

"PRIMARY" AND "SECONDARY" SUGGESTIBILITY¹

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THE question of whether "suggestibility" can be considered to be a general trait, more or less predictive of an individual's behavior in a variety of situations, was raised fairly early in the course of experimentation in the field. While some early workers (1, 2, 8) concluded that suggestibility did possess general properties, the characterization was challenged from the very first by a substantial number of their contemporaries (3, 4, 9, 10, 11). Subsequent investigation led, in the great majority of studies, to essentially negative results, the general empirical finding being very small positive intercorrelations of negligible predictive significance between the performances of the same individual on various tests of suggestibility. Consequently, the consensus of recent opinion among researchers has been that no general factor of suggestibility exists. Concurrently, in recent decades the utilization of the concept of suggestibility as an explanatory principle in psychopathology and social psychology has declined markedly.

Despite the negative evidence of the work of the past 25 years, interest in the possibility of a general suggestibility factor (or factors) has been renewed by a recent paper of Eysenck and Furneaux (7), reporting a study on 60 psychoneurotic male Army patients of average intelligence. They present findings purporting to demonstrate the existence of two factors of suggestibility, designated as "primary" (ideomotor) and "secondary" (indirection or gullibility). Examination of their data suggests substantial support for the idea of a "primary" suggestibility factor. The average intercorrelation of the six tests (Hypnotizability, Posthypnotic Suggestibility, Chevreul Pendulum, Body Sway, Hand Press, Hand Release) purporting to measure this type of suggestibility was $+ .50$. The factor saturations of the individual tests varied from $.38$ to $.92$, with the factor of "primary" suggestibility accounting for 55

per cent of the variance in performance. However, from examination of the data, the idea of a "secondary" suggestibility factor seems less tenable. The average intercorrelation of the six tests (Picture Report, Inkblot Suggestion, Odor Suggestion, two types of Progressive Weights Suggestion, Heat Illusion) purporting to measure this type of suggestibility was only $+ .15$. The factor saturations of the individual tests varied from $.06$ to $.71$, with the factor of "secondary" suggestibility accounting for only 20 per cent of the variance in performance.

The present study represents an attempt to verify the findings of Eysenck and Furneaux on a normal population with regard to this factorization of performance into two types of suggestibility. Of the nine tests employed in the present study, seven are essentially equivalent to those utilized by Eysenck and Furneaux. The other two tests are similar in principle to certain tests in the Eysenck-Furneaux study, the substitution having been made because of our unsatisfactory experience with the original tests.

METHOD

The 50 Ss (25 men, 25 women) in the experiment were undergraduate students enrolled in the introductory course in psychology at the University. Range of ages was 18 to 29 years, median age being 20 years. By way of introducing S to the session, E stated that he had a number of sensorimotor tests which he would like S to take. The junior author ran all the experiments.

The tests (in the order in which they were given) were as follows:

Picture Report (introduced as a "memory test"). Two Stanford-Binet pictures (Dutch home, river scene) were shown successively for 30 seconds each. The S was then asked 12 "leading" questions concerning details in each of the pictures. Four questions in each set of 12 made reference to supposed details which were not actually in the picture. Thus, there were eight "suggestive" questions included in the total of 24 questions. "Suggestibility" score was the number of suggestions accepted by S in response to these eight "suggestive" questions. Thus, range of scores was 0 to 8. The test was patterned after the single "picture report" test of Eysenck and Furneaux, the modification into a two-

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picture test being made in order to secure a wider effective range of scores and greater reliability. The estimate of reliability, using the split-half correlation coefficient corrected for coarseness of grouping and full length of test, was found to be .75.

Inkblot Test (introduced as a comparison of *S*'s imagination with that of other people). Rorschach cards I, II, III, and VIII were shown successively and five interpretations offered by *E* for each blot. Three suggested interpretations were "populars" (Hertz's norms) while the other two suggested interpretations were of a type that would be rarely given and of poor quality (i.e., O-interpretations). Thus, there were eight "suggestive" interpretations included in the total of 20 interpretations which were offered. "Suggestibility" score was the number of suggestions accepted by *S* in response to these eight "suggestive" interpretations. Thus, range of scores was 0 to 8. The test was patterned after the single "ink-blot suggestion" test of Eysenck and Furneaux, the modification into a four-inkblot test being made in order to secure a wider effective range of scores and greater reliability. The estimate of reliability, using the split-half correlation coefficient corrected for coarseness of grouping and full length of test, was found to be .60.

Progressive Weights, Impersonal (introduced as a weight-discrimination test). "Here are 12 blocks before you. The blocks all differ in weight. You are to compare block 1 with block 2, 2 with 3, 3 with 4, and so on, and you are to say each time whether the second block of each pair feels heavier, or lighter, or feels just the same as the first. In order that your vision may not interfere with the experiment you will close your eyes." The weights of the boxes (which were identical in appearance) were: Box 1, 20 gm.; Box 2, 40 gm.; Box 3, 60 gm.; Box 4, 80 gm.; Boxes 5-12, 100 gm. The score was the number of weights called "heavier" minus the number of weights called "lighter" in the comparison of the 100-g. weights (Boxes 5-12). Thus, range of scores was -7 to 7.

Progressive Weights, Personal. Performance on this test was scored by summing the number of times the boxes of identical weight were called "heavier" or "lighter." Thus, range of scores was 0 to 7. The estimate of reliability, using the split-half correlation coefficient corrected for coarseness of grouping and full length of test, was found to be .35.

Vibration Suggestion (introduced as a "sensitivity" test). The "Biothesiometer" (Bio-Medical Instrument Co.), an electrically activated vibrator for determining thresholds for vibratory sensitivity, was applied to the volar surface of *S*'s forearm, threshold values being established in terms of readings on the voltmeter which is part of the instrument. Four determinations of the threshold were made by gradually increasing strength of the current until *S* indicated that he felt the vibration by calling out the reading on the voltmeter. At this point, without *S*'s knowledge, the vibrator was disconnected by opening a knife switch which permitted the current to flow directly through the volt-

meter. Four more trials were then given. As the pointer approached *S*'s previously established threshold, *E* would say, "Be on the lookout, you should feel it any time now." If *S* failed to report a vibratory sensation during any "suggestive" trial, *E* would indicate that there had better be a rest period. After the rest period, the trials were resumed. Score was the number of times *S* reported a vibratory sensation in the four "suggestive" trials. Thus, range of scores was 0 to 4. The estimate of reliability, using the split-half correlation coefficient corrected for coarseness of grouping and full length of test, was found to be .85. This test was substituted for the "heat illusion" test of Eysenck and Furneaux.

Body Sway. In order to insure constancy in stimulus conditions, the verbal suggestion that the blindfolded *S* is falling forward was made through a phonograph recording of the voice of the junior author of 2 min., 10 sec. duration. This was preceded by a control period of observation which was also 2 min., 10 sec. in duration. *S*'s behavior was evaluated in two ways: (A) The maximum forward or backward sway (whichever was larger), with no correction for sway in the control period. Complete falls were arbitrarily scored as 12 inches. Thus, possible range of scores was 0 to 12 inches. (B) The maximum amount of sway induced in both directions minus the maximum amount of sway induced in both directions in control period. Complete falls were arbitrarily scored as 12 inches and possible range of scores was 0 to 12 inches. Method A is then a measure of positive or negative responsiveness to suggestion, while Method B is a measure of total responsiveness, both positive and negative.

Arm Movement (introduced as a motor steadiness test). The blindfolded *S* rested his arm on a wooden board mounted on two wheels which ran with minimal friction along a strip of glass. He was instructed to try to keep his arm as steady as possible, and measurements of excursions of the arms during a control period of 1 min., 45 sec. were taken. Then, by means of a phonograph recording of the junior author's voice, the suggestion that *S* was pulling his arm was given for a period of 1 min., 45 sec. Performance was scored in two ways: Method A, the maximum amount of "pulling" or "pushing" (whichever was larger) with no correction for movement during control period; and Method B, the maximum amount of "pulling" and "pushing" minus amount of "pulling" and "pushing" in control period.

Press and Release. Patterned after the tests of Eysenck and Furneaux, these tests measured the effect of verbal suggestion that the *S* is either grasping more firmly, or is releasing his hold, on a rubber ball. Pressure was measured by connecting the ball through rubber tubing to a column of liquid. With *S* having been given the instruction to maintain the pressure of his grasp as constant as possible, a control period of observation (1 min., 45 sec.) was followed by a period of equal length during which phonographically recorded verbal suggestions by the junior author were given that

TABLE 1
MEANS AND DISTRIBUTIONS OF SCORES ON THE SUGGESTIBILITY TESTS

TEST	MEAN	SD	RANGE	TYPE OF DISTRIBUTION
Body Sway (A)	1.7	1.22	.6-7	J-shaped, positively skewed
Arm Movement (A)	.3	.18	0-.8	Marked positive skewness
Press (A)	10.2	4.15	2-21	Unimodal, nearly symmetric
Release (A)	20.5	8.57	3-39	Negative skewness
Body Sway (B)	1.0	1.27	0-6.8	J-shaped, positively skewed
Arm Movement (B)	.2	.16	0-.7	Marked positive skewness
Press (B)	3.6	3.24	0-17	Probably bimodal
Release (B)	4.4	6.23	0-30	J-shaped, positively skewed
Picture Report	4.8	1.95	1-8	Positively skewed
Inkblot	2.4	1.64	0-8	J-shaped, positively skewed
Progressive Weights, Impersonal	1.4	2.24	-3-7	Nearly symmetric
Progressive Weights, Personal	5.2	1.34	2-7	Platykurtic
Vibration	2.0	1.47	0-4	Rectangular
Static Ataxia	1.2	.64	.5-3.9	Positively skewed

S is: ("Press") tightening his grasp of the ball, or ("Release") releasing his grasp of the ball. Each test was scored in two ways: (A) the maximum amount of "press" or "release" (whichever was larger) with no correction for movements during the control period, and (B) the maximum amount of "press" and "release" minus amount of "press" and "release" during the control period.

Static Ataxia was measured by the total amount (maximum forward plus maximum backward) of sway during the control period of 2 min., 10 sec. which preceded the *Body Sway* suggestion test.

RESULTS

Distribution of Scores

The means and distributions for the nine tests of suggestibility and for Static Ataxia are given in Table 1. Mean *Body Sway* in our Ss was 1.7 inches, which is far smaller than the mean sway (6.5 inches) of the neurotic Ss in the Eysenck-Furneaux study. However, Eysenck's data (6, p. 184) on 120 normal Ss indicate a mean sway of about 1.1 inches, which is comparable to the mean for normal Ss obtained in the present study. Moreover, Eysenck's more extensive data on neurotic patients suggest that the group of 60 patients in the Eysenck-Furneaux study

were somewhat atypical even for neurotics. He found the mean sway of 900 neurotic males to be 4.18 inches. Further, Eysenck found that amount of body sway was directly related to the degree of neuroticism, with values ranging from a mean sway of 2.53 for the "slightly" neurotic to 5.55 inches for the "most severely" neurotic. Here it may be noted that the mean sway of even the "most severely" neurotic did not equal the mean sway of the 60 Ss in the Eysenck-Furneaux study.

Press and *Release* show good dispersions of scores, with distribution types similar to those of Eysenck and Furneaux. Our new test of Arm Movement was less successful, showing a very low mean and marked positive skewness in the distribution of scores. All the tests of secondary suggestibility showed good dispersions of scores.

"Primary" Suggestibility

The tetrachoric intercorrelations of the four tests of "primary" suggestibility, as scored by Method A, are presented in Table 2. It is evident both from general inspection and

TABLE 2
TETRACHORIC COEFFICIENTS OF CORRELATION BETWEEN THE SCORES ON THE FOUR TESTS OF "PRIMARY" SUGGESTIBILITY AS SCORED BY METHOD "A"

TEST	BODY SWAY	ARM MOVEMENT	PRESS	RELEASE
Body Sway		-.19	.20	-.05
Arm Movement			.20	-.18
Press				-.42

TABLE 3

TETRACHORIC COEFFICIENTS OF CORRELATION BETWEEN SCORES ON THE FOUR TESTS OF "PRIMARY" SUGGESTIBILITY AS SCORED BY METHOD "B"

TEST	BODY SWAY	ARM MOVEMENT	PRESS	RELEASE
Body Sway		-.25	-.13	.31
Arm Movement			-.07	-.13
Press				.13

from the average intercorrelation (-.07) that the findings provide no evidence for the existence of a factor of "primary" suggestibility.

In Table 3 are presented the intercorrelations of the four tests of "primary" suggestibility, as scored by Method B (total responsiveness in both directions minus total responsiveness in both directions in the control period). Again it is evident (average intercorrelation = -.02) that our observations do not support the hypothesis of a unitary factor.

"Secondary" Suggestibility

The tetrachoric intercorrelations of the five tests of "secondary" suggestibility are presented in Table 4. Again it is clear that there are no indications (average intercorrelation = +.06) that a common factor can be extracted from the table of relationships.

Static Ataxia

The obtained mean sway of 1.2 inches accords well with Eysenck's (6, p. 276) findings for 120 normal Ss (mean sway about .8 inches). There was no significant correlation ($r = -.19$) between static ataxia and body sway as measured by Method A, which confirms Eysenck's experience (6, p. 277) with normal Ss.

DISCUSSION

The negative results of the present study are in general accord with the literature of the past two decades and warrant detailed discussion only in relation to the positive findings of the Eysenck-Furueaux study. As has been indicated, Eysenck and Furueaux present no impressive evidence for the existence of a factor of "secondary" suggestibility. In a previous paper (5), Eysenck has reported that the reliabilities of these tests purporting to measure "secondary" suggestibility are low, one of them (Progressive Weights, Impersonal) being found on one sample to be about .10. It is evident that a general factor of any significance can be derived from a group of tests with reliabilities "usually ranging between .30 and .50" only if the intercorrelations are relatively high, i.e., approaching the reliabilities of the tests themselves. The inference of Eysenck and Furueaux that *if* the tests were more reliable, the "secondary" suggestibility factor might be shown to be more important can hardly be accepted in the absence of empirical demonstration. Negative empirical evidence of a limited degree is provided by the failure in the present study to find a "secondary" suggestibility factor with tests, a number of which possessed somewhat higher reliabilities than the corresponding Eysenck-Furueaux tests.

TABLE 4

TETRACHORIC COEFFICIENTS OF CORRELATION BETWEEN SCORES ON THE FIVE TESTS OF "SECONDARY" SUGGESTIBILITY

TEST	PICTURE REPORT	INKBLOT	VIBRATION	WEIGHTS, PERSONAL	WEIGHTS, IMPERSONAL
Picture Report		.09	.11	-.28	-.20
Inkblot			.28	-.11	.24
Vibration				.41	-.14
Weights, Personal					.24

TABLE 5

CHARACTERISTICS OF SAMPLES IN EYSENCK-FURNEAUX AND BENTON-BANDURA STUDIES

VARIABLE	EYSENCK-FURNEAUX	BENTON-BANDURA
Psychiatric status	Psychoneurotic	"Normal" (unselected)
Sex	60 males	25 males, 25 females
Age	Not stated: probably higher median and wider range than in B-B study.	Median, 20 yrs. Range, 18-29 yrs.
Intelligence	IQ, 90-110	Not exactly determined: probably all Ss had IQ's of 110 or higher.

Turning to the question of a "primary" suggestibility factor, it is clear that our results are in contradiction to those of Eysenck and Furneaux and that they confirm the findings of previous investigators who have reported that body sway shows little, if any, relationship to other measures of "ideomotor" suggestibility. Possible reasons for this discrepancy in findings may be considered. First, the slight modifications and the substitutions which we made in the tests utilized may be responsible. A second factor which should be kept in mind is that our investigation was done in the frankly experimental milieu of a university psychological laboratory while the Eysenck-Furneaux study was done in a clinical setting. The effect of this difference in milieu on strength and consistency of responsiveness to suggestion is an open question, but we are inclined to believe that the status of a medical patient in a hospital setting would favor both greater and more consistent responsiveness. Finally, there is the fact that the experimental samples differed in respect to several variables, which are listed in Table 5.

It may be that one or more of these factors play a role in determining the degree of generality of the trait of "primary" suggestibility. In any event, the available evidence indicates

that the conclusions of Eysenck and Furneaux do not apply to a group of normal young adults of superior intelligence whose performances were investigated in a frankly experimental setting.

REFERENCES

1. AVELING, F., & HARGREAVES, H. L. Suggestibility with and without prestige in children. *Brit. J. Psychol.*, 1921, 12, 53-75.
2. BINET, A. *La suggestibilité*. Paris: Schleicher, 1900.
3. BROWN, W. Individual and sex differences in suggestibility. *Univer. Calif. Publ. Psychol.*, 1916, 2, 291-430.
4. CHOJECKI, A. Contribution à l'étude de la suggestibilité. *Arch. Psychol., Genève*, 1911, 11, 182-186.
5. EYSENCK, H. J. Suggestibility and hysteria. *J. Neurol. Psychiat.*, 1943, 6, 22-31.
6. EYSENCK, H. J. *Dimensions of personality*. London: Kegan Paul, 1947.
7. EYSENCK, H. J., & FURNEAUX, W. D. Primary and secondary suggestibility: an experimental and statistical study. *J. exp. Psychol.*, 1945, 35, 485-503.
8. PEARCE, H. J. Experimental observations upon normal motor suggestibility. *Psychol. Rev.*, 1902, 9, 329-356.
9. SCOTT, W. D. Personal differences in suggestibility. *Psychol. Rev.*, 1910, 17, 147-154.
10. TOWN, C. H. An experimental study of the suggestibility of twelve- and fifteen-year-old boys. *Psychol. Clin.*, 1916, 10, 1-12.
11. WHIPPLE, G. M. *Manual of mental and physical tests*. Vol. II. *Complex processes*. Baltimore: Warwick and York, 1915.

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