

# THE INTERPRETATION OF CHILDREN'S LIE SCALE SCORES

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**SUMMARY.** 390 children were given an intelligence test and a 100-item personality inventory purporting to measure E, N and the tendency to put themselves in the best light (lie scale). Factor analysis of the intercorrelations between items gave rise to three clearly defined independent factors identified as E, N and L. Intelligence correlated significantly only with L ( $r = -.29$ ). It is suggested that these results support an interpretation of the L scale in terms of 'lack of insight' rather than propensity to lie, although under highly motivating conditions the L scale may fulfil this function also.

## INTRODUCTION

LIE SCALES were originally introduced by Hartshorne and May in their *Studies in Deceit* (1930); the intention then was not so much to correct personality scale scores for 'faking' or other test-taking attitudes, but rather to measure the children's tendency to deceive. The method "consists of a series of rather personal questions. There are many specific acts of conduct which on the whole have rather widespread social approval, but which at the same time are rarely done. The questions revolve around situations of this sort." Lying is diagnosed when such rarely performed acts are endorsed by the child as being habitually done, or when frequently performed non-desirable acts are denied by the child. Validity was claimed for the test by its authors because it correlated with various other tests of deceitful conduct, such as class-room cheating, out-of-classroom cheating, and stealing; the correlations are not very high, ranging from .11 to .40, but correction for attenuation might raise these observed correlations to some extent. (A parallel form reliability of .84 is claimed, but this is meaningless as the two forms contain several identical items; the true reliability is not likely to be much higher than .7 or thereabouts.) Scales of this kind have been used to correct other scales for test-taking attitudes; this use of the Lie scale has been pioneered by the authors of the MMPI (Dahlstrom and Welsh, 1960). The EPI and the Junior EPI both contain Lie scales, although these are rather short, and consequently of somewhat lower reliability than the other (personality) scales. A detailed discussion of the statistical properties of the JEPI scales for different age-groups is given in Eysenck and Eysenck (1970); the aim of the present paper is to (1) construct a longer and more reliable scale for use with children than that contained in the JEPI; (2) investigate the correlation of this scale with personality factors E and N; and (3) discuss alternative theories of Lie scale scores and their interpretation to that put forward by Hartshorne and May. A minor aim was (4) to investigate the relation between items in the JEPI Lie scale, and the original Hartshorne and May items; though these were derived according to similar principles, it is by no means certain that different investigators would in fact write items defining identical factors.

A number of facts have been demonstrated regarding Lie scales and their relation to personality scales. (1) Scores on personality inventories of all kinds can be increased or decreased when subjects are instructed to 'fake good' or 'fake bad' (Dicken, 1959). (2) Lie scale scores are increased when the test is taken under 'fake good' instructions (Eysenck and Eysenck, 1963, 1966).

(3) Life situation motivation to present oneself in the best light, as in employment selection test, *decreased* scores on neuroticism and *increased* Lie scale scores (Michaelis and Eysenck, 1971). (4) Diagnosed neurotics who have low N scores tend to have high L scores (Eysenck, 1953). (5) Correlations between N and L are nearly always negative (Eysenck and Eysenck, 1969), but the sizes of these correlations differ widely. (6) The items of the Lie scale show evidence of reasonable homogeneity (Gibson, 1962; Eysenck and Eysenck, 1970). (7) Many of these findings on adults have been replicated with children (Eysenck, 1965; Eysenck and Eysenck, 1969, 1970). It thus seems likely that the L scale does in fact perform in some degree the function allocated it in personality testing with inventories, i.e., to measure test-taking attitudes.

Intentional faking is not, however, the only cause for high L scores. Dicken (1959) has suggested that 'honest' but un insightful self-appraisal may also result in high L scores; if this were true then the L scale would be measuring an interesting dimension of personality ('insightfulness') which is not covered by other existing scales. We will return to this possibility later. Another possible cause, already suggested by Hartshorne and May, is that some people may genuinely be more conventional; finding that girls have higher L scores than boys, they gallantly suggested "that girls can truthfully claim a more complete observance of conventional requirements than boys can. If this should be the case, the difference between boys and girls on this test would be in part, if not wholly, accounted for by a difference in conventionality rather than in deceptiveness." Eysenck (1965) showed in her Table 4 that for all age groups, except the very small group of 16-year-olds, girls had higher scores than boys on L. Introverts, too, have somewhat higher L scores (Eysenck and Eysenck, 1969), perhaps because introverts tend to have a more active 'conscience' and consequently are more conventional in ethical matters (Eysenck, 1965).

It is important to bear in mind that these three entirely different causes can contribute to the emergence of high L scores, and that no simple one-to-one relation may exist between scores and any particular 'cause'; worse, the relative contributions of these three causes may vary, not only from person to person, but from situation to situation. In other words, the L scale may serve as a good measure of 'faking good' under one set of circumstances, but be quite useless for this purpose under another. Michaelis and Eysenck (1971) have demonstrated this in an experimental study in which they varied the motivational conditions under which the subjects filled in the inventory; under high-motivation conditions the correlation between L and N was  $-.50$ , while under low-motivation conditions the correlation was only  $-.36$ . In terms of  $r^2$ , therefore, the former condition gave rise to a relationship twice as close as the latter, indicating that while under high motivation conditions the L scale might be used to correct for test-taking attitudes, this would not be reasonable under low motivation conditions. Other data were cited to show that there existed a linear relationship between degree of motivation, on the one hand, and  $r_{LN}$  on the other; as motivation increased, so did  $r_{LN}$ . These correlations ranged from  $.07$  (for the least motivated group) to  $-.58$  (for the most highly motivated group). If we may then regard  $r_{LN}$  as a (somewhat indirect) measure of the amount of motivation to 'fake good' in a given situation, then it may be of interest to see just how high this correlation might be in a sample of school children tested under ordinary conditions; if the correlation should turn out to be low, then L scores would be indicative, not of lying, but perhaps of conventionality, or of 'insight.' If L scores correlated very little with E, then the notion of conventionality would not receive much support, and 'insight' would be the

most probable variable measured. If L scores did in fact measure 'insight' in such a situation, and with such subjects, then it might be supposed that intelligent children would have lower L scores than dull ones, having presumably more 'insight.'

### THE INVESTIGATION

To investigate these various points, a 100-item inventory was constructed containing items for the measurement of E and N taken from some of our existing scales; also included were the items from JEPI Lie scale, and newly written items, as well as items taken from the Hartshorne and May scales. (The Inventory is given in the Appendix.) The children were also administered the Progressive Matrices non-verbal test of intelligence. To help prevent the possibility of copying, half the children (alternate rows) completed the Inventory first, the remainder doing the Progressive Matrices. After 20 minutes (the time limit used for the Progressive Matrices) the procedure was reversed. Any unfinished inventories were completed at the very end; in fact nearly all the children completed the inventory within the 20 minutes and spent the rest of the time checking over their answers. The school teacher introduced each session, stressing the importance of the research and reassuring the children about their answers being confidential. The experimenter then took over, explained the procedure and supervised the session.

A comprehensive junior high school catering for all children in the area (except for a few attending public schools) was chosen; the children were from a wide range of social classes with perhaps a slight bias towards the higher end. All first- and second-year children (aged 11-13 years) were tested, with the exception of 26 who were absent and three children who produced unscorable records, leaving 390 out of 419 with usable records. Pupils were divided into four groups for the testing sessions, and tested in the school hall, set out as for an examination. The pupils seemed to take the test very seriously; they did not seem worried by the personal nature of some of the questions in the inventory. There was no evidence of copying from other children.

### RESULTS

The items in the personality inventory, with score on the Progressive Matrices added as a 101st item, were intercorrelated (product-moment) and the matrix of intercorrelations factor-analysed by the method of principal components. Three factors were extracted, and rotated to oblique simple structure by the Promax programme (Hendrickson and White, 1964). These rotated factors quite clearly correspond to L, N and E; Tables 1, 2 and 3 set out the items with loadings above .3 for each factor, and the correspondence with similar factors found in previous studies will be noted. It is also clear that the JEPI Lie scale items fall into the same factor as the Hartshorne and May items; obviously our understanding of the concepts underlying their scale had been correct.

The correlations between the factors are all low. L correlates with N to the extent of  $-.16$ ; L correlates with E to the extent of  $-.10$ ; and E and N correlate  $-.13$ . Correlations of Progressive Matrices score with N and E are negligible:  $-.03$  and  $.05$ . The correlation of Progressive Matrices with L, however, is clearly significant and meaningful,  $r = -.29$ . In terms of the discussion given in the introduction, these figures suggest that there was little motivation in this group under the circumstances of the testing to 'fake good'; hence the Lie scale scores cannot really be interpreted in terms of 'lying.' The

*Children's Lie Scale Scores*

TABLE 1

## LOADINGS

Item	L	N	E
11	-.10	-.05	-.39
17	-.04	-.01	.38
21	-.08	.11	.45
27	.05	.00	.50
33	.06	-.04	.43
37	.05	.01	.45
43	-.07	.13	.36
49	.04	-.11	.31
53	.03	-.05	.31
64	.25	.08	-.31
71	.08	.08	.51
74	.02	.00	.46
77	-.26	-.12	.32
80	.09	.11	.45
84	-.02	-.04	.57
86	-.12	-.02	-.52
89	.02	.18	.30
92	.19	.25	-.31
97	-.03	.04	-.48

19 items having loadings of .30 or above in E scale.

TABLE 2

## LOADINGS

Item	L	N	E
3	.04	.50	.07
9	-.16	.37	-.06
13	.07	.44	.17
19	-.06	.50	-.11
25	-.09	.43	-.10
29	.15	.49	-.13
35	-.01	.36	.03
41	.13	.49	-.20
45	-.13	.52	-.06
51	-.08	.47	.06
57	.04	.31	.02
61	.02	.53	-.03
65	-.14	.37	.13
69	.07	.45	.04
72	.11	.55	-.24
76	.08	.49	-.02
82	-.06	.43	-.10
85	-.10	.43	.06
88	.13	.62	.02
90	.08	.57	-.09
93	-.07	.41	.05
96	-.02	.55	.08
99	-.13	.40	.01

23 items having loadings of .30 or above in N scale.

TABLE 3

## LOADINGS

Item	L	N	E
2	-.33	.03	.05
4	-.48	.10	.04
6	-.37	.17	.04
15	.48	-.07	-.01
20	.49	.04	.08
23	-.50	.06	.03
26	-.48	.07	.05
28	.38	.13	.00
36	-.46	.16	.08
40	-.47	.12	-.05
47	.47	-.02	.17
50	.45	.00	.07
52	.55	.14	.06
54	-.44	.19	.05
56	.47	.13	.10
59	-.48	-.08	.18
60	.54	.19	.18
68	.43	.02	-.08
70	-.55	.03	-.01
73	-.46	.16	.11
75	.55	.12	.08
78	.30	-.03	.08
81	-.32	-.03	-.10
87	.40	.01	.11
91	.47	.15	.15
94	.44	-.01	.08
95	.44	.01	.14
98	.42	.02	.16
100	-.52	.09	.11

29 items having loadings of .30 or above on L scale.

low correlation with E suggests that probably conventionality did not play too large a part in the genesis of the scores. The correlation of L with IQ is in line with the hypothesis; bright children 'lie' less. We have suggested that such a result might be expected on the grounds that 'insight' might be a cognitive function, and consequently correlated with IQ. This interpretation is also in line with the finding that Lie scale scores decrease with increasing age (Eysenck, 1965); as children increase in age, they may be presumed to increase in mental age, experience and 'insight.' But even if these arguments are regarded as reasonable, they obviously do not provide direct proof of the hypothesis; at best the observed correlation does not contradict the theory.

There is little doubt that the internal cohesion of the Lie scale items is no less than that observed in relation to the E and N scales. This is obvious from a consideration of the loadings, and it appears equally strongly in the KR 20 reliabilities for the scales. Twenty-two items were chosen to constitute a Lie scale, 20 items to constitute an N scale, and 20 items to constitute an E scale; the reliabilities of these scales were .826 (N); .732 (E); .833 (L). Items making up these scales are identified in the Appendix and a scoring key is also given there. Obviously there is a psychological source trait underlying the L items which is independent of those underlying the E and N items, and which is equally as strong as those underlying these other traits. This result is in agreement with the conclusion reached by Eysenck and Eysenck (1970), and supports

the original contentions of Hartshorne and May. The means and intercorrelation of these scales, whose constitution is shown in Tables 1, 2 and 3, are as follows:  $E_M = 14.87 \pm 3.29$ ;  $N_M = 12.15 \pm 4.53$ ;  $L_M = 9.51 \pm 4.67$ . Correlations:  $r_{EN} = -.14$ ;  $r_{EL} = -.01$ ;  $r_{NL} = -.19$ . These figures are very similar to those indicating correlations between factors, and suggest that the items chosen to represent factors were properly selected.

## DISCUSSION

The results of this study support previous suggestions that Lie scales are multidimensional in nature; depending on instructions, circumstances, motivations and other factors, they may measure a tendency to 'fake good,' or conformity to social pressures, or else some psychological trait which might be labelled 'insight' (for the positive end) or 'denial' (for the negative end). Lack of insight seems to be connected with low mental and physical age, and with low IQ; it does not seem unreasonable that awareness of one's own behaviour, particularly as compared to social norms, or that of others, should require mental ability—Spearman's first neogenetic law seems appropriate here. But the observed correlations are not high enough to suggest that the L scale is nothing more than another intelligence test; it measures something unique and relatively independent of all the other personality scales used in this research, provided testing is carried out under conditions which do not motivate subjects to 'fake good.' Under such circumstances it may be surmised that the scale changes its meaning and purpose completely, and can then be used to correct for test-taking attitude. The decision as to the degree of motivation involved in a situation may be made on the basis of three considerations: (1) common-sense evaluation as to whether the results of the test are to be used in such a way that self-interest of subjects would make them 'fake good'—e.g., for employment purposes, or for advancement in school or profession; (2) unusually high L scores; (3) unusually high negative correlations with N scale (Michaelis and Eysenck, 1971). If and when all three criteria are in good agreement, then some confidence may be had in the motivational nature of the testing conditions.

It might be thought that one criterion by itself might be sufficient, but this is not necessarily so. Commonsense evaluation may not always be correct; it is difficult to know how a group of subjects construe the situation in their own minds, and whether they believe the assurances given by the tester that the results will not be used for purposes other than research. High L scores are sometimes found in situations where the usual motivation to 'fake good' does not apply at all; this is often true when testing people who are physically handicapped. F. Morgenstern (unpublished) found that amputees with strong 'referred pain,' who are being treated with behaviour therapy, had high L scores, but not reduced N scores; they also showed strong denial of their own physical defect. In another unpublished study, G. Bianchi found elevated L and N scores in psychiatric in-patients with somatic preoccupation and psychogenic pain. High L scores unaccompanied by low N scores suggest lack of 'insight' and 'denial,' or perhaps a strong desire for 'conformity' when such conformity is so clearly non-existent in some other area. Clearly there is much room here for further research. What is also clear is that the use of the L scales as a simple measure of test-taking attitude is accompanied by many dangers, and that experimental and statistical precautions have to be taken before the scale can be interpreted, even in a preliminary manner. Our data suggest that it would be of considerable interest to select children high and low on L,

respectively, matched for N, E, IQ and sex, and study behavioural differences between them which might be indicative of that personality trait hypothesised to be measured by the L scale under low drive conditions. Only in this way will it be possible to make more precise the notions of 'insight' and 'denial' here suggested as related to low and high L scores.

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### APPENDIX

(Items selected to constitute the L, N and E scales are identified by a letter in the right-hand margin, with 'Yes' or 'No' indicating the answer scoring on the scale.)

#### JUNIOR PERSONALITY INVENTORY

INSTRUCTIONS. Please answer each question by putting a circle around the 'Yes' or the 'No' following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the question.

*Remember to answer each Question.*

- |   |   |     |
|---|---|-----|
| 1. Do you like plenty of excitement going on around you ?                               | E | Yes |
| 2. Have you ever taken the credit for something you knew someone else had really done ? | L | No  |
| 3. Do you often need kind friends to cheer you up ?                                     | N | Yes |
| 4. Were you ever greedy by helping yourself to more than your share of anything ?       | L | No  |
| 5. Do you nearly always have a quick answer when people talk to you ?                   | E | Yes |
| 6. Have you ever blamed anyone for doing something you knew was really your fault ?     |   |     |

- |  |   |     |
|--|---|-----|
| 7. Do you sometimes get cross ?  |   |     |
| 8. Do you usually note the number of a car you think is driving too fast and tell the police ?       |   |     |
| 9. Are you moody ?   |   |     |
| 10. Have you ever pretended to understand something you weren't quite sure about ?                   |   |     |
| 11. Would you rather be alone instead of meeting other children ?                                    | E | No  |
| 12. Do you tell the teacher when you catch children cheating ?                                       |   |     |
| 13. Do ideas run through your head so that you cannot sleep ?  | N | Yes |
| 14. Do you talk to everyone you know even those people you dislike ?                                 |   |     |
| 15. Do you always do as you are told at once ?   | L | Yes |
| 16. Have you ever got to school late ?   |   |     |
| 17. Do you like practical jokes ?  |   |     |
| 18. Do you always keep smiling even if things go wrong ?   |   |     |
| 19. Do you ever feel ' just miserable ' for no good reason ?   | N | Yes |
| 20. Do you usually pick up broken glass in the street and put it in a waste bin ?                    |   |     |
| 21. Are you rather lively ?  | E | Yes |
| 22. Do you stick with your gang even when they do something wrong ?                                  |   |     |
| 23. Have you ever broken any rules at school ?   | L | No  |
| 24. Do you usually sneeze whenever you feel like it ?  |   |     |
| 25. Do lots of things annoy you ?  | N | Yes |
| 26. Did you ever take anything (even a pin or button) that belonged to someone else ?                | L | No  |
| 27. Do you like doing things where you have to act quickly ?   | E | Yes |
| 28. When you see other children fighting, do you stop them ?   |   |     |
| 29. Do you worry about awful things that might happen ?  | N | Yes |
| 30. Do you always accept the decisions of the umpire or games teacher, without question ?            |   |     |
| 31. Can you always keep every secret ?   |   |     |
| 32. Even when others will not play your way, do you always keep on playing anyway ?                  |   |     |
| 33. Can you get a party going ?  | E | Yes |
| 34. Do you try to take an interest in things you hate doing ?  |   |     |
| 35. Do you get thumping in your heart ?  | N | Yes |
| 36. Did you ever say anything about your teacher that you would not like to say to her face ?        |   |     |
| 37. When you make new friends do you usually make the first move ?                                   | E | Yes |
| 38. Did you ever feel that you would like to ' get even ' with someone for something they had done ? |   |     |
| 39. Have you ever told a lie ?   |   |     |
| 40. Did you ever pretend that you did not hear when someone was calling you ?                        | L | No  |
| 41. Are you easily hurt when people find fault with you or the work you do ?                         |   |     |
| 42. Do you go to church and Sunday School every week ?   |   |     |
| 43. Do you like telling jokes or funny stories to your friends ?                                     | E | Yes |
| 44. Do you keep a diary regularly ?  |   |     |
| 45. Do you often feel tired for no good reason ?   | N | Yes |
| 46. Did you ever carve your name on your desk ?  |   |     |
| 47. Do you always finish your homework before you play ?   | L | Yes |
| 48. Do you read the Bible every day ?  |   |     |
| 49. Are you usually happy and cheerful ?   | E | Yes |
| 50. Do you generally pick up papers and rubbish others throw on the classroom floor ?                | L | Yes |
| 51. Are you touchy about some things ?   | N | Yes |
| 52. When you hear children using bad language, do you try to stop them ?                             | L | Yes |
| 53. Do you like mixing with other children ?   | E | Yes |



- |   |   |     |
|---|---|-----|
| 54. Did you ever break or lose anything belonging to someone else ?                           |   |     |
| 55. Do you say your prayers every night ?   |   |     |
| 56. Are you always quiet when older people are talking ?                                      | L | Yes |
| 57. Do you have ' dizzy turns ' ?   | N | Yes |
| 58. Have you ever told on another child for something wrong he had done?                      |   |     |
| 59. Do you like playing pranks on others ?  |   |     |
| 60. Do you always say you are sorry when you have been rude ?                                 | L | Yes |
| 61. Do you often feel fed-up ?  | N | Yes |
| 62. Do you give something to every beggar you see ?   |   |     |
| 63. Do you sometimes boast a little ?   |   |     |
| 64. Are you mostly quiet when you are with others ?   | E | No  |
| 65. Do you sometimes get so restless that you cannot sit in a chair long ?                    | N | Yes |
| 66. Do you usually ' give in ' when others are against you ?                                  |   |     |
| 67. Do you often make up your mind to do things suddenly ?                                    | E | Yes |
| 68. Are you always quiet in class, even when the teacher is out of the room ?                 | L | Yes |
| 69. Do you have many frightening dreams ?   | N | Yes |
| 70. Do you throw waste paper on the floor when there is no waste paper basket handy ?         | L | No  |
| 71. Can you usually let yourself go and enjoy yourself at a gay party ?                       | E | Yes |
| 72. Are your feelings rather easily hurt ?  |   |     |
| 73. Have you ever said anything bad or nasty about anyone ?                                   | L | No  |
| 74. Would you call yourself happy-go-lucky ?  | E | Yes |
| 75. At prayers or assembly, do you always sing when the others are singing ?                  | L | Yes |
| 76. Do you worry for a long while if you feel you have made a fool of yourself ?              | N | Yes |
| 77. Do you often like a rough and tumble game ?   |   |     |
| 78. Do you always eat everything you are given at meals ?                                     | L | Yes |
| 79. Do you find it very hard to take no for an answer ?                                       |   |     |
| 80. Do you like going out a lot ?   | E | Yes |
| 81. Did you ever write your name in a school or library book ?                                | L | No  |
| 82. Do you sometimes feel life is just not worth living ?                                     | N | Yes |
| 83. Have you ever been cheeky to your parents ?   | L | No  |
| 84. Do other people think of you as being very lively ?                                       | E | Yes |
| 85. Does your mind often wander off when you are doing a job ?                                | N | Yes |
| 86. Would you rather sit and watch than play at parties ?                                     | E | No  |
| 87. Are you always specially careful with other people's things ?                             | L | Yes |
| 88. Do you find it hard to get to sleep at nights because you are worrying about things ?     | N | Yes |
| 89. Do you usually feel fairly sure you can do the things you have to ?                       | E | Yes |
| 90. Do you often feel lonely ?  | N | Yes |
| 91. Do you usually correct other children who use bad grammar ?                               |   |     |
| 92. Are you shy of speaking first when you meet new people ?                                  | E | No  |
| 93. Do you often make up your mind when it is too late ?                                      | N | Yes |
| 94. When children shout at you, do you shout back ?   |   |     |
| 95. Do you always share all the sweets you have ?   | L | Yes |
| 96. Do you sometimes feel specially cheerful and at other times sad without any good reason ? | N | Yes |
| 97. Do you find it hard to really enjoy yourself at a lively party ?                          | E | No  |
| 98. Do you always wash before a meal ?  | L | Yes |
| 99. Do you often get into trouble because you do things without thinking first ?              | N | Yes |
| 100. Have you ever cheated at a game ?  | L | No  |

*Please make sure you have answered all the questions.*