviant Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Far Advanced&quot; Tuberculosis Females</td>
<td>Normal Females</td>
<td>33</td>
<td>350</td>
<td>20</td>
</tr>
<tr>
<td>&quot;Moderately Advanced&quot; Tuberculosis Females</td>
<td>Normal Females</td>
<td>33</td>
<td>350</td>
<td>14</td>
</tr>
</tbody>
</table>
Table 5

Significant Differences in Frequency of Responses to the Various Options of the Perceptual Reaction Test Between Male Tuberculosis Patients at Two Stages of the Disease and Normal Males

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Total Deviant Responses</th>
<th>Second Sig. of Order Difference in Deviant Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Far Advanced&quot; Tuberculosis Males</td>
<td>Normal Males</td>
<td>43</td>
<td>500</td>
</tr>
<tr>
<td>&quot;Moderately Advanced&quot; Tuberculosis Males</td>
<td>Normal Males</td>
<td>42</td>
<td>500</td>
</tr>
</tbody>
</table>
Table 6

Significant Differences in Frequency of Responses to the Various Options of the Perceptual Reaction Test Between Female Tuberculosis Patients of Two Levels of Education and Normal Females

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Total Deviant Responses</th>
<th>Second Order Sig.</th>
<th>Sig. of Difference in Deviant Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Female Tuberculosis Patients with Education of 11th Grade and Above</strong></td>
<td><strong>Female Tuberculosis Patients with Education of 11th Grade and Above</strong></td>
<td><strong>Normal Females</strong></td>
<td><strong>18</strong></td>
<td><strong>.01</strong></td>
</tr>
<tr>
<td><strong>54</strong></td>
<td><strong>Normal Females</strong></td>
<td><strong>350</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Female Tuberculosis Patients with Education of 10th Grade and Below</strong></td>
<td><strong>Female Tuberculosis Patients with Education of 10th Grade and Below</strong></td>
<td><strong>Normal Females</strong></td>
<td><strong>15</strong></td>
<td><strong>.01</strong></td>
</tr>
<tr>
<td><strong>42</strong></td>
<td><strong>Normal Females</strong></td>
<td><strong>350</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7

Significant Differences in Frequency of Responses to the Various Options of the Perceptual Reaction Test Between Male Tuberculosis Patients of Two Levels of Education and Normal Males

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Total Deviant Responses</th>
<th>Second Order Sig.</th>
<th>Sig. of Difference in Deviant Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Tuberculosis Patients with Education of 8th Grade and Above</td>
<td>Normal Males</td>
<td>58</td>
<td>500</td>
<td>19</td>
</tr>
<tr>
<td>Male Tuberculosis Patients with Education of 7th Grade and Below</td>
<td>Normal Males</td>
<td>42</td>
<td>500</td>
<td>44</td>
</tr>
</tbody>
</table>
Table 8

Significant Differences in Frequency of Responses to the Various Options of the Perceptual Reaction Test Between Male Tuberculosis Patients of Two Occupational Levels and Normal Males

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Total Deviant Responses</th>
<th>Second Order Sig.</th>
<th>Sig. of Difference in Deviant Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Higher&quot; Occupational Level</td>
<td>48</td>
<td>Normal Males</td>
<td>500</td>
<td>18</td>
</tr>
<tr>
<td>Tuberculosis Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Lower&quot; Occupational Level</td>
<td>47</td>
<td>Normal Males</td>
<td>500</td>
<td>42</td>
</tr>
<tr>
<td>Tuberculosis Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9

Tuberculosis Females Compared to Barnes' Cross-Validation Group on Several Scale Scores on The Perceptual Reaction Test

<table>
<thead>
<tr>
<th>Scales</th>
<th>Tuberculosis Group</th>
<th>Barnes' Group</th>
<th>T Value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>σ</td>
<td>Mean</td>
<td>σ</td>
</tr>
<tr>
<td>Masculinity-Femininity</td>
<td>4.84</td>
<td>9.26</td>
<td>2.64</td>
<td>9.65</td>
</tr>
<tr>
<td>Schizophrenic</td>
<td>-12.13</td>
<td>11.31</td>
<td>9.03</td>
<td>19.91</td>
</tr>
<tr>
<td>Psychotic</td>
<td>-11.26</td>
<td>15.47</td>
<td>7.50</td>
<td>22.55</td>
</tr>
<tr>
<td>Abnormal</td>
<td>-11.69</td>
<td>15.43</td>
<td>0.96</td>
<td>19.27</td>
</tr>
</tbody>
</table>
Table 10

<table>
<thead>
<tr>
<th>Scales</th>
<th>Tuberculosis Group</th>
<th>Barnes' Group</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>σ</td>
<td>Mean</td>
<td>σ</td>
</tr>
<tr>
<td>Schizophrenic</td>
<td>-4.37</td>
<td>19.76</td>
<td>6.39</td>
<td>23.63</td>
</tr>
<tr>
<td>Character Disorder</td>
<td>-6.42</td>
<td>9.18</td>
<td>1.32</td>
<td>12.09</td>
</tr>
<tr>
<td>Psychotic</td>
<td>-3.27</td>
<td>18.25</td>
<td>1.76</td>
<td>24.05</td>
</tr>
<tr>
<td>Abnormal</td>
<td>-5.72</td>
<td>13.81</td>
<td>2.09</td>
<td>18.83</td>
</tr>
</tbody>
</table>
Table 11

Pearson Product Moment Correlation Coefficients
Between Several of Barnes' Scale Scores on the
Perceptual Reaction Test for Tuberculosis Groups

<table>
<thead>
<tr>
<th>Scales</th>
<th>Male Schizophrenic and Masculinity-Femininity</th>
<th>Male Character Disorder and Masculinity-Femininity</th>
<th>Female Schizophrenic and Masculinity-Femininity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>r</em></td>
<td>-.600</td>
<td>-.485</td>
<td>-.081</td>
</tr>
</tbody>
</table>
VITA

Eugene Paul Engen was born in Yankton, South Dakota, on March 4, 1931. He studied at Yankton College from 1948 to 1952 at which time he received a Bachelor of Arts degree in psychology. He served in the United States Air Force from October, 1952 to November, 1954. Concurrent with his service in the Air Force he carried on graduate work in psychology at Mills College, Oakland, California, and the latter institution awarded him a Master of Arts degree in February, 1955. In December, 1954, he was employed as a psychologist at Yankton State Hospital, Yankton, South Dakota, which employment he continued until September, 1956. He was admitted to graduate work in the Department of Psychology of Louisiana State University and he began his studies there in September, 1956. He was a clinic assistant in the Department of Psychology during the academic year 1956-1957, and he was a United States Public Health Service Fellow in psychology from 1957 to 1959.
EXAMINATION AND THESIS REPORT

Candidate: Eugene Paul Bngen

Major Field: Psychology

Title of Thesis: RESPONSE SET OF PULMONARY TUBERCULOSIS PATIENTS

Approved:

[Signatures]

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

[Signatures]

Date of Examination:

27 July 1959