TWO PERSONALITY CHARACTERISTICS RELATED TO ACADEMIC ACHIEVEMENT

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Summary. Experimental studies suggest that capacity for sustained work depends largely on an individual's level of drive and rate of accumulation of inhibition. This work implies that good academic achievers should be characterized by high drive levels and a slow rate of accumulating inhibition. The Maudsley Personality Inventory measures these two personality dimensions and a comparison of the scores of university students with those of controls confirms both predictions.

I.—Introduction.

The theories of behaviour built up by experimentalists (e.g., Hull, 1952) have now reached a stage where there is broad agreement on certain general principles. At this point the findings of laboratory experimentation should be of considerable use to the various fields of applied psychology, and, in fact, considerable use of behaviour theory as an explanatory device has been made in the areas of personality development (e.g., Dollard and Miller, 1950 ; Sears, Maccoby and Levin, 1957), psychotherapy (Davis, 1957 ; Eysenck, 1957), and individual differences (Eysenck, 1957). As yet, however, and with one notable exception (Peel, 1956), rather little use of behaviour theory has been made in educational psychology. The present paper is concerned with two predictions from behaviour theory to the problem of individual personality differences in capacity for academic work.

It is clear that people differ considerably in their capacity for sustained and concentrated work and it seems likely that this personality characteristic contributes to good educational attainment, perhaps to a considerable degree. In behaviour theory terms, sustained work is largely dependent on two factors, namely, the strength of drive and the accumulation of inhibition as work proceeds. Individuals with a capacity for sustained work should, therefore, be characterised in the following way : (1) they should have high drives; (2) they should accumulate reactive inhibition slowly with continuous work. Some of the recent studies of Eysenck (e.g., 1957) simplify the testing of these predictions. In this work, Eysenck has identified his personality dimension of neuroticism with autonomic drive, and that of extraversion with the fast accumulation and slow dissipation of reactive inhibition. There is now a considerable amount of experimental evidence supporting this theory, for which the reader is referred to the original reports (e.g., Eysenck, 1957). If Eysenck's theory is accepted, the predictions about educational attainment can be stated as follows : good educational attainers should (1) score high on neuroticism ; (2) low on extraversion.

Several recent studies have produced evidence supporting this theory. The most extensive of these is that of Furneaux (1957), who has shown that students who do well at university score more highly on neuroticism and lower on extraversion. He also puts forward the interesting view that extraversion only begins to have a detrimental effect on educational attainment at the university level. His argument on this aspect of the question is as follows : if candidates who are accepted and rejected for university places are considered, their extraversion scores are very similar. However, since their educational attainment differs

(this being largely the basis of acceptance or rejection), it appears that at the level of university entrance extraversion is not related to educational attainment. Furneaux suggests that the explanation for this lies in the stricter supervision of school life in which the tendency of the extravert to dissipate his energies is held in check.

A corrobatory study of the introversion-extraversion finding has been reported by Broadbent (1958). Students graduating at Cambridge were divided into those obtaining good and poor degrees, and their level of extraversion assessed by means of the triple tester; this test showed that students who do well were significantly more introverted than those who do badly. This study also showed that the two groups of students did not differ in intelligence as assessed by the A.H.4 test and suggests, therefore, that introversion-extraversion acts independently of intelligence in affecting educational attainment.

Several studies have been made of the relation of educational attainment to anxiety, with rather conflicting results. The concept of anxiety is rather an unsatisfactory one, since although it is largely a measure of neuroticism (autonomic drive), it is also related to introversion. Hence, the theory would predict that high anxious subjects should do well in tasks where sustained work is required, although it is not certain how far this is due to neuroticism or introversion. Some evidence in support of this prediction has been presented elsewhere (Lynn, 1955).

The present paper reports findings extending the work of Furneaux and Broadbent. Essentially, these investigators have shown that good students differ from poor students in the expected directions of introversion and neuroticism. The theory should also predict that students as a whole should differ from other young people on these two dimensions.

II.—The Investigation.

Levels of neuroticism and extraversion were assessed in university students and controls by means of the Maudsley Personality Inventory (see Eysenck, 1956). University students were all in their first year at university; mean age of women=18·8, mean age of men=19·2. Controls used were (*a*) sixty-seven female occupational therapy students of the same age (mean age=18·5) and social background as the female university students but differing in academic motivation; (*b*) 100 male apprentices aged 16-19 years whose scores on neuroticism and extraversion were taken from a study by Field (1959). There

TABLE 1

	Norms	Apprentices	University Students
1. Men :			
Number	200	100	115
Neuroticism ..	17·8	21·2	25·5
Extraversion ..	24·6	29·3	22·4
	Norms	O.Ts.	Students
1. Women :			
Number	200	67	96
Neuroticism ..	19·4	23·8	28·2
Extraversion ..	25·2	28·5	22·9

may have been some group difference in intelligence, but since there is virtually no correlation between the two personality dimensions and intelligence, this difference is probably of little significance. However, the possibility of intelligence affecting extraversion and neuroticism scores deserves further scrutiny. The norms of the questionnaire are also used as a control, although these are probably less satisfactory because there may be some tendency for different age groups to score differently.

The results are presented in Table 1. All the differences are in the predicted directions and are significant at the ·05 level, as tested by the calculation of the standard errors of the differences between the means..

III.—Discussion.

The results support the two predictions at a significant level and extend the findings of Furneaux and Broadbent. Moreover, they show that extraversion has wider detrimental effects on educational attainment than Furneaux concludes on the basis of his work and that these effects manifest themselves below the level of university extrance. This conclusion follows from the quite large differences in extraversion between the university students and the occupational therapists and apprentices. Since university entrance is obtained largely on performance in 'A' level, the results suggest that educational attainment at school is substantially affected by the introversion-extraversion dimension. Furneaux's findings of the small difference between accepted and rejected candidates is probably due to the fact that the rejected candidates must have been quite good attainers to be candidates for university entrance at all; further, the small difference he did obtain was in the expected direction, i.e., rejected candidates were more extraverted.

The finding that university students score significantly more highly on neuroticism than normal groups is perhaps surprising in view of Terman's (1925) widely accepted finding that highly talented young Americans are better adjusted than the normal population. There are now a large number of studies on this subject and the results are conflicting, so that it is becoming increasingly evident that the findings obtained depend on the measuring instrument used for assessing 'neuroticism' or 'maladjustment.' The present finding adds weight to the studies already existing which suggest that Terman's findings cannot be generalised too widely.

The findings suggest a further prediction concerning sex differences in personality and attainment. The present results confirm the common finding that women score more highly on tests of neuroticism and anxiety (e.g., Terman and Tyler, 1954). Hence, it seems likely that if intelligence and extraversion are held constant, women should, by virtue of their higher level of neuroticism, be better academic attainers than men. As far as university students are concerned, this is perhaps not an easy prediction to test. For example, the fact that at Oxford women obtain a higher proportion of first class degrees than men is doubtless due in part to greater selectivity of intake. However, a large number of studies have shown that at the age of eleven girls are significantly better attainers than boys (e.g., Yates and Pidgeon, 1957). This could be explained in terms of their higher drive level.

It may be thought that the positive association of academic attainment with neuroticism presents a curious contrast with the results of laboratory experiments, in which it is generally found that high drive levels impair the learning of complex tasks. It seems that neuroticism has two different effects on attainment, a disorganising one on learning and performance in stress

situations but a facilitating one in so far as it motivates sustained work. Further, at the educational levels of the university and school sixth form, its disorganising effects seem to be more than compensated for by its motivating powers. How far this is true at earlier educational levels seems to be a question well worth investigation.

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