Personality Measurement in Children: A Dimensional Approach<sup>1</sup> H. J. EYSENCK, Ph.D., D. Sc. University of London G. EASTING, M.S. Poulton-le-Fylde College S. B. G. EYSENCK, Ph.D. University of London

1Investigation supported by the Bethlem Royal Research Fund.

Phrases like "exceptional children" and "special education," when used in the psychological and educational literature, are usually applied to children scoring especially high or low on some scale which measures cognitive "ability" variables; temperament and character are usually passed by-possibly because of the well-known difficulties of measurement in this area. Another reason has probably been the psychiatric and medical overtones of "abnormality" in these areas; there is a deep-seated belief that an extreme placement in regard to some of the dimensions along which personality can be measured denotes some kind of "disease," and it goes against the grain to suggest the presence of mental disorders in young children-unless, as in the case of autistic children, there is no gainsaying such abnormality. In this paper, we shall be reviewing some recent efforts to study the personality of the child in its noncognitive aspects, and to test the applicability to children of some theories originally developed in relation to the adult personality.

The main notion underlying our approach has been that of the personality continuum or dimension (Eysenck, 1947). Psychiatrists diagnose patients as though they were dealing with categorical concepts or disease entities; this is probably a relic of long-established medical ways of thinking not necessarily applicable to psychological variables and concepts. Malaria, scarlet fever, syphilis, and broken bones are rightly considered "categorical" disease entities, with special causes, specific sets of symptoms, and particular types of treatment. It is equally clear that anxiety state, hysteria, and schizophrenia are not "categorical" disease entities in this sense; hence the very low reliability with which they are diagnosed (Eysenck, 1968), and the lack of correspondence between diagnosis and type of treatment chosen (Bannister, Salman & Licherman, 1964). The evidence regarding this contention is now quite voluminous, and has been reviewed by Eysenck (1970a); the conclusion is clearly unfavorable to the old medical hypothesis, and in favor of the alternative "dimensional" hypothesis.

The "dimensional" hypothesis deals with a continuum ranging from normality to so-called abnormality; there is no clear break between the two extremes, and all sorts and varieties of intermediate states can be found and recognized. The problems remain, of course, of defining and measuring the major dimensions involved; furthermore, it seems likely that psychiatric patients, regardless of their diagnostic labels, will fit into a dimensional framework with some degree of precision, and it remains to demonstrate any correspondence between diagnosis and dimension that might exist. This task has been attempted with some degree of success (Eysenck, 1952, 1957), and there is now a considerable body of evidence to show that a large amount of interpersonal variance can be accounted for in terms of three main dimensions of personality (Eysenck & Eysenck, 1969). The first of these is extraversion-introversion (E); while the label recalls Jung (1959), it should be noted that modern views of this dimension are based on objective, experimental evidence and bear little relation to Jung's mystical notions (Eysenck, 1967). The second dimension has been variously labeled neuroticism (N), emotionality, and anxiety; it is characterized by emotional lability predisposing a person to neurotic

breakdown. The third dimension has been called psychoticism (P); it attempts to measure certain underlying personality traits which are usually found in psychotics of all kinds (Eysenck, 1952; Eysenck & Eysenck, 1968). Note that the terms have psychiatric overtones, but that the concepts are applied to the vast range of non-pathological adults and children encountered outside the mental hospital; subjects with high scores on N or P are certainly more likely to succumb to stress, but they are not necessarily "abnormal," except in the purely statistical sense of having exceptionally high scores. Note also that these three dimensions are conceived of as being independent; thus, a high score on N does not imply a high score on P. This goes counter to the Freudian belief that there is a continuum stretching from normality through neuroticism to psychotic disorders; while our theory agrees with Freud's in that we also postulate a continuum from normal to abnormal, we postulate two orthogonal (unrelated) continua where he postulates only one. The evidence is now conclusive that more than one continuum is needed (Eysenck, 1970a) to understand psychopathology. Studies using multiple discriminant function analysis, factor analysis, and other statistical methods of great power have put the issue beyond doubt.

There are fairly clear-cut relations between our dimensional system and the orthodox psychiatric diagnostic method of classification. Thus, as Jung has already suggested, anxiety states and other dysthymic groups ("psychasthenics" in his nomenclature) are high N, low E scorers, while hysterics, and more anti-social psychopaths, are high N, high E scorers. Psychotics, of course, score high on P, but not on N; criminals also score high on P, (Eysenck, 1970b). One might conceive of the "typical" psychiatric patient as occupying a particular locus in the multidimensional framework created by our three dimensions; patients located further and further away from a particular locus become more and more atypical (and hence more and more difficult to diagnose) until they approach some other diagnostic locus. Such a framework would be very useful in translating statements from one dimension into another.

Questionnaires like Cattell's 16 PF scales (Cattell & Eber, 1949-69), Guilford's personality inventories (e.g., Guilford, 1934; Guilford & Holley, 1953-63), or our M.P.I. (Eysenck, 1962) and E.P.I. (Eysenck & Eysenck, 1963-68) have long existed to measure E and N in adult subjects; it is interesting that such independently developed inventories measure these dimensions with almost complete agreement (Eysenck & Eysenck, 1969). Measurement of P in the adult realm has only recently been accomplished (S. B. G. Eysenck & H. J. Eysenck, 1968, 1969a). A children's inventory measuring E and N has been published (Eysenck, 1965), and an extension of this scale to take in P appeared last year (S. B. G. Eysenck & H. J. Eysenck, 1969b). The present paper presents a further development of these studies; previous scale items have been improved and new ones added, in an attempt to make the scale better. Furthermore, a 12-item Lie Scale formed part of the original PEN inventory for children (S. B. G. Eysenck & H. J. Eysenck, 1969b); this was considered too short to be sufficiently reliable, and accordingly the scale was expanded to take in 22 items in its present form. (A detailed presentation of research into

the Lie Scale and its interpretation in children is given by Eysenck, Nias & Eysenck, 1971.) The new scale, entitled Junior Personality Inventory (J.P.I.), is given in the Appendix; it consists of 80 items, 18 of which measure P, 20 measure E, 20 measure N, and 22 measure L. A scoring key is given with the scale in the Appendix. The scales have been used with children as young as seven, but it is probably advisable to restrict its use to children of eight or over.

The scales were applied to over 3,000 children during school hours; 1,876 of these were boys and 1,557 were girls. The ages of the children involved and the number of each age and sex group are shown in Table 1. Also given in that table are the main results of the study, i.e., the reliabilities (alpha coefficients) of the four scales used, the means and standard deviations of the children's scores on these scales, and the inter-correlations between the scales.

A brief discussion of the results may be of some interest. Let us first consider the reliabilities. The L scale is clearly the most satisfactory at all ages; its reliability exceeds .8 even at the seven-year-old level, and never sinks much below it. E and N do not reach a satisfactory level until the nine-or 10-year-old level, with E somewhat unsatisfactory for the girls even up to the 12-year level, and N rather more satisfactory for the girls almost from the beginning. These differences may be due to the fact that the L scale has more items than the other scales, making it more reliable, and to the fact that girls, as we have always found in our work, are less extraverted and more emotional than boys. The Pscale is clearly somewhat less satisfactory than the other scales, with reliabilities

Girls		Boys	
10 10 11 12 15	12 13 14	AGE 7	
182 132 215 218 218 218 218 218 83			Rel
.495 .575 .575 .585	.597 .622 .591 .570	P .521 .535 .535 .535	iability
.584 .650 .611 .755 .755	.720 .768 .763 .771	E .526 .513 .759 .614	coeffi
.776 .742 .800 .810 .810 .810 .810 .810 .810 .810	.788 .794 .785 .738	N .698 .664 .766 .757 .782	cients
.843 .786 .821 .819 .806 .788 .722 .820	.778 .778 .784 .745	L .826 .793 .797 .808	
4.376 4.986 5.231 5.195 5.853 5.853	8.233 7.893 8.242 8.347 4.483	M 7.996 7.710 8.027 7.438 8.019	:
2.192 2.277 2.422 2.292 2.292 2.550 2.559 2.559	2.816 2.903 2.765 2.765	SD 2.654 2.892 2.892 2.800 2.880	а -
13.846 14.531 15.072 14.679 14.899 15.156 15.156 15.288 14.843	15.026 15.046 15.277 15.426 13.750	M 14.056 14.503 14.441 14.692 14.536	Means
2.909 2.824 2.906 2.789 3.014 3.337 3.308 4.211	3.293 3.525 3.471 3.439 2.668	SD 2.804 2.884 2.888 3.572 2.954	and Star
12.558 12.444 12.561 11.909 12.516 12.764 13.133 12.964	10.844 11.719 10.135 10.472 10.153	M 10.840 11.320 11.170 12.546 11.914	Table 1 Means and Standard Deviations
4.090 3.897 4.312 4.195 4.195 4.252 4.045 4.045	4.334 4.272 4.350 4.172 3.865	SD 3.746 3.529 4.187 3.969 4.193	iations
15.404 14.404 11.508 11.774 9.926 9.858 9.782 8.940	8.213 7.911 7.130 6.696 17.710	M 14.728 13.577 11.310 9.484 9.044	-
4.520 4.040 4.357 4.417 4.263 4.045 3.569 4.279	4.083 4.038 4.020 3.627 3.656	SD 4.600 4.413 4.489 4.382 4.382 4.931	;
.092 .313 .261 .264 .279 .289 .329 .329	.264 .320 .396	PE .065 .196 .271	1
132 030 1210 123 .067 131	095 132 010	PN 0.057 088 264	Inter o
		PL 542 243 197	orrelation
126 208 264 279 234 222 072	158 158 223 194	EN 	Inter correlations between scales
.178 .113 .050 047 182 .021	096 169 128 150		n scales
	8  182  4.63  5.84  .776  .843  4.376  2.192  13.846  2.909  12.558  4.090  15.404  4.520  .092  .132 389 126    9  177  .495  .584  .742  .786  4.986  2.277  14.531  2.824  12.444  3.897  14.404  4.040  .313 030 149 208    10  132  .555  .650  .800  .821  5.231  2.422  15.072  2.906  12.561  4.312  11.508  4.357  .261 210 022 264    11  215  .503  .611  .783  .819  4.691  2.292  14.679  2.789  11.909  4.195  11.774  4.417  .264 086 319 279    12  223  .575  .682  .810  .788  5.998  2.560  15.156  3.337  12.764  4.252  9.858  4.045  .279 234    13  177  .566  .750  .792  .722	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	AGE    n    E    N    L    M    SD    PE    PM    PL    PM    PL <t< td=""></t<>

THE JOURNAL OF SPECIAL EDUCATION VOL. 4/NO. 3

seldom exceeding .6; reliabilities seem more satisfactory for the boys than for the girls, perhaps because of the higher scores for the boys. The reliabilities of the scales are, of course, a mirror of inter-item similarity; they should not be taken to throw any light on the validity of the scales. Cattell & Tsujioka (1964) have discussed the problems involved in this relation, and have concluded that a two-item scale could have zero reliability and yet be perfectly valid, i.e., correlate unity with a particular criterion. Nevertheless, it would seem desirable in future revisions to lengthen and improve the reliability of the P scale, and possibly the E scale, insofar as the younger age groups are concerned. Even as they stand, however, we believe that the scales could be used with advantage for experimental work with groups of children; individual testing for clinical purposes appears to be premature.

The means, as already mentioned, show that boys have much higher scores on P than do girls; this agrees with similar findings in relation to adults, where men score more highly than women (S. B. G. Eysenck & H. J. Eysenck, 1969a). E and N also fall in line with previous work, with boys more extraverted and less emotional (S. B. G. Eysenck, 1965). On the L scale, the girls have higher scores; this was already found to be so in the original work of Hartshorne & May (1930), who left it open whether girls were more prone to lying, or actually were better behaved! In regard to age, P scores tend to rise, as do E scores. N scores do not seem to vary with age. The results are in line with previous work (S. B. G. Eysenck, 1965).

The inter-scale correlations show that P and N, the two "pathological" scales, are virtually uncorrelated; this

adds support to the two-dimensional view expressed above, as opposed to the Freudian uni-dimensional hypothesis. E, however, is not entirely uncorrelated with P and N; it correlates positively with P, at a level that is not far short of .3, and negatively with N, at a rather low level. These correlations are somewhat higher than might be desirable, but they indicate that the overlap between scales amounts to less than 10 percent of the variance; nevertheless, efforts should be made, by suitable item selection, to reduce this overlap to zero. The L scale shows the usual and expected negative correlation between the two "pathological" scores. Children who score high on the Lie Scale tend to have lower scores on the P scale (-.3) and on the N scale (-.2). This would seem to justify the use of the L scale either to exclude high L scorers (on the grounds that they are falsifying their scores), or to correct, by regression formula, the obtained P and N scores. Doing so would, of course, imply an acceptance of the hypothesis that high L scale scores are evidence of lying, and are produced by a conscious desire to "put on a good face"; Michaelis & Eysenck (in press) have shown that an alternative hypothesis can be supported by empirical data, viz., that high L scale scores may be the product of lack of self-knowledge, and may constitute a separate personality variable. They suggest, in fact, that both factors play a part in the genesis of L scale scores; clearly, the interpretation of these scores is not as simple as it was thought to be. Much further work will be required to sort out the divergent influences which determine high and low scores.

The nature of E and N are, of course, quite well understood by now

(Eysenck, 1967; Eysenck & Eysenck, 1969); the nature of P is much less clear. On the basis of their original work with children, S. B. G. Eysenck & H. J. Eysenck (1969b) listed the following characteristics as typical of high P scorers: (1) solitary, not caring for people; (2) troublesome; not fitting in; (3) cruel, inhumane; (4) lack of feeling, insensitive; (5) sensation-seeking, "arousal jags"; (6) hostile to others, aggressive; (7) liking for odd, unusual things; (8) disregard for danger, foolhardy; (9) making fools of other people, upsetting them.

What emerges from these admittedly subjective interpretations of questionnaire responses is a fairly congruent picture of an odd, isolated, troublesome child; glacial and lacking in human feelings for his fellow-beings and for animals; aggressive and hostile, even to near-and-dear ones; trying to make up for lack of feeling by indulging in sensation-seeking "arousal jags" without thinking of the dangers involved. Whether such children are in fact predisposed to the later development of psychotic symptoms, or even whether they retain this type of personality, are questions which cannot at the moment be answered; follow-up studies are clearly required in order to clarify these issues (S. B. G. Eysenck & H. J. Eysenck, 1969b, p. 31).

The items included in the P scale on the questionnaire reproduced in the Appendix certainly support these interpretations; the reader may glance at the items scored for P to reassure himself on this point. Such a perusal may also pin-point-the reason for the correlation between P and E; it is possible that sensation-seeking is more an E trait than a P one, and its inclusion in the measurement of P may have caused the observed correlation. Future research on these scales will, of course, explore this, as well as other possibilities suggested by a close study of the statistical results of

this investigation.

The major interest of these scales centers, of course, on the possibilities they open up for the study of "exceptional children," i.e., children who have unusually high or low scores on any of these scales. We already know that E and N are implicated in school success (Eysenck & Cookson, 1969), and it seems highly unlikely that P does not also play an important part in the child's adjustment there. A clear-cut research strategy would seem to be to choose matched groups of high- and low-scoring children on any (or all) of these major dimensions of personality and to study their school work, school adjustment, interpersonal relations, and other spheres of activity; quite high correlations have been reported, for instance, between E and success at various sports. Clearly, the existence of considerable personality differences along these dimensions implies special educational needs, and it is sad to report that research into special education adapted to the needs of these children has been lacking; some discussion of these issues has been given elsewhere (Eysenck, 1971). Such research must focus on personality differences along the dimensions discussed above, and it is hoped that the provision of scales for carrying out measurement and for identifying extreme individuals on P, E, and N will encourage such research.

## References

- Bannister, D., Salman, P. & Licherman, D. Diagnosis treatment relationships in psychiatry-a statistical study. British Journal of Psychiatry, 1964, 110, 726-32.
- Cattell, R. B. & Eber, H. W. Sixteen Personality Factor Questionnaire. Champaign, III.: Institute for Personality and Ability Testing, 1949-69.

- Cattell, R. B. & Tsujioka, B. The importance of factor-trueness and validity versus homogeneity and orthogonality in test scales. Educational and Psychological Measurement, 1964, 24, 330.
- Eysenck, H. J. Dimension of personality. London: Routledge & Kegan Paul, 1947. Eysenck, H. J. The scientific study of personality.
- London: Routledge & Kegan Paul, 1952. Eysenck, H. J. The dynamics of anxiety and hys-
- teria. London: Routledge & Kegan Paul, 1957.
- Eysenck, H. J. Maudsley Personality Inventory. Chicago: Educational and Industrial Testing Service, 1962.
- Eysenck, H. J. The biological basis of personality. Springfield, III.: Charles C. Thomas, 1967.
- Eysenck, H. J. The contributions of clinical psychology to psychiatry. In J. G. Howells (Ed.). Modern Perspectives in World Psychiatry. London: Oliver & Boyd, 1968. Pp. 353-90.
- Eysenck, H. J. A dimensional system of psychodiagnostics. In A. H. Mahrer (Ed.), New Approaches to Personality Classification. New York: Columbia University Press, 1970. (a)
- Eysenck, H. J. Crime and personality. (2nd ed.) London: Palladin Books, 1970. (b)
- Eysenck, H. J. Psychology is about people. Lon-don: Allen Lowe Press, 1971.
- Eysenck, H. J. & Cookson, D. Personality in primary school children. British Journal of Educational Psychology, 1969, 109-30. Eysenck, H. J. & Eysenck, S. B. G. Eysenck Per-
- sonality Inventory. Chicago: Educational and Industrial Testing Service, 1963-68.
- Eysenck, H. J. & Eysenck, S. B. G. A factorial study of psychoticism as a dimension of personality. Multivariate Behavioral Research (spe-

cial issue), 1968, 15-31.

- Eysenck, H. J. & Eysenck, S. B. G. (Eds.) The structure and measurement of personality. London: Routledge & Kegan Paul, 1969.
- Eysenck, S. B. G. The Junior Eysenck Personality Inventory. Chicago: Educational and Industrial Testing Service, 1963-65.
- Eysenck, S. B. G. & Eysenck, H. J. The measurement of psychoticism: A study of factor stability and reliability. British Journal of Social and Clinical Psychology, 1968, 7, 286-94.
- Eysenck, S. B. G. & Eysenck, H. J. Scores of three personality variables as a function of age, sex, and social class. British Journal of Social and
- Clinical Psychology, 1969, 8, 69-76. (a) Eysenck, S. B. G. & Eysenck, H. J. "Psychot-icism" in children: A new personality variable. Research in Education, 1969, 1, 21-37. (b)
- Eysenck, S. B. G., Nias, D. K. B. & Eysenck, H. J. On the interpretation of Lie Scale scores in children. British Journal of Social and Clinical Psychology, in press. Guilford, J. P. Nebraska Personality Inventory.
- Beverly Hills, Calif .: Sheridan Supply, 1934.
- Guilford, J. P. & Holley, J. W. Guilford-Holley L Inventory. Beverly Hills, Calif.: Sheridan Psy-chological Services, 1953-63.
- Hartshorne, H. & May, M. J. Studies in deceit. New York: Macmillan, 1930.
- Jung, C. G. Basic writings of C. G. Jung. New York: Modern Library, 1959.
- Michaelis, V. & Eysenck, H. J. The determination of personality inventory factor pattern and intercorrelations by days in real-life motivations. Journal of Genetic Psychology, in press.

## APPENDIX

E	······································	NO
L		ΝΟ
N	else had really done?YES 3. Do you often need kind friends to cheer you up?YES	NO
P		NO
Ľ		NO
L	5. Were you ever greedy by helping yourself to more than your share of anything?	NO
Ε		NO
P	7. Are other children's feelings much more easily hurt than yours?	NO
N		NO
Ē		NO
	10. Would you rather be alone instead of meeting other children?	NO
	11. Do you like practical jokes?	NO
	12. Do you ever feel 'just miserable' for no good reason?	NO
	13. Have you ever broken any rules at school?	NÖ
	14. Are you rather lively?	NO
p	15. Do you always seem to be in trouble at home?	NO
	16. Do lots of things annoy you?	NO
1	17. Did you ever take anything (even a pin or button) that belonged	
	to someone else?	NO
F	18. Do you like doing things where you have to act quickly?	NO
	19. Do you sometimes like teasing animals?	NO
	20. Did you ever pretend that you did not hear when someone was	
-	calling you?YES	NO
Е	21. Can you get a party going?YES	NO
	22. Do you worry about awful things that might happen?YES	NO
	23. Would it upset you a lot to see a dog that has just been run over?,YES	NO
	24. Do you always finish your homework before you play?YES	NO
	25. When you make new friends do you usually make the first move?YES	NO
	26. Do you get thumping in your heart?YES	NO

	NO
L 28. Do you generally pick up papers and rubbish others throw on the	
classroom floor?	NO
E 29. Do you like telling jokes or funny stories to your friends?	NO
N 30. Do you often feel tired for no good reason?YES	NO
P. 31 Even if it were very denearable would you still like to do to the	
moon in a rocket?	NO
L 32. When you hear children using bad language, do you try to stop them? YES	NO
	NO
	NO
	NO
P 35. Are you in more trouble at school than most children?	NO
E 37. Do you like mixing with other children?	NO
	NO
P 39. Would you do dangerous things for a dare?YES	NO
	NO
	NO
	NO
P 43. Are your feelings rather easily hurt?YES	NO
	NO
	NO
	NO
P 47. Would it bother you if you knew your home front door was unlocked	
at night?	NO
	NO
L 52. Do you throw waste paper on the floor when there is no waste paper	NO
	NO
	NO
	NO
	NO
E 57. Do other people think of you as being very lively?	NO
N 58. Do you sometimes feel life is just not worth living?	NO
P 59. Would you feel very sorry for an animal caught in a trap?	NO
	NO
	NO
	NO
	NO
N 64. Do you find it hard to get to sleep at nights because you are	
	NO
L 65. Do you always eat everything you are given at meals?	NO
	NO
	NO
	NO
	NÔ
	NÖ
	NO
	NO
N 77. Do you sometimes feel especially cheerful and at other times sad	
	NO
	NO
	NO
L 80. Have you ever cheated at a game?YES	NO