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Relationship Between Body Build and Mental Illness

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SUMMARY A study to test the relationship between body build and mental illness, conducted in Royal Park Psychiatric Hospital, Melbourne, is described. The Rees-Eysenck body index (REBI) and androgyny score (AGS) were determined for 225 male patients and 24 normals. As age increases, there is a decreasing trend in the scores for these two indices. There were no significant differences between the various diagnostic groups and the normal group for the AGS. But the difference between the non-paranoid schizophrenic group and paranoid schizophrenic group in REBI was significant.

Introduction

The relation between body build and temperament has been widely proclaimed from early days of medicine, but the scientific study of the relation between physical constitution, temperament and mental illness was first initiated by Kretschmer (1936) and followed by Sheldon *et al* (1940), Rees and Eysenck (1945), Parnell (1958) and Tanner (1951). There have been several reports on the relationships between personality, body build and susceptibility to mental illness, and these have been discussed by Rees (1960). Eysenck (1947) found that leptomorphs tended to develop dysthymic symptoms and endomorphs hysterical symptoms. Moore and Hsu (1946) reported that non-paranoid schizophrenics were different from manic-depressive psychotics and from paranoid schizophrenics in being more leptomorphic. Polednak (1971) measured the body build of 36 male chronic in-patients and did not find any significant difference between paranoid and non-paranoid schizophrenic patients. Glueck and Glueck (1950) and Epps and Parnell (1952) reported that delinquents were more mesomorphic and less ectomorphic. Rees found that schizophrenic patients were more leptomorphic (Rees, 1960).

Betz (1942) reported that female schizophrenic patients were more leptomorphic. Paranoid schizophrenics, according to Conolly (1939), were more pyknic than other types of schizophrenic patients; and Langfeldt (1937) claimed that schizophrenic patients with leptomorphic body build tended to have an early age of onset and greater degree of withdrawal. Kallman (1953) suggested that schizophrenic patients with leptomorphic body build had a poor prognosis. Coppen (1959) reported a lower androgyny score in homosexuals and neurotic patients. Evans (1972) also reported a lower androgyny score in homosexuals. Verghese (1971) found that non-paranoid schizophrenic patients were leptomorphic compared with paranoid schizophrenic patients and that neurotic patients with dysthymic symptoms were more leptomorphic than those with hysterical symptoms.

Thus the literature suggests some relationship between the type of mental illness and body build. The purpose of this paper is to describe a study of the relationship between body build and mental illness in a sample of psychiatric patients in Melbourne.

Material and Method

All male patients admitted to Royal Park Psychiatric Hospital during a four-month period (May 1974 to August 1974) were selected for this study. The Rees-Eysenck body index (REBI) and the androgyny score (AGS) were determined for all these patients. The Rees-

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Eysenck body index was calculated using the formula REBI $= \frac{\text{Height} \times 100}{\text{Chest diameter} \times 6}$ (Rees and Eysenck, 1945). The height was taken barefooted. The chest diameter was taken by means of a pelvimeter at the 3rd intercostal space, midway between inspiration and expiration. The values of REBI were read off from a normogram (Hamilton, 1950). The AGS was calculated by using the formula:

$$\text{AGS} = 3 \times \text{biacromial} - 1 \times \text{biiliac.}$$

The biacromial measurement was made with a pelvimeter between the tips of the acromial processes when the subject was standing straight with arms relaxed by the side of the body. The biiliac measurement was made with a pelvimeter between the highest points of the iliae crest (Tanner, 1951).

The number of male patients admitted during the period of study was 298. Of these 73 could not be studied because they were discharged or transferred within three or four days of admission. Thus 225 patients were studied and of these 115 were diagnosed as schizophrenic (18 paranoid and 97 non-paranoid), 26 as having primary affective illness and the remaining 84 had other psychiatric disturbances, such as alcoholism, organic states, chronic neuroses, and personality disorders. A normal group of 24 men who belonged to the staff of the hospital were included for comparison. The age and ethnic origin of all the subjects were noted. The different groups were compared with regard to the above two indices.

Results

Table I shows the influences of age on REBI and AGS. As age increases there is a decreasing trend in the scores for these two indices of body build which is statistically significant in each case. Table II shows the influence of ethnic origin on REBI and AGS. There are no significant differences. Table III shows the mean values for REBI and AGS for the different diagnostic groups studied. There are no significant differences between the groups in AGS scores. The REBI scores show some group differences. The difference between the non-paranoid and the paranoid schizophrenic groups is significant ($P < 0.05$).

Table I

Influence of age on Rees-Eysenck body index (REBI) and androgyny score (AGS)

Age	No.	REBI Mean SD	AGS Mean SD
<20	9	108·1 ±6·9	87·8 ±5·1
20–29	77	103·8 ±7·5	87·9 ±5·1
30–39	61	101·6 ±7·0	87·1 ±4·8
50–59	32	100·7 ±7·5	85·2 ±5·3
>59	27	101·0 ±9·1	82·4 ±4·1
		(P <0·01)*	(P < 0·05)*

* Student's t test.

Table II

Influence of ethnic origin on Rees-Eysenck body index and androgyny score

	Age	No.	REBI Mean SD	AGS Mean SD
Anglo-Saxon	37·7±15·1	179	103·0±7·7	86·8±6·6
Other European**	38·3±11·9	70	99·5±7·1 NS*	86·0±4·0 NS*

* Student's t test.

** European-born patients who were not Anglo-Saxon, e.g. Greeks, Italians, etc, born in Continental Europe.

Although there is a difference between the affective disorder group and both the schizophrenic groups, these differences fail to reach statistical significance. When the influence of age is removed by analysis of covariance, similar relations persist, though the ranges of differences become smaller (Table IV).

Comments

The three variables which can influence these indices used in this study are age, nutrition (which again depends on socio-economic status) and ethnic origin. Socio-economic status could not be reliably determined in this investigation. Ethnic origin did not influence these indices. Age was a determining factor. As age increased, there was a tendency for both body build indices to become lower. When the influence of age was removed, there were significant differences between the paranoid and the non-paranoid

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TABLE III

Rees-Eysenck body index, androgyny score, by diagnosis

	No.	Age Mean SD	REBI Mean SD	AG score Mean SD
Nonparanoid schizo.	97	32·0 ± 11·4	103·0 ± 7·7	87·2 ± 5·5
Paranoid schizo.	18	44·8 ± 11·1	98·8 ± 6·9	87·3 ± 4·4
Affective disorder	26	47·4 ± 12·8	101·1 ± 7·5	85·5 ± 6·2
Others	84	44·5 ± 13·9	101·4 ± 7·5	86·1 ± 6·1
Normal	24	24·7 ± 8·2	104·0 ± 7·8	86·4 ± 6·7

Nonparanoid schizo. vs Paranoid schizo. ($P < 0·05$)* (REBI)

* Student's t test.

TABLE IV

Group differences in Rees-Eysenck body index after the influence of age is removed

	No.	Age Mean SD	REBI Mean SD
Nonparanoid schizo.	97	32·0 ± 11·4	102·5 ± 7·5
Paranoid schizo.	18	44·8 ± 11·1	99·3 ± 7·0
Affective disorder	26	47·4 ± 12·8	101·8 ± 7·9
Others	84	44·5 ± 13·9	101·9 ± 7·1
Normal	24	24·7 ± 8·2	103·0 ± 7·7

Nonparanoid schizo. vs Paranoid schizo. ($P < 0·05$)*

* Student's t test.

schizophrenic group in REBI scores. The former tended to be more pyknic than the latter. Though there were differences between the affective disorder group and the schizophrenic groups (the former more pyknic) these were not statistically significant. This finding is in agreement with other studies which suggest that there are differences in somatotype between paranoid and non-paranoid schizophrenic patients and also between affective disorder and schizophrenic groups of patients. This study suggests that there is a relationship between age and body build, and therefore this factor should be considered in studies on the relationship of body build and mental illness.

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