

STUDY OF THE RELATIONSHIP BETWEEN CONSTITUTIONAL VARIATIONS AND FUNDAMENTAL PSYCHOTIC BEHAVIOR REACTIONS

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This study of relationships between constitutional factors and fundamental types of psychotic behavior reaction was started at the Elgin State Hospital in June 1945.

At that time Dr. Sheldon with some associates from the University of Chicago photographed 350 male patients diagnosed by the Elgin staff as either schizophrenic, paranoid, or manic depressive.

The photographing procedure is really a standardized test situation, and the subject's ability to comprehend and to respond effectively to instruction and to assistance is measured by the resulting photographs. The placing and photographing of each subject, together with a simple measure of hand and general strength took from 3 to 5 minutes, and that is all the contact Dr. Sheldon had with any of the subjects in this study.

The somatotyping, which is a way of describing qualitatively the relative weightings for the three fundamental components of morphology, i.e., endomorphy, mesomorphy and ectomorphy, was done by Dr. Sheldon from the photographs. The ratings on temperamental pathology were made by Dr. Sheldon on the basis of the responses of each patient, as recorded at the time of photographing and as shown photographically, to the test situation already described.

The first component of temperamental pathology, corresponding to the cycloid component in the diagnostic rating, is the degree to which

viscerotonia and somatotonia seem to combine maladaptively in the personality. The second component of temperamental pathology, paranoid in the diagnostic weightings, is the degree to which somatotonia and cerebrotonia seem to combine maladaptively. The third component of temperamental pathology, heboid in the diagnostic weightings, is Sheldon's evaluation of dissociative somatopenia, or failure of normal expression of somatotonia, with or without a secondarily strong cerebrotonia, and with or without a secondarily strong viscerotonia.

My part of the project included making an individual study of each patient without seeing either the photographing of the patient or the resulting picture. Each of the 167 patients worked up for this preliminary report has been evaluated on a 7-point scale as to relative strength or weakness in 221 factors of psychological and psychiatric significance.

As a final step, I recorded a quantitative evaluation of each of what we now consider to be three fundamental psychological components in psychotic behavior reactions.

1. Cycloid or affective.
2. Paranoid.
3. Heboid or regressive.

This type of evaluation was made because right from the start it was found that patients classified within a single diagnostic entity were so heterogeneous that a more elastic and discriminative diagnostic device was needed. Study of this

problem resulted in the conclusion that there may be only three fundamental components of psychotic behavior reaction, and that as far as psychotic behavior is concerned, both functional and organic cases can probably be described in terms of the relative strength of these three components (cycloid, paranoid, and heboid).

Using such a diagnostic schema made the classification of the many cases in which there was a mixture of psychotic symptoms—those diagnosed Schizo-affective psychoses, or Manic-depressive with schizophrenic features for example—clearly and easily characterizable in terms of the relative weightings of fundamental psychotic components.

To further a comparison of these diagnostic evaluations with Sheldon's components of temperamental pathology, the ratings were made on a 7-point scale with "1" indicating a complete lack, and "7" the most extreme degree of a given psychotic component.

Recognizing the subjective character of the weightings that the psychologist in the study was making we asked one of the staff physicians (C.K.) to join us in this study and evaluate independently a number of the patients on the factors studied by the psychologist.

The correlations between the two sets of weightings thus arrived at independently, but from a study of the same material for each patient, were $+0.89$ for the cycloid factor, and $+0.78$ for the paranoid, and $+0.91$ for the heboid. This agreement appears not only to validate the diagnostic evaluations made by the psychologist, but also to emphasize the value and significance of a diagnosis based on a scaling of components of psychotic behavior reaction, rather than attempting to

force each case into a single and specific psychiatric pigeon-hole.

One of the important questions we hoped to answer on the basis of this study was the value of morphological analysis in understanding and differentiating psychotic behavior reactions. Consequently we ran correlations between the somatotypes as determined by Sheldon and the diagnostic evaluations of the patient. Graphs were prepared which give the correlations between somatotype and diagnosis. (Slides shown in oral presentation are omitted from this preliminary report.)

The graph indicates that there is a definite relationship between body morphology and type of psychotic behavior reaction. The predominantly cycloid patients are mesomorphic endomorphs with ectopenia (lack of ectomorphy). The paranoid psychotics are strongly mesomorphic, as we had expected, but the secondarily strong ectomorphy expected did not come out. Compared to the cycloid or affective patient the paranoid is relatively ectomorphic, it is true, but in absolute values in this study he appears to be lower in ectomorphy than in endomorphy. This is possibly due to the number of affective patients with secondary strong paranoid behavior reactions. (We plan to check this finding further by study of all 350 cases, only 167 of whom are included in this preliminary report.) The heboid, i.e., regressive and hebephrenic subjects in our study, constitutionally are extreme ectomorphs and with a marked ectopenia (lack of mesomorphy).

Since Dr. Sheldon had found in other studies that the mesomorphic strength of the 3rd region (arm) was almost pathologically low in heboid patients, and could be used as a diagnostic aid in such cases,

we correlated the arm mesomorphy with the weightings of the heboid component. The resulting coefficient of $-.684$ strongly corroborates this hypothesis.

The correlation coefficients showing the relationship between diagnosis and Sheldon's evaluations of temperament based on constitutional factors, together with the patient's reaction in the standardized photographing situation, were shown in another graph.

In the second graph the correlations are even more striking than in the first graph, suggesting that although morphology is definitely related to pattern of psychotic behavior reaction, there are other constitutional factors that are important also, and when these are taken into consideration the resultant agreement with diagnosis is remarkable.

In this kind of study it is significant that an analysis of photographs and an approach stressing constitutional factors when compared with an independent diagnostic approach stressing symptomatology should show *any* agreement at all, let alone the definite relationships we do find.

Another important point is this: That the analysis of morphology and of temperament was made by one of us; the diagnostic evaluations by a second; and the statistical analysis by Dr. French and assistants at Northwestern. *All three approaches were made independently without any knowledge of what the other collaborators in the study were finding.*

Certainly, then, these findings indicate that adequate and accurate diagnosis of psychotic patients ought to include constitutional analysis, and if this is not done the examiner is overlooking factors that have been shown to be *closely* related to psychotic behavior reaction.

As a further check on these results, and in order to gain further insight into their value, we divided the 167 subjects into 4 different categories according to the relative strength of the psychotic factors.

The affective, paranoid, and heboid groups were those whose heaviest weighting was in that type of psychotic behavior reaction. The fourth group we called mixed psychosis, since relatively equal weightings had been given to all three components of psychotic behavior reaction. This yielded 4 groups, with 31 patients classified as predominantly paranoid, 57 as hebephrenic, and 44 as mixed psychosis.

The mean strength of each primary morphological component, for each psychotic group, was computed and is given in the following table:

These data agree with the correlation results in defining the cycloid as endomorphic and mesomorphic, and low in ectomorphy; the paranoid as predominantly mesomorphic; and the heboid as predominantly ectomorphic. The mixed psychoses, including a large number of subjects diagnosed dementia praecox catatonic, and undetermined types, showed only half-step differences between the components of body build. This agrees with the hypothesis that the so-called catatonic cases are those who show affective, paranoid, and regressive features all mixed together.

Because of Dr. Sheldon's belief that shock therapy is rarely or never of value in mesopenic cases (those lacking mesomorphy in body build) we classified therapy results in three groups: much improved, temporarily improved and unimproved.

Table I indicates that as you move from the definitely improved at one extreme to the unimproved group at the other extreme, the average degree of mesomorphy decreases, and

TABLE I

	Average Somatotypes		
	Endomorphy	Mesomorphy	Ectomorphy
Psychosis Type			
Cycloid.....	4½	4½	2
Paranoid.....	3	4	3½
Heboid.....	3	2½	5
Mixed.....	3	3½	4
Shock Therapy Results			
Definite Improvement.....	4	4½	2
Temporary Improvement.....	3	4	3½
Unimproved.....	3	2½	4½

conversely the average degree of ectomorphy increases. We hope to check this hypothesis carefully on our therapy cases from now on whenever we are able to do constitutional analyses as a routine on newly admitted patients.

So far, I have been presenting facts and figures and throwing the terms endomorphy, mesomorphy and ectomorphy, viserotonia, somatonia and cerebrotonia around without much compassion for those in the audience who are not acquainted with the terms. Now, however, I should like to show you a few of the photographs from which these evaluations were made (Nos. 164, 91, 47, 1, 66, in this order).

No. 164 has had 6 admissions to the Elgin State Hospital, the first in 1932, the last one in 1942. Each time he was diagnosed manic-depressive manic. He is now 44 years old. The last progress note on this patient says, "Has ground parole. Works as assistant in the morgue and takes a certain amount of responsibility well. Neat and clean, interested and cooperative. Sociable with other patients and with employees. Plays cards and is friendly,

frequently conversing with others on the ward."

The patient's somatotype is 5 4½ 2. The temperament rating is 5 3 2, and the diagnostic weightings are also 5 3 2; he rates 5 in affective features, 3 in paranoid, and 2 in heboid.

The massive abdomen, short thick neck, fairly broad, but well-padded shoulders, the relatively short, stubby hands, thick arms with slight hamming of the upper arm, are characteristic of the affective psychoses. The round face with fat cheeks that makes the relatively small nose seem smaller by comparison, the thick protruding lips and double chins are all there, but unfortunately in order to show the photograph the face had to be blanked out.

No. 1 is a 27-year old patient who has had three admissions to the Elgin State Hospital, diagnosed each time as dementia praecox catatonic type. He has had periods of hyperexcitability with press of speech and typical manic-like outbursts, at other times has shown the irritable, sullen, suspicious behavior characteristic of the paranoid, and frequently has had periods of extreme withdrawal,

being mute, untidy in toilet habits and appearance, extremely apathetic, and indifferent. He responds well to shock therapy, but this improvement, back to what appears to be a perfectly normal mental picture, is quite short-lived. He has had metrazol, insulin, and several courses of electric shock. The last progress note on this patient is "Definitely improved following last electric shock, but has again relapsed. Is now mute and a feeding problem." This patient's somatotype is 3 3 4 with a temperamental pathology rating of 3 3 4 and a diagnostic evaluation of 3 3 5. These evaluations of morphological, temperament and diagnostic patterns emphasize the mixed picture that we have found characteristic of the cases diagnosed catatonic. In this case the ectomorphic, cerebrotonic and heboid components predominate, thereby emphasizing the regressive features already prominently displayed.

No. 91 is a 51-year old man, a former professor of mathematics, diagnosed paranoid dementia praecox, who has been in the Elgin State Hospital for the past 20 years. The note on patient's present status is "Tidy in habits, neat in appearance, combative at times. Always superior in manner, frequently noted talking to himself. Well posted on current events, but seclusive and supercilious in contact with other patients and attendants. Eats and sleeps well."

This patient's somatotype is 2 5 3, that is to say, predominantly mesomorphic. The compact, sturdy body build with straight upright posture, relatively low waist, flat abdomen, strong muscular arms and legs, are noticeable and are especially so when this man's age, 51, and duration of psychosis (20 years) are taken into account. This patient's

face and facial expression would also be revealing if you could see them. His face is the only somatotype region in which he looks his age. He has deep naso-labial folds and is heavily wrinkled. He has the firmly compressed mouth and watchful suspicious glance that, for those of us under Dr. Sheldon's tutelage, have become hallmarks of paranoid psychosis. This patient's temperament rating is 2 5 3, and his diagnostic evaluation 2 6 3. The ratings emphasize the somatorotic (pathologically somatonic) temperament, and the paranoid psychotic behavior reaction.

Now please try to keep this patient's body build in mind to compare with the next one, who is 26 years old, as compared with this man's 51 years.

No. 66, a typical example of a severely regressed patient, was admitted to the hospital in April 1940, diagnosed dementia praecox hebephrenic. The last progress note on this patient, made a few months ago, states, "Untidy in toilet habits, very careless of personal appearance, seclusive and apathetic, has to be bathed and dressed, but infrequently will undress himself." This patient has had shock therapy, but without any improvement.

He has an extreme somatotype 117, that is to say, lacking in both endo- and mesomorphy, but with extreme ectomorphy. The excessively weak arms, the ectomorphic stoop so common in hebephrenics, the fragile pipe stem legs, all add up to the kind of physique that I am sure Dr. H. Douglas Singer was thinking of when he described what he called constitutional schizophrenia with pathologically low energy endowment.

In a previous research project in collaboration with the Child Study Bureau of the Chicago Board of

Education, we found that this particular patient had been referred when 7 years old and in the second grade to the Study Bureau because of school retardation and suspected feeble-mindedness. He was found to be of average intelligence at the Bureau, but the really significant thing is that the psychologist at that time described the 7-year-old boy as apathetic, indifferent, inattentive, timid and monosyllabic in his replies. Certainly this patient's very early pre-psychotic personality suggests the shut-in personality type that Adolph Meyer thinks character-

izes schizophrenic patients just as the morphological pattern fits in with Dr. Singer's concept of constitutional schizophrenia, also fits in with Langfeld's "process" schizophrenia, and probably with Meduna and McCullough's concept of true schizophrenia as differentiated from oneirophrenia.

All this suggests that constitutional analysis can yield a definite and objective frame of reference that should be used generally in carrying out experimental projects in both diagnostic and research fields of psychiatry and abnormal psychology.