Original Article

Characteristics of Patients with High Lie Scores in a Personality Test

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ABSTRACT

Background: It is reported that persons with high Lie score (L score) of a personality test are aggressively self-confident and are also related to depression or schizophrenia In this study, we examined the characteristics of patients with high L scores on the Maudsley Personality Inventory (MPI) and examined the significance of the L score. **Materials and Methods:** We collected the data of 10789 subjects and examined the relationship between L score or the number of characteristic biased persons and the parameters of age, sex, education level, occupation, and degree of pain. Furthermore, we examined the changes in extraversion–introversion (E score), neuroticism (N score), and L scores at approximately 1 year after surgery in 1711 patients who underwent surgery at our university hospital or affiliated hospitals. **Results:** L score was significantly higher among persons with a high degree of pain, and ratio of the characteristic biased persons in L score was significantly high among persons in their 40s to 60s, healthcare professionals and those with a high degree of pain. Moreover, L score scarcely changed between before and after surgery when compared with E score and N score. **Conclusion:** L score is not greatly influenced by an individual's state of mind or situation at different times, and may indicate the personality traits proper to the person. It is shown that L score may indicate the personality trait characteristics of persons who want to make themselves look good in the eyes of other.

Key words: *Lie score, patients' personality, personality test*

INTRODUCTION

The Maudsley Personality Inventory (MPI) evaluates not only traits of extraversion–introversion (E score) and neuroticism (N score) but also the tendency to lie through the Lie score (L score), which shows whether the respondent answered the personality test honestly.[1,2] The L score indicates the credibility of the answers, and should not be related to personality traits by nature. However, it is reported that persons with high L score are aggressively self-confident and are also related to depression or schizophrenia.[3-5] In this study, we examined the characteristics of persons with high L scores on the MPI and examined the significance of the L score.

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MATERIALS AND METHODS

The included were 5145 patients, who were admitted or treated as outpatients at the Department of Orthopedic Surgery at our university hospital or affiliated hospitals from 1997 to 2005, 2631 outpatients who visited any department at our university hospital from January 24 to 28, 2011, and 3013 doctors or nurses at our university hospital and students or graduate students enrolled in our university from 2001 to 2012. All 10,789 subjects completed the MPI, which was administered as follows. Nurses handed MPI response sheets to inpatients immediately after admission to their ward and collected the anonymous responses from patients who gave consent to participate. For outpatients, response sheets were handed only to patients who gave consent to participate and the anonymous responses were collected during postoperative follow-ups. Response sheets were handed or mailed to doctors, nurses, students, and graduate students at our university hospital and the anonymous sheets were collected from those who gave consent to participate. We collected background data on age, sex, education level, occupation, and degree of pain (numerical rating scale [NRS]; score range 0–10). This research was conducted with the approval of our university's ethical committee (approval number 1143).

To examine and compare the data, the 10789 subjects were categorized by age (≤20 years old; 1804, 20s; 1716, 30s; 1016, 40s; 984, 50s; 956, 60s; 1601, 70s; 1778, ≥80 years old; 934), sex (male: 4639, female: 6150), education level (high school education or less; 3537, vocational technical school/college; 1724, university/graduate school; 5528), occupation (healthcare professionals; 1456 subjects, students; 2257, workers other than healthcare professionals; 4760, unemployed; 2316), and degree of pain (no pain, NRS score = 0; 5275, mild pain, NRS = 1–3; 2894, moderate pain, NRS = 4–7; 1753, severe pain, NRS = 8–10; 867).

This study used the Japanese version of the MPI published by Jensen in 1958, which is composed of 80 items in the three scales of introversion and extraversion traits (24 questions), N score (24 questions), and false discovery (20 questions). The remaining 12 questions are not related to the three scales but are used as filler to help conceal the nature of the questionnaire from the subject. The MPI takes approximately 10 min to complete. The maximum score for introversion and extraversion traits (E score) is 48 points, and those for N score and false discovery (L score) are 48 and 40 points, respectively. The mean ± standard deviation (SD) L score on the Japanese version of the MPI among healthy adults in the general population was 16.8 ± 7.4; thus, we defined L scores surpassing the mean + 2 SD, that is, ≥32 points as characteristic biased persons.[6]

In this study, we examined the relationship between L score or the number of characteristic biased persons and the parameters of age, sex, education level, occupation, and degree of pain. Furthermore, we examined changes in E, N, and L scores at approximately 1 year after surgery in 1711 patients who underwent surgery at our university hospital or affiliated hospitals. The Mann–Whitney test was used with $P < 0.05$ indicating significant difference to study the relationship between sex and L score, and Kruskal–Wallis test was used to study the relationship between four parameters (age, education level, occupation, and degree of pain) and L score and then, Steel-Dwass test was used to compare groups with $P < 0.05$ indicating significant difference. Chi-square test was used to study the relationship between each parameter and the number of characteristic biased persons, and then, comparison for two proportions test was used to compare groups with $P < 0.05$ indicating a significant difference. To test changes in L score between before and after surgery, the Wilcoxon signed-ranks test was used with $P < 0.05$ indicating a significant difference.

RESULTS

With regard to the relationship between age and L score [Table 1], L scores tended to be higher with age; however, the difference was not significant. The ratio of the number of characteristic biased persons in their 40s, 50s, and 60s was significantly higher ($P < 0.01$) when compared with other age cohorts.

As for the relationship between sex and L score [Table 2], L scores were slightly higher among females than males, and the ratio of the number of characteristic biased persons tended to be higher; however, no significant difference was observed. For the relationship between education level and L score [Table 3], L scores were

Table 1: Relationship between age and Lie score

	Number of characteristic biased persons	L score (mean±SD)	Number of characteristic biased persons (%)
≤20 years old	1804	15.5±9.4	19 (1.1)
20s	1716	16.1±7.8	20 (1.2)
30s	1016	16.2±8.6	18 (1.8)
40s	984	20.1±9.4	47 (4.8)*
50s	956	21.3±9.9	45 (4.7)*
60s	1601	20.4±8.3	69 (4.3)*
70s	1778	16.3±6.9	25 (1.4)
≥80 years old	934	16.8±8.8	15 (1.6)

*$P<0.01$, characteristic biased persons; ≥32 L score. SD – Standard deviation; L score – Lie score

Table 2: Relationship between sex and Lie score

	Number of subjects	L score (mean±SD)	Number of characteristic biased persons (%)
Male	4639	16.9±8.5	101 (2.2)
Female	6150	17.3±7.9	157 (2.6)

Characteristic biased persons; ≥32 L score. SD – Standard deviation; L score – Lie score

Table 3: Relationship between education level and Lie score

	Number of subjects	L score (mean±SD)	Number of characteristic biased persons (%)
High school education or less	3537	15.3±6.2	78 (2.2)
Vocational technical school/college	1724	15.4±7.8	39 (2.3)
University/graduate school	5528	17.8±6.9	141 (2.6)

Characteristic biased persons; ≥32 L score SD – Standard deviation; L score – Lie score

Table 4: Relationship between occupation and Lie score

	Number of subjects	L score (mean±SD)	Number of characteristic biased persons (%)
Healthcare professional	1456	20.9±8.6	88 (6.0)*
Students	2257	15.1±6.4	43 (1.9)
Workers other than healthcare professionals	4760	16.8±7.3	80 (1.7)
Unemployed	2316	17.2±8.1	47 (2.0)

*$P<0.01$, characteristic biased persons; ≥32 L score. SD – Standard deviation; L score – Lie score

Table 5: Relationship between degree of pain and Lie score

Degree of pain	Number of subjects	L score (mean±SD)	Number of characteristic biased persons
No pain	5275	15.3±6.8	89 (1.7)
Mild pain	2894	16.8±8.2	60 (2.1)
Moderate pain	1753	18.1±8.5	39 (2.2)
Severe pain	867	24.6±9.2*	70 (8.1)**

*$P=0.0118$ ($P<0.05$), *$P<0.01$, characteristic biased persons; ≥32 L score. SD – Standard deviation; L score – Lie score

Table 6: Comparison between pre- and post-operative scores (1711 patients)

	Preoperative score	Postoperative score	Significant difference (P)
E score	28.4±10.2	31.9±10.7	0.0348 (<0.05)
N score	23.4±9.8	19.1±8.8	0.0256 (<0.05)
L score	17.2±8.3	17.3±8.5	NS

Postoperative score: Each score at approximately 1 year after surgery. NS – Not significant; L score – Lie score; E score – Extraversion-introversion; N score – Neuroticism

slightly higher among students/graduate students, and the ratio of the number of characteristic biased persons tended to be higher; however, no significant difference was observed.

L scores were higher among healthcare professionals, however, no significant difference was observed when compared with other occupations [Table 4] and the ratio of the number of characteristic biased persons was significantly ($P < 0.01$) higher than other occupations.

L scores were significantly higher ($P < 0.05$) among patients with a high degree of pain (NRS score 8–10), and the ratio of the number of characteristic biased persons was also significantly higher ($P < 0.01$) compared to those with other pain categories [Table 5].

Follow-up examination of patients who underwent personality tests once before surgery and once after surgery [Table 6] showed that E scores and N scores changed significantly ($P < 0.05$) after surgery, whereas L scores scarcely changed.

DISCUSSION

Previous reports made the following observations regarding L score: Drivers who have had a large-scale accident have higher L scores than those who have not had a large-scale accident;[7] patients placed in prison have high L scores;[8] policemen with high L scores at the time of examination for service tend to cause problems in the future;[9] and religious teaching (virtue) increases L score.[10] Another past study reported that individuals with very high L scores tend to show displeasure with surgery results, or to be "doctor shoppers".[11] Namely,

L score is used not to detect the credibility of the answer, but rather as an index that shows these individuals intentionally try to make themselves look better in the eyes of others.[12] According to the results of the present study, L score was significantly higher among persons with a high degree of pain, and ratio of the characteristic biased persons in L score was significantly high among persons in their 40–60s, healthcare professionals and those with a high degree of pain.

The characteristics of age, occupation, and degree of pain showed a significant relationship with L score in this study. Persons in their 40–60s are part of the generation that needs sociability most in their daily lives, and many of them are in the state of mind of being ostentatious to an excessive degree. For example, there is a possibility that people in these age cohorts will answer "Yes" to the question "Do you always keep promises?" and "No" to questions such as "Do you speak ill of others?" or "Do you sometimes get agitated?" Therefore, it was assumed that the ratio of the characteristic biased persons in L score became high for these age cohorts. In the case of healthcare

professionals, it was assumed that they tend to want to look good in front of colleagues, which led to significantly higher L scores. Persons with a high degree of pain tended to appeal to their doctor for sufficient treatment because they have such severe pain, which may lead to higher L scores. We also considered that this also affected persons who want strong drugs such as narcotics, those involved in compensation issues after a traffic or industrial accident, habitual liars, and patients with depression or schizophrenia.[13]

Among the major personality tests conducted worldwide, only to calculate L score, the MPI and the Minnesota multiphasic personality inventory (MMPI). However, the MMPI takes a long time (45–75 min) to complete because it has 550 or more questions, and some of the questions are difficult to answer; furthermore, the method of determining the final score is complicate.[14,15] In comparison, the MPI has questions that are relatively easy to answer[16] and then, our results also confirmed the usefulness of the MPI.

The results of this study revealed that L score scarcely changes between before and after surgery when compared with E score and N score. Namely, E score and N score are influenced greatly by the surgical results, whereas L score is not; therefore, L score is not greatly influenced by an individual's state of mind or situation at different times, and may indicate the personality traits proper to the person.

There are several limitations of this study. First, data were only collected through the MPI. Second, abnormal values were determined uniquely by the mean and SD of L scores of Japanese adults in the general population. Third, many data are biased toward patients in the Department of Orthopedic Surgery and healthcare professionals in a hospital. Fourth, since most data were anonymous, detailed data other than age, sex, education level, occupation, and degree of pain were not examined. However, this study accumulated a great amount of data and is considered extremely valuable in considering the significance of the L score and the relationship between L score and age, occupation, and degree of pain.

CONCLUSION

The characteristics of persons with very high MPI L scores include persons in their 40s to 60s, healthcare professionals, and those with very severe pain. L score is not greatly influenced by an individual's state of mind or situation at different times, and may indicate the personality traits proper to the person. It

is shown that L score may indicate the personality trait characteristics of persons who want to make themselves look good in the eyes of others.

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Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. Jensen AR. The maudsley personality inventory. Acta Psychol 1958;14:314-25.
2. Mirnics Z, Békés J, Rózsa S, Halász P. Adjustment and coping in epilepsy. Seizure 2001;10:181-7.
3. Morita A. Interpretation of each point in Japanese maudsley personality inventory. In: Japanese MPI Study Group, editor. New Personality Inventory – Maudsley Personality Inventory. 1st ed. Tokyo: Seishin Shobo; 1969. p. 225-43.
4. Bech P, Shapiro RW, Sihm F, Nielsen BM, Sørensen B, Rafaelsen OJ. Personality in unipolar and bipolar manic-malancholic patients. Acta Psychiatr Scand 1980;62:245-57.
5. Brown MS, Kodadek SM. The use of lie scales in psychometric measures of children. Res Nurs Health 1987;10:87-92.
6. Ooyama T, Komatsu R. Preparation and validation of Japanese maudsley personality inventory. In: Japanese MPI Study Group, editor. New Personality Inventory – Maudsley Personality Inventory. 1st ed. Tokyo: Seishinshobo; 1969. p. 115-57.
7. Luczak A, Tarnowski A. Validation of selected temperament and personality questionnaires for diagnosing drivers' aptitude for safe driving. A Polish study. Accid Anal Prev 2014;70:293-300.
8. Fjordbak T. Clinical correlates of high lie scale elevations among forensic patients. J Pers Assess 1985;49:252-5.
9. Weiss PA, Vivian JE, Weiss WU, Davis RD, Rostow CD. The MMPI-2 L scale, reporting uncommon virtue, and predicting police performance. Psychol Serv 2013;10:123-30.
10. Rosen GM, Baldwin SA, Smith RE. Reassessing the "Traditional Background Hypothesis" for Elevated MMPI and MMPI-2 Lie-Scale Scores. Psychol Assess. 2015. [Epub ahead of print]. PMID: 26653053. DOI: 10.1037/pas0000262.
11. Kasai Y, Takegami K, Uchida A. A study of patients with spinal disease using maudsley personality inventory. Int Orthop 2004;28:56-9.
12. Wang Z, Sakakibara T, Kasai Y. Personality of outpatients with malignant tumors: A cross-sectional study. World J Surg Oncol 2012;10:187.
13. Jung B, Reidenberg MM. Physicians being deceived. Pain Med 2007;8:433-7.
14. Herron LD, Turner J, Weiner P. A comparison of the millon clinical multiaxial inventory and the Minnesota multiphasic personality inventory as predictors of successful treatment by lumbar laminectomy. Clin Orthop 1986;203:232-8.
15. Homer C. The MMPI as a predictor of outcome in low back surgery. Spine 1979;4:78-84.
16. Sugiyama Y. The assessment of the Japanese maudsley personality inventory. In: Japanese MPI Society. Japanese MPI. Tokyo: Seishinshobo; 1960. p. 209-23.