

# The questionnaire measurement of psychoticism<sup>1</sup>

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**SYNOPSIS** A study is reported of a random sample of 170 normal men and 192 normal women who were given a 110-item questionnaire incorporating items intended to measure personality variables P (psychoticism), N (neuroticism), E (extraversion), and L (a lie and dissimulation scale). Factor analysis of the intercorrelations between items disclosed a clear-cut psychoticism factor, relatively independent of the others. The rationale and the psychiatric importance of this factor are discussed.

In its descriptive aspects, psychiatry has always clung to a categorical diagnostic system which is not in good accord with established facts; as Eysenck (1970a) has pointed out, some form of dimensional system would seem to fit these facts much better. Some of the dimensions involved, and established with some degree of experimental rigour, are Neuroticism (N), Extraversion-introversion (E), and Psychoticism (P) (Eysenck, 1952b). It is implied that psychiatric patients are not qualitatively differentiated from each other (in line with diagnostic categories as customarily used), or from 'normal' members of the population, but occupy a common n-dimensional space created by the various dimensions already isolated, or discovered in the future. Such a model would account for the well-known lack of reliability in psychiatric diagnosis (Eysenck, 1968a), and would go a long way to overcome the difficulties associated with the preservation of a 'medical model' enumerated by Szasz (1961). Special statistical methods—for example, criterion analysis (Eysenck, 1950)—have been used to establish this continuity principle, and more orthodox methods (factor analysis, discriminant function analysis) have been used in separating out the required number of dimensions needed to account for the observed experimental data (Eysenck, 1960). The major dimensions of personality, so isolated, have been shown to have a strong genetic component (Eysenck, 1968b), and neurophysiological theories regarding their causal antecedents have been put forward, and

supported by psychological and physiological laboratory studies (Eysenck, 1967).

Of particular interest here is the study of psychoticism as a personality variable; the continuity of normal and psychotic personality was experimentally established by means of criterion analysis (Eysenck, 1952a), and the independence of P and N a little later (Eysenck, 1954; Cattell and Scheier, 1961). These studies suggested that it might be possible to discover and measure by means of questionnaire methods a P factor which would have the properties of (1) differentiating between psychotic and neurotic subjects, (2) differentiating between psychotic and normal subjects, (3) being independent of N and E, and (4) having sufficient reliability to be useful for experimental purposes. It was hoped that such a questionnaire would make it possible to isolate high P scorers in the normal population, as opposed to low P scorers, and to compare these two groups with respect to experimental procedures considered relevant to theories of psychosis. Several papers have been published recording the selection of items, the factorial analyses of responses, and the reliabilities of the resulting scales (Eysenck and Eysenck, 1968a, 1969a); similar studies have been carried out with a special children's questionnaire (Eysenck and Eysenck, 1969b, 1971a, b). Early versions of the P scale have suffered from low reliabilities, and from lack of independence from other personality variables; constant revision of items has enabled us to obtain a better understanding of this personality dimension, and the present version of the scale is decidedly more satisfactory

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in these respects than are the former ones. This paper is not concerned with the questionnaire differentiation between normals and neurotics, on the one hand, and psychotics, on the other, nor with the interesting observation that criminals tend to have very elevated P scores (Eysenck, 1970b); data bearing on these issues will be published on another occasion. Similarly, the genetic determination of P has already been discussed elsewhere (Eysenck, 1971). Our concern is purely with the measurement of the P factor, and its nature as it emerges from the statistical analyses carried out.

#### EXPERIMENTAL STUDY

The subjects of the study here reported were 170 normal males and 192 normal females, constituting a reasonably random sample of the population as far as age and social class and education are concerned. Subjects were approached by a commercial market research

organization according to precise random sampling specifications, and tested by us as part of a group testing procedure instituted by the organizers for commercial purposes unrelated to our own. It would not be possible to claim that this group was, in fact, a precise random sample in any rigorous sense of the term; all that can be said is that it probably resembled such a random sample much more closely than is usual in studies of this type.

The subjects were administered a 110-item questionnaire incorporating four types of items, believed on the basis of prior work and theoretical analysis to measure four different dimensions of personality. These four types of item consisted of N items, E items, P items, and in addition L (Lie Scale) items forming a scale for the detection of dissimulation; Michaelis and Eysenck (1971) have shown that this scale, in addition to measuring dissimulation, may also be regarded as a personality scale for certain purposes, and under certain conditions. The items in the questionnaire

TABLE I  
FACTOR LOADINGS OF 20 ITEMS DEFINING THE NEUROTICISM FACTOR

	Males				Females			
	N	E	P	L	N	E	P	L
1. Does your mood often go up and down?	0.41	0.12	0.05	-0.21	0.47	0.15	-0.00	-0.04
2. Do you ever feel 'just miserable' for no good reason?	0.51	-0.02	0.03	-0.14	0.41	-0.02	-0.03	-0.08
3. Do you often worry about things you should not have done or said?	0.48	-0.03	-0.09	-0.03	0.49	-0.08	-0.16	0.06
4. Are your feelings rather easily hurt?	0.56	-0.11	-0.13	0.12	0.39	-0.01	-0.00	-0.08
5. Are you an irritable person?	0.33	-0.21	0.02	-0.16	0.33	-0.04	0.09	-0.36
6. Are you often troubled about feelings of guilt?	0.57	0.19	-0.18	0.06	0.52	-0.04	-0.19	-0.12
7. Would you call yourself tense or highly strung?	0.56	0.07	-0.02	0.20	0.48	0.07	0.05	0.10
8. Do you worry about awful things that might happen?	0.43	-0.04	-0.07	0.02	0.52	-0.01	-0.14	0.10
9. Would you call yourself a nervous person?	0.53	0.07	-0.02	0.12	0.57	-0.08	0.09	0.18
10. Do you worry about your health?	0.30	0.04	-0.01	-0.02	0.50	0.13	-0.08	0.26
11. Do you suffer from sleeplessness?	0.31	-0.10	0.09	0.00	0.47	0.04	0.08	0.14
12. Do you sometimes sulk?	0.41	-0.01	-0.15	-0.14	0.28	0.08	-0.02	-0.31
13. Do you often feel life is very dull?	0.54	-0.02	0.18	-0.10	0.45	-0.13	0.04	-0.03
14. Have you often felt listless or tired for no good reason?	0.50	-0.12	-0.07	-0.06	0.57	0.00	-0.03	-0.03
15. Do you often feel 'fed up'?	0.64	0.04	0.14	-0.06	0.62	-0.07	0.08	-0.02
16. Are you touchy about some things?	0.47	-0.05	-0.33	-0.01	0.23	0.11	-0.22	-0.12
17. Are you sometimes bubbling over with energy and sometimes very sluggish?	0.48	0.14	-0.14	-0.13	0.36	0.20	-0.02	-0.12
18. Do you worry too long after an embarrassing experience?	0.56	-0.07	-0.07	0.04	0.56	-0.15	-0.09	0.11
19. Do you suffer from 'nerves'?	0.56	0.00	0.15	0.05	0.67	-0.08	0.02	0.14
20. Are you easily hurt when people find fault with you or the work you do?	0.48	-0.10	-0.12	0.00	0.32	-0.15	-0.13	0.03

TABLE 2  
FACTOR LOADINGS OF 20 ITEMS DEFINING THE EXTRAVERSION FACTOR

	<i>Males</i>				<i>Females</i>			
	<i>N</i>	<i>E</i>	<i>P</i>	<i>L</i>	<i>N</i>	<i>E</i>	<i>P</i>	<i>L</i>
1. Are you a talkative person?	-0.11	0.60	0.11	-0.11	0.04	0.49	-0.06	0.10
2. Can you usually let yourself go and enjoy yourself a lot at a gay party?	0.05	0.56	0.03	-0.11	-0.03	0.48	-0.00	-0.13
3. Do you have many different hobbies?	-0.02	0.28	-0.13	0.15	0.05	0.22	0.21	0.21
4. Do you like going out a lot?	-0.00	0.45	0.01	0.05	0.02	0.45	-0.06	-0.08
5. Do you have many friends?	-0.08	0.48	-0.17	0.05	-0.05	0.46	-0.09	0.29
6. Do you hate being with a crowd who play harmless jokes on one another?	-0.08	-0.28	-0.03	0.00	0.12	-0.25	-0.04	0.11
7. Are you rather lively?	-0.06	0.67	0.01	0.06	-0.13	0.64	-0.07	0.10
8. Can you easily get some life into a rather dull party?	-0.04	0.59	0.03	0.13	0.08	0.55	0.17	0.26
9. Do you prefer reading to meeting people?	0.04	-0.37	0.16	0.21	0.10	-0.47	0.28	0.10
10. Are you mostly quiet when you are with other people?	0.18	-0.52	-0.05	0.20	0.12	-0.53	0.16	0.01
11. Do you like having long chats on the telephone?	0.24	0.47	-0.13	-0.04	0.13	0.41	-0.14	-0.06
12. Would you rather plan things than do things?	-0.04	-0.31	0.01	0.09	0.17	-0.19	0.26	0.16
13. Do you often take on more activities than you have time for?	0.22	0.30	0.04	-0.03	0.01	0.44	0.16	0.07
14. Do you like telling jokes and telling funny stories to your friends?	0.15	0.28	-0.21	-0.05	0.12	0.34	0.18	0.02
15. Do you like mixing with people?	-0.07	0.55	-0.23	0.01	0.01	0.57	-0.37	-0.07
16. Do you nearly always have a 'ready answer' when people talk to you?	-0.04	0.36	-0.01	0.14	-0.20	0.39	0.02	0.09
17. Would you call yourself happy-go-lucky?	-0.02	0.49	0.14	0.13	-0.26	0.50	0.01	0.20
18. Do you mind selling things or asking people for money for some good cause?	0.03	-0.38	0.00	0.13	-0.07	-0.29	0.02	0.05
19. Do you prefer to have few but special friends?	0.19	-0.39	-0.20	-0.06	0.02	-0.27	0.01	-0.00
20. Do you often do things on the spur of the moment?	0.24	0.27	-0.04	-0.08	0.17	0.44	-0.02	0.09

were intercorrelated (product-moment) for men and women separately, and principal component factor analysis carried out; four factors were extracted and rotated by Promax. These four factors constitute the substantive result of our work; if we have been successful they should (1) correspond in their make up to the hypothetical factors P, E, N, and L, and (2) should be orthogonal—that is, uncorrelated with each other. Promax rotation allows the factors to be correlated—that is, it does not (like Varimax) impose constraints on them which force them into orthogonality; consequently it is possible for the data to infirm our assumptions about orthogonality.

#### RESULTS

Results are presented in the form of four Tables, giving the loadings of the most highly loading 20 items for each factor. Loadings are given separately for men and women, and in each case loadings are given for all four factors, to demon-

strate not only that given items load highly on the factor they are supposed to measure but also fail to load on the other three factors. Table 1 gives the results for the N factor. All the items are identical with, or similar to, items which on previous occasions have shown high loadings on this factor, and with very occasional (probably chance) exceptions none of the items has high loadings on any of the other factors.

Table 2 lists the loadings of E items; again it will be seen that these are all familiar from previous analyses, and that there are only a few sizeable loadings on other factors.

Table 3 lists the loadings of the L items. These too fall into line very well; the Table incorporates a number of new items specially selected for this scale, and these agree very well with those used in previous studies.

Table 4 lists the P items. It will be seen that these fall into line very well; the majority are items used in previous analyses, but there are several new items which show good loadings on

P and low loadings on other factors. A discussion of the nature of the factor, as suggested by the items, will be given later on.

Reliabilities and means for the resulting scales are given in Table 5; the reliabilities were calculated by Kuder-Richardson formula 20. It will be seen that, for the men, reliabilities for the scales are satisfactory, and that P is not significantly lower than E or L. For the women, the reliabilities are much the same as for the men, except for P, which is significantly lower. The reason for this would seem to be bound up with the large differences in mean scores between the sexes; men have much larger P scores than do women, a finding which replicates earlier results. Consistently low scores within a group are not compatible with a reasonably high reliability, and hence it seems likely that this is the explanation

of the observed differences in reliability between the two samples. The other differences in mean scores between the sexes are also in the expected direction, and agree with previous findings (Eysenck and Eysenck, 1969a). Women score significantly higher on N and on L; men are somewhat (though not significantly) higher on E.

Table 6 lists intercorrelations between factors, and also between the 20-item scales. It will be seen that these are low throughout and mostly insignificant; a value of  $r$  of approximately 0.20 would be required for significance at the  $P < 0.01$  level. The only consistent relationship which appears is the negative correlation between L and N; this is sufficiently low to suggest the almost complete absence of dissimulation (Michaelis and Eysenck, 1971). Altogether these

TABLE 3  
FACTOR LOADINGS OF 20 ITEMS DEFINING THE LIE (DISSIMULATION) FACTOR

	Males				Females			
	N	E	P	L	N	E	P	L
1. Have you ever taken the credit for something you knew someone else had really done?	0.10	0.12	0.05	-0.35	0.11	0.05	-0.02	-0.28
2. Were you ever greedy by helping yourself to more than your share of anything?	0.02	-0.04	0.11	-0.35	0.15	0.10	-0.26	-0.30
3. If you say you will do something do you always keep your promise no matter how inconvenient it might be?	0.06	-0.14	-0.19	0.42	0.04	0.03	-0.26	0.39
4. Have you ever blamed anyone for doing something you knew was really your fault?	0.12	0.00	-0.04	0.53	0.08	-0.12	-0.08	-0.33
5. Are <i>all</i> your habits good and desirable ones?	0.08	0.16	0.19	0.35	0.06	-0.04	-0.03	0.35
6. Have you ever taken anything (even a pin or a button) that belonged to someone else?	-0.18	-0.15	-0.30	-0.45	-0.14	-0.04	0.07	-0.50
7. Do you sometimes talk about things you know nothing about?	-0.06	0.19	0.06	-0.45	0.25	0.32	-0.02	-0.26
8. Do you always say you are sorry when you have been rude?	0.14	-0.01	-0.23	0.50	0.11	0.08	0.09	0.39
9. Have you ever broken or lost something which belonged to someone else?	0.00	0.05	-0.12	-0.31	-0.13	0.12	0.07	-0.36
10. Do you sometimes boast a little?	0.17	0.12	-0.17	-0.33	-0.05	0.25	0.05	-0.30
11. Have you ever said anything bad or nasty about anyone?	0.06	-0.03	-0.18	-0.45	-0.09	-0.09	-0.18	-0.49
12. As a child were you ever cheeky to your parents?	0.09	0.02	0.02	-0.43	0.16	0.07	-0.25	-0.26
13. Do you always wash before a meal?	0.06	-0.04	-0.16	0.23	0.13	0.19	-0.06	0.42
14. Have you ever cheated at a game?	-0.05	0.17	-0.06	-0.30	0.06	0.12	0.08	-0.37
15. Have you ever taken advantage of someone?	0.11	0.16	0.07	-0.45	0.06	0.10	0.17	-0.62
16. Are you always polite even to unpleasant people?	0.14	0.09	-0.13	0.47	0.01	0.02	0.14	0.39
17. Have you ever insisted on having your own way?	0.07	-0.07	-0.09	-0.43	-0.01	0.11	-0.14	-0.34
18. Would you dodge paying taxes if you were sure you would never be found out?	-0.03	-0.10	-0.22	-0.48	-0.03	0.14	0.14	-0.20
19. Have you ever deliberately said something to hurt someone's feelings?	0.10	-0.18	0.13	-0.44	0.07	0.11	0.09	-0.49
20. Do you always practise what you preach?	-0.08	0.12	0.09	0.60	-0.04	0.07	0.13	0.36

TABLE 4  
FACTOR LOADINGS OF 20 ITEMS DEFINING THE PSYCHOTICISM FACTOR

	Males				Females			
	<i>N</i>	<i>E</i>	<i>P</i>	<i>L</i>	<i>N</i>	<i>E</i>	<i>P</i>	<i>L</i>
1. Do most things taste the same to you?	0.11	0.07	0.33	0.22	0.09	0.12	0.18	0.15
2. Would it upset you a lot to see a child or an animal suffer?	0.25	-0.10	-0.52	0.12	0.31	0.14	-0.12	0.04
3. Do you think that marriage is old-fashioned and should be done away with?	-0.08	-0.05	0.47	-0.05	0.01	-0.03	0.45	0.01
4. Do you love your mother?	0.08	0.21	-0.43	0.14	-0.17	0.14	0.04	0.01
5. Do you enjoy hurting people you love?	0.10	-0.10	0.48	-0.18	0.10	0.07	0.29	-0.12
6. Can you easily understand the way people feel when they tell you their troubles?	0.09	0.12	-0.31	0.23	0.12	0.16	-0.41	0.17
7. Would you like to think that other people are afraid of you?	0.08	0.05	0.42	-0.07	0.02	0.15	0.46	-0.11
8. Would you take drugs which may have strange or dangerous effects?	0.18	0.08	0.36	-0.16	0.14	0.22	0.26	-0.12
9. Do you enjoy practical jokes that can sometimes really hurt people?	0.00	0.17	0.24	-0.05	-0.18	0.03	0.26	-0.11
10. Is your mother a good person?	0.04	0.23	-0.58	0.08	-0.13	0.07	-0.03	0.23
11. Have you always been known as a loner?	0.18	-0.36	0.23	0.12	0.01	-0.30	0.40	0.10
12. Do your friendships break up easily without it being your fault?	0.20	-0.15	0.30	0.03	-0.11	-0.03	0.32	0.12
13. Would you feel very sorry for an animal caught in a trap?	0.17	-0.02	-0.42	0.07	0.25	0.18	-0.28	-0.05
14. Are you always specially careful with other people's things?	0.03	-0.02	-0.45	0.34	0.03	-0.24	-0.24	0.19
15. When you are in a crowd, do you worry about catching germs?	0.15	-0.06	0.25	0.17	0.20	0.07	0.30	0.14
16. Do you try not to be rude to people?	0.11	-0.09	-0.36	0.22	0.06	-0.16	-0.31	-0.06
17. Do you sometimes get cross?	0.16	0.03	-0.46	-0.28	0.15	0.04	-0.21	-0.12
18. Have you ever told a lie?	0.03	-0.02	-0.56	-0.20	-0.07	0.03	0.04	-0.21
19. Do good manners and cleanliness matter much to you?	0.06	-0.03	-0.37	0.40	0.14	0.02	-0.38	0.04
20. Did you mind filling in this questionnaire?	-0.11	0.04	0.32	-0.13	0.08	-0.09	0.18	-0.01

figures suggest that we have succeeded in our task of writing a set of items which would be reliable and orthogonal to existing factors.

The items defining the P factor suggest a descriptive picture of the underlying personality which may be worth spelling out in some detail. The high P scorer is cold, impersonal, hostile, lacking in empathy, unfriendly, untrustful, rude,

unmannered, unhelpful, unemotional, and lacking in human feeling. Many of these qualities are perhaps more characteristic of the male sex than of the female, and we have already commented on the close relationship between P score and sex. It is interesting that criminals have unusually high P scores, and of course it is well known that crime is closely linked with the male sex. It is also of interest that people with XYY chromosomes have unusually elevated P scores (Eysenck, 1971); this agrees well with the observed relationship between P and maleness. This finding suggests possible hormonal correlates of P which would be interesting to investigate.

#### DISCUSSION

The data presented suggest that the questionnaire measurement of a personality dimension which

TABLE 5

RELIABILITY, MEANS, AND STANDARD DEVIATIONS FOR 20-ITEM SCALES OF P, E, N, AND L FOR MEN AND WOMEN

	Reliabilities		Means and SDs	
	Men	Women	Men	Women
P	0.74	0.57	2.74 ± 2.72	1.57 ± 1.70
E	0.79	0.78	12.67 ± 4.12	12.43 ± 3.96
N	0.84	0.82	9.59 ± 4.71	12.31 ± 4.31
L	0.78	0.74	6.74 ± 3.88	7.84 ± 3.76

TABLE 6

INTERCORRELATIONS BETWEEN FACTORS AND INTERCORRELATIONS BETWEEN SCALES FOR MEN AND WOMEN SEPARATELY

	Intercorrelations between factors					
	NE	NL	NP	EL	EP	LP
Males	-0.03	-0.14	0.03	-0.16	-0.01	0.04
Females	-0.06	-0.21	0.19	-0.08	0.03	-0.07
	Intercorrelations between scales					
	NE	NL	NP	EL	EP	LP
Males	-0.01	-0.16	-0.01	-0.19	-0.08	-0.10
Females	-0.14	-0.18	0.12	-0.08	-0.05	-0.07

we have previously called 'psychoticism' may not be impossible; even if it is agreed that such a dimension may with advantage be hypothesized it does not, of course, necessarily follow that questionnaire measurement of it should be feasible. It could have been possible that high P scorers are characterized by lack of insight, and hence unable to fill in a questionnaire truthfully; there are many other possibilities which might have militated against the success of such a venture. Our data show that there exists such a dimension of personality, independent of E, N, and L which can be measured reliably (at least in men); whether we are right in assuming that this dimension is identical with the hypothetical P, or whether the dimension measured by our questionnaire has only a non-essential and possibly tangential connection with Psychoticism cannot be asserted unequivocally on the basis of such knowledge as we possess at the moment. Psychopathic behaviour resembles that of our high P scorer in many ways, and the high P scores of prisoners may suggest that P may stand for psychopathy rather than for psychoticism. It would be pointless to speculate about these possibilities at the moment; experimental research exploring the differences between high and low P scorers is obviously required to make possible a meaningful answer to this question. If, on such tests, high P scorers, compared with low P scorers, behave as psychotics do compared with non-psychotics, then the hypothesis would be supported; if not, then it would be infirmed. Such experiments are in progress at the moment, and it seems likely

that they will provide a clear-cut answer to this question.

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