

BODY BUILD, PERSONALITY AND NEUROSIS IN WOMEN.

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INTRODUCTION.

THE theory that physique and temperament are correlated remains a subject of controversy. Various workers in the field differ in their findings and, in the past, investigations on body build and its psychological correlates have been handicapped by lack of precise knowledge of the variations in body build. In recent years improved statistical methods of analysis have been applied to the study of body build, enabling the variations in physique to be analysed and assessed inductively.

This paper describes an investigation into the alleged association between body build and temperament in women utilizing a new body-build index, consisting of a regression equation of four measurements derived from the results of a factorial analysis of female body build (Rees, 1950).

HISTORICAL SURVEY.

The notion that physical features provide clues to mental and moral qualities is very ancient and may be found in the literature of all ages. An old Greek proverb states, "A gross belly does not produce a refined mind," and in Shakespeare's "Love's Labour's Lost" (Act i, Sc. 1, line 26) is stated, "Fat paunches have lean pates; and dainty bits make rich the ribs but bankrupt quite the wits." A clear affinity between body type and temperament is indicated by Caesar's well-known remarks to Anthony ("Julius Caesar," Act i, Sc. 2, line 92):

"Let me have men about me that are fat, sleek headed men and such as sleep o' nights. Yond Cassius hath a lean and hungry look. He thinks too much: such men are dangerous. Would he were fatter! But I fear him not. Yet if my name were liable to fear, I do not know the man I should avoid so soon as that spare Cassius."

From ancient times we find two parallel and distinct lines of thought regarding physical and temperamental correlation. On the one hand we have the science of physiognomy founded by Aristotle (384-322 B.C.). Aristotle's views were published in his book *Physiognomica*, and his work was continued in the third century in Greece by Polemonis, and in the fourth century by a Jewish physician, Adamantius.

Physiognomy was expanded by speculation to a rather ludicrous degree in a book by Lavater in 1841. Physiognomy was also at this time deflected into the later discredited science of phrenology by Coombe, Gall and Spurzheim,

and later in the nineteenth century by Lombroso into the now invalidated science of criminal anthropology.

Parallel in development to the study of physiognomy we have the theory of temperaments. Hippocrates (460–375 B.C.) considered health to be due to the optimum mixture of four humours and disease a disturbance of this relationship. The humours were blood, phlegm, black and yellow bile, corresponding to the four primary elements—air, water, earth and fire—from which all substances were thought to be constituted. Galen (A.D. 129–199) described nine temperamental types allegedly attributable to various humoral admixtures and with characteristic physical attributes. The Galenic theory not only attempted to explain temperamental differences, but was also a general theory of disease causation, and as such dominated medical thought as late as the eighteenth century.

No serious attempt was made to study the importance of physical constitution in mental disease until the early nineteenth century, when Esquirol (1816) found that the strong robust type of physique was associated with an acute course of psychosis with crises, whereas the lymphatic type of physique tended to be associated with a more chronic dementing course of psychosis. These remarkable observations antedated Kretschmer's (1921) work by over a century. The Kretschmerian theory of a biological affinity between asthenic, athletic and certain dysplastic physiques and schizophrenia on the one hand, and between pyknic physique with manic-depressive psychosis on the other, provided the main stimulus to modern research into physical constitution in psychiatry and psychology.

Kretschmer's work has been criticized on grounds of methodology, mainly on account of its subjectivity and lack of anthropometric and statistical validation. The following investigations support Kretschmer's theory in the main: Weissenfeld (1925), Olivier (1922), Rohden (1926), Shaw (1925), Wertheimer and Hesketh (1926), Farr (1928), Cohen (1940), Betz (1942), Rees (1943). The following support the theory in part: Clegg (1935), Burchard (1936), and the following workers give no support to the theory: Mollenhoff (1924), Kolle (1925), Garvey (1930), Wells (1938), Farber (1938).

Similarly the extension of Kretschmer's body type theory from psychotic types to include normal personality types (schizothymic and cyclothymic) stimulated a considerable research on the psychological correlates of physique.

Marked differences in psychological traits between pyknics and leptosomes have been reported by Kibler, Van der Horst, Enke and others (Farber, 1938). Pyknics were found to excel in incidental memory and to have a greater perception span. In the tachistoscopic perception of a long work leptosomes were found to use an analytic atomistic method, while pyknics perceived first the "Gestalt" and then the details. Pyknics were superior in perceiving colour and leptosomes in perceiving form.

Some workers, e.g. Pillsbury (1939) and Kraines (1938), found no evidence to support Kretschmer's theory in the correlation between introversion and extraversion and physique as measured by body-build indices. Sheldon (1942), in his book *Varieties of Human Temperament*, described three primary components of personality designated Viscerotonia, Somatotonia and Cerebrotonia,

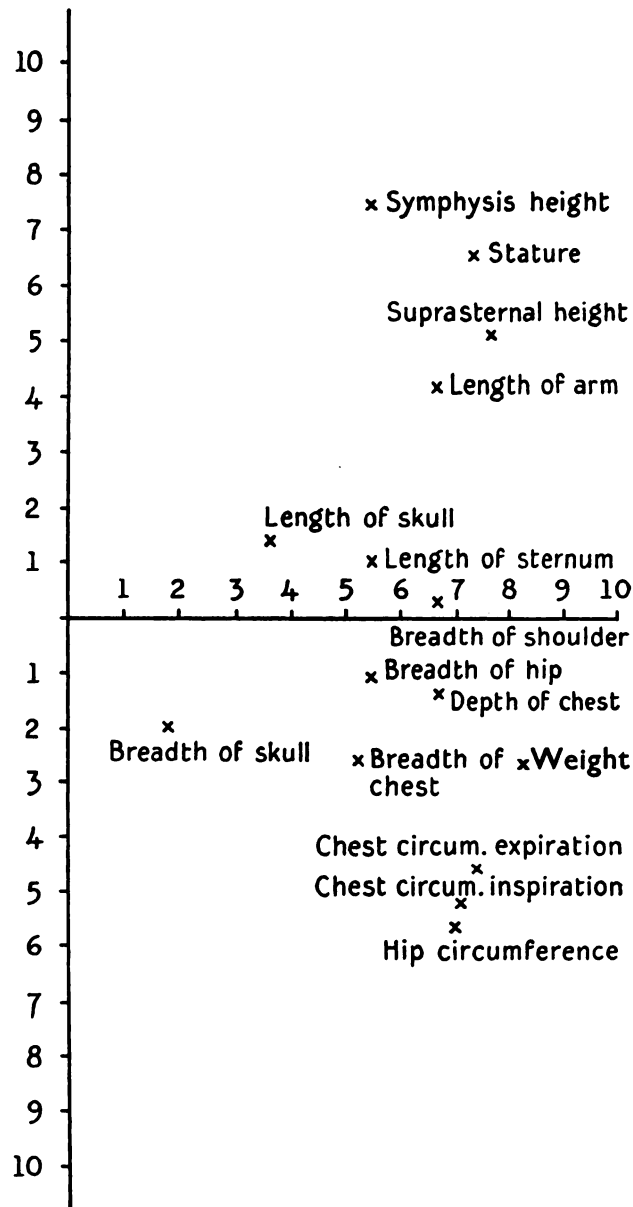


FIG. 1.—Saturation of anthropometric measurements with general and type factors.

which correlated very highly with the three primary components of physique described by Sheldon (1940), viz., Ectomorphy, Mesomorphy and Endomorphy, relating to the degree of development of structures of three primary germinal layers, ectoderm, mesoderm and endoderm.

Although physique and temperament has been the subject of considerable research, the question of relationship between physical constitution and neurosis has received little attention. Naccarati (1934), using an index based on that

of Viola, classified a group of 100 male neurotics into microsplanchnic, normo-splanchnic and macrosplanchnic types. He found the group had a larger number of extremes of physique than the normal population, and that the so-called emotional neuroses, in which he includes anxiety states and hysteria, were associated with macrosplanchnics, whereas neurasthenic patients were more microsplanchnic than the normal and emotional neurosis groups. Unfortunately Naccarati's work is vitiated by absence of statistical validation, by his classification of neurosis, and because the criteria used in diagnosis are

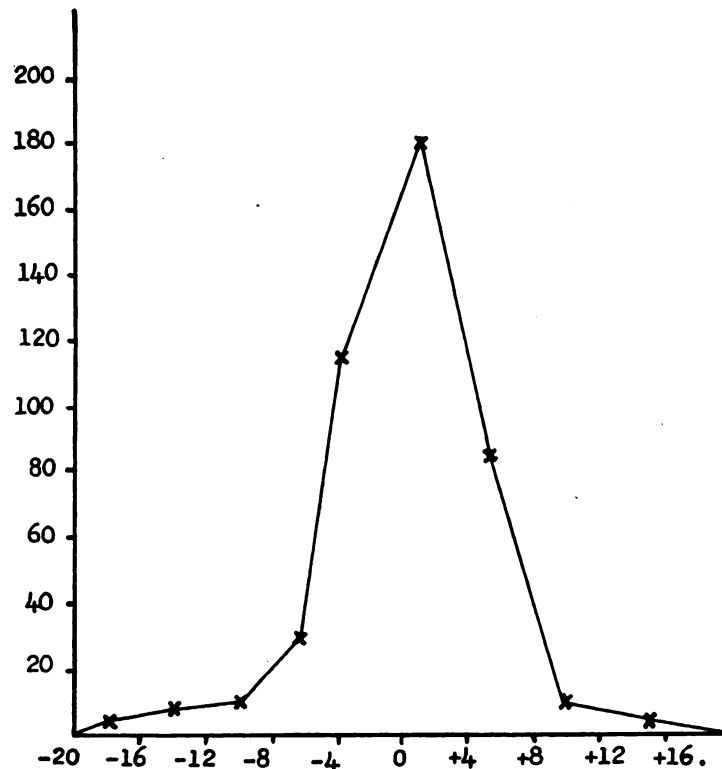


FIG. 2.—Frequency distribution curve of a new index of body build in a group of 400 women.

not given, and therefore one cannot be sure what neurotic syndromes are included under particular diagnostic terms, e.g., neurasthenia.

Burt (1937) found that in children stoutness was correlated positively, but to a very small extent, with cheerful emotions, whereas relative thinness correlated with inhibitive and repressive tendencies. He concluded that no definite associations were found as the correlation was seldom above .15. In adults he found that the asthenic build was associated with repressed and introverted temperaments and tendency to depression. He found that much of the correlation was attributable to the fact that the group contained several who showed mild hyperthyroid symptoms and a number who were definitely

ill nourished. His final conclusion was that the measurable correlations between physical and mental characteristics, though frequently positive, were almost always too small to be treated for the needs of diagnosis.

Sanford (1943) and his co-workers at Harvard have published an interesting study of physical and psychological correlates in normal children. Using factorial methods to analyse the intercorrelations of 18 anthropometric measurements similar to those used in this study, they elicited the existence of two contrasting body types, the tall-narrow and the wide-heavy. The tall-narrow type was found to be associated with autonomic dysfunction, good intelligence test results, satisfactory school progress, and with guilt feelings, remorse and other features similar to a dysthmic category described later. Wide-heavy body build correlates negatively with autonomic dysfunction, social feeling and lively self-expression.

RESULTS.

The experimental population consists of 400 women service patients suffering from neurosis successively admitted to Mill Hill Emergency Hospital. Using the new regression equation index of body build, the group was classified according to the criteria described by Rees (1950) into 60 leptomorphs, 263 mesomorphs and 77 eurymorphs. An item sheet containing some 200 items relating to personality and neurosis was analysed for the three groups, the distribution of items expressed in percentages and compared by means of the critical ratio. A summary of the results is given in Table I. Items marked with one cross (+) are suggestive with a critical ratio somewhat less than 2 ; items marked with two crosses (++) are significant with a C.R. between 2 and 3 ; items marked with three crosses (+++) are very significant with a C.R. of over 3.

The items are arranged in groups. The first group deals with age distribution. It will be seen that there is no marked trend of association between body build and age group.

The second group contains hysterical and dysthmic traits. These traits were particularly chosen because factorial analysis of neurotic symptoms had shown a tendency to a dichotomy of clinical types into hysteria and dysthmic (Eysenck, 1944). It will be seen that the eurymorph group tends towards hysterical traits and symptoms, whereas leptomorphs tend more towards dysthmic symptoms and traits.

The next group contains personality items relating to the introversion-extraversion dichotomy of Jung and the schizothymic-cyclothymic dichotomy of Kretschmer (1934). It will be seen that leptomorphs show a greater tendency to introversion or schizothymic tendencies, whereas eurymorphs tend to be more extraverted or cyclothymic.

The fourth group relates to manifestations of autonomic dysfunction. It will be seen that leptomorphs show a higher incidence of manifestations of autonomic dysfunction than do eurymorphs.

The last group contains miscellaneous items of interest. It will be noted that leptomorphs have a higher incidence of well-marked neurotic disorder in the family and of childhood neurotic symptoms. These features are two

of the more important indicators of the neurotic constitution according to Slater (1943). This indication of a greater degree of neurotic constitution may also possibly be related to the higher proportion of cases with an illness of over

TABLE I.

	Lepto- morph (60).	Meso- morph (263).	Eury- morph (77).	Standard of significance.
1. <i>Age:</i>				
16-20	12.2	17.5	20.2	..
21-25	61.1	51.2	45.9	..
26-30	10.7	19.6	24.3	..
31-40	7.7	9.8	8.1	..
41-	2.2	1.7	1.3	..
2. <i>Hysteria versus Dysthymia:</i>				
Hysterical personality	14.4	23.9	20.2	..
Very marked hysterical traits	2	5	8	+
Hysterical, motor and sensory con- version symptoms	12	14	23	+
Headache	61	69	69	..
Anxiety, moderate and severe	71	55	49	+++
Depression, moderate and severe	52	41	33	++
Irritability	54	44	37	++
Diagnosis: Anxiety state, acute, severe	14	10	8	..
Diagnosis: Anxiety state (all types)	60	59	51.3	..
3. <i>Personality:</i>				
Marked schizoid personality	6.7	7	2.7	..
Very touchy and suspicious	7	6	1.5	..
Weak, dependent	89	55	46	+++
Narrow interests	63	52	54	+
Inert, apathetic	15	6	9	..
Markedly cyclothymic	2.2	7	8.1	..
Hypochondriasis	37	27	25	+
4. <i>Autonomic Dysfunction:</i>				
Autonomic symptoms (palpita- tions, sweating, etc.)	49	44	40	..
Effort intolerance	65	62	55	..
5. <i>Miscellaneous:</i>				
Duration of illness more than 1 year	40	45	27	..
Positive family history of marked neurosis	30	33	21	..
Childhood neurotic symptoms	48	43	42	..
Backward in elementary school	5	6	13	..
Good past physical health	57.7	71.7	22.9	++
Vocabulary test above average	22	22	14	..
Matrices test above average	13	10	12	..

one year's duration in the leptomorph group. Eurymorphs show a higher incidence of patients with poor scholastic record, i.e., did not pass Standard V in elementary school. It is interesting to note that Eysenck (1944) finds that this is correlated with hysteria. It will also be seen that eurymorphs have a lower incidence of patients who are above average in vocabulary score, whereas on the matrices test, which is non-verbal, there is practically no difference. In this connection it is noteworthy that Eysenck, Himmelweit and Rees (1947) have shown that the vocabulary level of the hysteric is significantly worse than the dysthymic of similar intelligence level.

An interesting finding is that both eurymorphs and leptomorphs, particularly the former, have a poorer past history of physical health than the mesomorphs. This confirms Pearl's (1933) finding that individuals of intermediate physique had a lower incidence of physical ill-health than the extreme types.

DISCUSSION AND CONCLUSIONS.

The results of our investigation on the relationship between female body build as measured by a new index and psychological features conform to the same pattern as those found in the study of male neurotics (Rees and Eysenck, 1945), although the differences between the extreme types in women are not as marked. The correspondence of the results in adult groups of each sex with those of Sanford (1943) in children is striking. The association of eurymorphic body build in adult groups of both sexes with hysterical symptoms and traits and leptomorphic body build with dysthymic traits and symptoms conforms with Janet's dichotomy of neuroses into hysteria and psychasthenia.

The association of eurymorphs with extraverted and cyclothymic tendencies and leptomorphs with introverted or schizothymic tendencies lends support to Kretschmer's theory of an affinity between body build and personality type. The higher incidence of symptoms of autonomic dysfunction in leptomorphs corresponds to the results of a study of physique and effort syndrome by the author (Rees, 1945) in which it was found that, as a group effort, syndrome patients were more leptomorphic than normal controls, and the leptomorphic patients tended to have a life-long history of symptoms of autonomic dysfunction in contrast to the eurymorphic effort syndrome patients, in whom exogenous rather than constitutional factors were found to be important. The dichotomy in body build therefore tends to correlate with a dichotomy of temperament, neurosis and psychosis as shown in Table II.

TABLE II.

Body type.	Leptomorph.	Eurymorph.
Autonomic activity.	Autonomic imbalance.	Autonomic balance.
Personality.	Introverted, schizothymic.	Extroverted, cyclothymic.
Neurosis.	Dysthymia (anxiety and depression).	Hysteria.
Psychosis.	Schizophrenia.	Manic-depressive psychosis.

While the table serves to display clearly the trends of association between body build, personality and mental disorder, it must be realized that it makes absolute what are, in fact, tendencies.

In conclusion we may say that the relationship between body build, personality and neurosis in women as shown by the results of our study conforms with the results obtained in a study of body build, personality and neurosis in a group of 400 soldiers (Rees and Eysenck, 1945), and with the results obtained by Stanford (1943) at Harvard on normal children. This consistency in the trend of association between body build and psychological traits in adults of each sex and in children suggests that the relationship is fundamental.

The findings provide further evidence of complex relationships between body build and psychological attributes, but the correlations are too slight for use clinically for diagnosis, prognosis or selection, and that, while body build and other physical attributes may provide clues to mental qualities, their detection and measurement will not serve as a short cut to replace the more direct methods of elucidating personality or mental disorder.

SUMMARY.

1. The paper describes investigation into the association between body build, personality and neurosis in a group of 400 service women neurosis patients. Body build is assessed by a new index consisting of a regression equation of four measurements derived from factorial analysis. Items relating to personality, symptomatology and mental status were recorded independently.

2. The group was divided by means of the new body-build index into Leptomorphs, Mesomorphs, Eurymorphs, and the distribution of psychological traits determined for each group and the significance of differences tested statistically.

3. Eurymorphs were found to be associated with hysterical traits and symptoms, whereas leptomorphs tended to be associated with dysthymic traits and symptoms (anxiety and depressive states).

4. Eurymorphs were found to be associated with extraversion and cyclothymic tendencies and leptomorphs tended to introversion and schizothymic tendencies, thus lending some support to Kretschmer's theory of a relationship between body build and personality.

5. Leptomorphs have a higher incidence of signs and symptoms of autonomic dysfunction than eurymorphs.

6. The findings conform to the results of a similar study in adult male neurotics and with those of a study of normal children at Harvard. It is stressed that the correlation between physique and its psychological correlates is too small for clinical use in diagnosis or prognosis. The results provide further evidence of complex relationships between body build, personality and mental disorder.

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