

Analysis of the structure validity of the Chinese version of the MMPI

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SUMMARY: *The factor structure of the Chinese version of the MMPI was evaluated with 8 different types of Chinese people and a similar factor structure was found in all 8 groups. The main factors in China are consistent with those in America and other countries. This means that the Chinese version of the MMPI gets a good structure validity and it is a valuable personality test in China, though further research is necessary to accelerate the MMPI using in China.*

INTRODUCTION

The MMPI was first introduced into the mainland of China in 1979. A revised Chinese version of the MMPI was published by the Psychological Institute of the Chinese Academy of Sciences in 1983. The principle of the revision was to keep the original meaning of the MMPI. The Chinese norms of the MMPI based on about 3000 subjects was published by a national research group in 1985. In China, the MMPI is mainly used in clinical psychiatry, psycho-counseling, psychosomatic clinics and forensic psychiatry nowadays. In general, MMPI's use in China is very limited, there are two main obstacles preventing its further use. Firstly, many clinicians in China do not think that MMPI is suitable for Chinese people, because there is no systematic research for MMPI's content validity, structure validity and discriminant validity in China. Secondly, it is a difficult thing to interpret MMPI.

In order to improve the use of the MMPI in China, to make it easier to be accepted and understood by most clinicians, and find out the personality difference between China and other

countries, a series of research projects have been performed in Beijing Huilongguan Hospital since 1985. Which include factor analysis, discriminant analysis and item analysis of the Chinese version of the MMPI, and developing a Chinese computerized MMPI interpretation service system. This paper is about the factor analysis of the Chinese version of the MMPI.

PURPOSE AND HYPOTHESIS

The purpose of the research is to verify the following hypothesis:

1. MMPI has the same factor structure in the different types of Chinese people - men and women, high school education and college education, normal people, psychiatric patients and forensic psychiatric patients.

2. The factor structure of the MMPI in China is the same as that in the United States and other countries.

SUBJECTS AND METHOD

The MMPI data used in this research consists of 633 normal subjects, 462 non-forensic psychiatric patients and 233 forensic psychiatric patients, in all a total of 1328 cases.

About half of the normal subjects were undergraduate students in the Beijing Capital Institute of Medicine and the rest normal subjects were relatives and friends of the staffs who worked in Beijing Huilongguan Hospital and Beijing Anding Hospital, both institutions are large mental hospitals in Beijing. All patient data came from both hospitals between 1983 and 1987. Most of the psychiatric patients were hospitalized in-patients, while only some of the neurotic patients were outpatients. The forensic

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psychiatric patients were patients of the forensic psychiatric department in Anding Hospital. The cases used in this research had to accord with the following demands:

1. All patients had to have a definite diagnosis. The diagnosis of the patients was according to the DSM-III.

2. All subjects had to be 16 years of age or more.

3. All subjects had to have at least high school education.

4. The "can't say" score had to be less than 22 when the 399 items sheet was used, or less than 30 when the 566 items sheet was used.

The total 1328 cases were divided into 8 groups:

1. normal men, high school education, 105 cases.

2. normal men, college education, 160 cases.

3. normal women, high school education, 186 cases.

4. normal women, college education, 182 cases.

5. male psychiatric patients, 282 cases, including 158 schizophrenia, 26 affective psychosis, 72 neurosis etc.

6. female psychiatric patients, 180 cases, including 113 schizophrenia, 19 affective psychosis, 28 neurosis etc.

7. male forensic psychiatric patients, 170 cases, including 95 schizophrenia, 11 affective psychosis, 34 personality disorder etc.

8. female forensic psychiatric patients, 63 cases, including 32 schizophrenia, 5 affective psychosis, 9 neurosis, 10 personality disorder etc.

The statistic method: separate principal component analysis with varimax rotation was performed on each of the 8 groups. The variables for the analysis were raw scores of the 13 MMPI standard scales. In order to observe the factor structure more accurately and completely, and make the result more comparably with other results, three, four, five, and six factors were sequentially extracted in all 8 groups. The Statistic Package of Social Science (SPSS) was used for statistic in the research.

RESULT AND ANALYSIS

Factors appearing in the research are shown in table III. Six common factors were found in the research, they are psychoticism (P), neuroti-

cism (N), introversion-extroversion (I), masculinity-femininity (M), overcontrol (F) and antisocial character (A). The 6 common factors represent about 88% variation in the MMPI basic scales and indicate some important clinical patterns, for example the psychotic pattern, the neurotic pattern and the lie pattern. These patterns often appear in clinical practicing.

Through study of table III, we can find that the MMPI factor structure in the 8 groups is quite consistent, though some small deviation exists in the forensic psychiatric patients groups. This may be due to the relatively small sample size of the female forensic patients group and high lie tendency in forensic patients.

The 6 common factor loadings (after rotation) in every group are shown from table IV to table IX. The meaning of these factors is explained as following:

Table IV, psychoticism. This factor has quite a high loading on the scale F, Pa, Pt, Sc and Ma, and a high negative loading on the scale K, which is very clear and similar in all 8 groups. It is also consistent with the results of most reports in the literature on this subject (Block, 1965). The person who gets a high position in this dimension usually has a poor connection with reality and is often associated with psychological deterioration, which suggest mental illness such as schizophrenia, affective psychosis etc. A low or moderate position indicates a realistic attitude to circumstance without serious mental deterioration.

Table V, neuroticism. This factor has a high loading on the scale Hs, D, and Hy, which is usually relative to neurosis. The similarity of the factor loading across the 8 groups is very clear. This is a common dimension of neurosis. Hobi (1972) calls it "the psychosomatic complaint factor". The person who gets a high position in this dimension often complains both psychologically and physiologically, showing negative emotion and some hysterical traits. A low position indicates stable and mature emotive state. It is interesting to note that the highest loading of the factor on the Hy scale in all groups. In China, the conversion symptoms has a higher rate than the United States and some European countries, because Chinese are used to expressing their feeling with nonverbal behavior and some cultural customs forbid people to express their feeling in a direct way. For example, it is a very unpolite thing to express your

anger to your parents or leaders, so the negative emotion is converted into physical symptoms.

Table VI, introversion-extroversion. This factor has a very high loading on the scale Si and a medium loading on the scales D and Pt. A high position in this dimension is associated with social introversion, combining with some degree of depression and compulsiveness. A low position means the opposite character, i.e. extroverted, active, warm-hearted, easy-going, relaxed and with little emotional conflict. It was interesting to find that most neurotic patients got a high position in both the factor N and factor I which indicates a high possibility of diagnosis of neurosis. Because a person with an introversion trait is vulnerable to the neurosis, whereas a person with an extroversion trait is not. Some schizophrenia patients may have a high position on the factor N, but few of them have a high position on the factor I at the same time.

Table VII, masculinity-femininity. This factor gets a singly extremely high loading on the scale Mf in all 8 groups, so that the meaning of the factor is similar to the Mf scale. Song Weizhen (1986) reported that most items in the scale Mf are not suitable for telling the difference between masculinity and femininity in China. According to the factor analysis research, the factor loading on the Mf scale in China is very similar to that in the United States and other countries. It seems to indicate that the meaning of the Mf scale is not heavily changed when it is used in China.

Table VIII, overcontrol. This factor is represented by a high loading on the scales L, K and some negative loading on the pathological scales, such as Pd, Pt, Sc and Ma across all the 8 groups. A high score on this factor means the subject is over self-protected, denying emotional problems and mental symptoms. Which is a fake-good tendency and can be found in some normal people and some recovered schizophrenia patients. A low position is associated with a frank attitude to answering questions in the MMPI, which is often seen in people with higher education. However, an extremely low position may be indication of some kind of acute psychosis, for example acute schizophrenia, reactive psychosis, mania etc., because their ability for self-protection is destroyed. It is important to point out that a low position is very common for a person who is undergoing a forensic mental examination, because some of these

people want to overstate their problem in order to avoid forensic punishment. We call it a fake-bad tendency. Therefore, the careful interpretation of this factor is very important. Butcher (1976) reported the results of the MMPI factor analysis of 7 countries' normal people and 3 countries' mental patients. Four factors were extracted from each group and the overcontrol factor appeared in every group, whereas in our research, the factor did not occur until 5 or 6 factors were extracted, excepting the female forensic patient group. This shows that in China, the overcontrol factor is not as obvious as it is in some other countries.

Table IX, antisocial character. This factor is defined by a high factor loading on the scale Pd and moderate loading on the scale Pa. The factor occurred in all groups excepting the female forensic group which got an emotion factor instead. This may be due to the small sample size of the group. Most previous MMPI factor studies have not mentioned this factor, an obvious reason is that most studies extracted less than 5 factors. In China this factor didn't occur until 5 or 6 factors were extracted. A high position in this dimension refers to antisocial behaviour, e.g. irritability, aggression, hostility, distrusting other people even friends or relatives, and never showing a sense of responsibility or apologizing for their mistakes. Such a person rarely keeps a good relationship with other people and often causes conflict around him. A high score in this factor could be seen in normal people, but it appears more often in personality disorder and psychosis patients, the psychosis patients could get a high score on the factor P as well. A low position in this dimension is associated with peaceful, sociable and non-aggressive characters.

The 6 common factors have been used in a Chinese computerized MMPI interpretation service, 6 factor scales are formed correspondingly through SPSS's factor score coefficient matrix to assist interpreting MMPI result. Meanwhile the Chinese norms and standard T score are introduced into the 6 factor scales. Through using these factor scales in clinical work, we are satisfied with their function and their interpretation which make the MMPI report more comprehensive, more clear and easier to be read and understood. Once the position on the 6 important personality dimensions are known for a person, the rest interpretation will become easier. Many ba-

sic, but important psychological problems could been found by using the factor scales.

DISCUSSION

Through this research, it can be discovered that the MMPI factor structure is quite consistent in different types of Chinese people.

Some results of the MMPI factor analysis throughout the world are listed in table X, in which common factor names take the place of some specials when they have the same meaning; for example the special name 'tendency to lie' in Hobi (1972)'s paper is displaced by the common name overcontrol. Concerning table X, it is interesting to note that the MMPI factors in the 1970's and 1980's are similar among different research projects. This may be due to the improvement of statistic method and computer capacity. Hobi (1972), Pancheri (1976) found somewhat similar factors in West Germany, America, Italy, Switzerland, Japan, Israel, Pakistan, Mexico and Costa Rica. All of the factors in these countries are covered by the factors in China except factor cyclothymic in the West Germany

(Hobi 1972). All the different countries have quite a similar MMPI internal structure, though the culture varies from country to country. If all research projects had extracted 3, 4, 5 and 6 factors sequentially, the result would have been more comparable. This is a valuable method in the MMPI factor analysis which shows the factor structure more clearly. Nowadays, computers enable us to do it in almost no time.

Another interesting fact is that these MMPI personality factors cover all of Eysenck's personality dimensions, which are psychoticism, neuroticism, extroversion and lie (see table XI).

In accordance with the results of the research mentioned above, the personality could be looked as a multiaxial coordinate, each axis representing a personality dimension. All the people in the world have the same personality dimensions which are mainly the biological and genetic side of personality. On the other hand, people with different back-grounds of culture and nations have different positions on each of the personality dimensions. This is mainly the cultural and social side of the personality. So everyone's personality is determined by his biological and social back-ground.

TABLE I - DATA: THE GROUPS OF THE NORMAL SUBJECTS

	GROUPS	CASES	MEAN AGE	S.D	MEAN EDUCAT Yr	S.D
MEN	EDUCATION 9-12 Yr	105	30.40	8.56	11.20	1.33
	EDUCATION 13- Yr	160	23.29	10.08	13.81	1.36
WOM	EDUCATION 9-12 Yr	186	30.07	9.13	11.37	1.22
	EDUCATION 13- Yr	182	20.54	6.52	13.44	1.03

TABLE II - DATA: THE GROUPS OF THE PSYCHIATRIC PATIENTS

GROUPS	CASES	M.AGE	S.D	M.EDU	S.D	CD-9 CODES							
						295	296	294	297	298	300	301	etc
MALE PATIENTS	282	31.57	10.10	11.33	2.40	158	26	3	9	3	72	8	3
FEMALE PATIENTS	180	30.53	10.05	11.37	2.21	113	19	1	4	3	28	9	3
MAL FORS PATIENTS	170	31.65	10.52	10.95	2.21	95	11	7	7	1	5	34	10
FEM FORS PATIENTS	63	29.78	8.61	10.65	1.89	32	5	3	1	1	9	10	2

FORS: FORENSIC

TABLE III - EXTRACTED FACTORS IN EACH GROUPS

GROUPS	CASES	No OF FACTORS	1	2	3	4	5	6	CUM PCT %
NORMAL MEN EDUCATION: 9-12 YEARS	150	3	P	N	I	-	-	-	69.5
		4	P	N	I	M	-	-	77.3
		5	P	N	I	M	F	-	83.0
		6	P	N	I	M	F	A	88.0
NORMAL MEN EDUCATION: 13- YEARS	160	3	P	N	I	-	-	-	69.4
		4	P	N	I	M	-	-	76.7
		5	P	N	I	M	F	-	82.2
		6	P	N	I	M	F	A	86.4
NORMAL WOMEN EDUCATION: 9-12 YEARS	186	3	P	N	I	-	-	-	72.2
		4	P	N	I	M	-	-	79.5
		5	P	N	I	M	F	-	84.9
		6	P	N	I	M	F	A	88.6
NORMAL WOMEN EDUCATION: 13- YEARS	182	3	P	N	I	-	-	-	68.1
		4	P	N	I	M	-	-	75.6
		5	P	N	I	M	A	-	82.8
		6	P	N	I	M	A	F	86.9
MALE PSYCHIATRIC PATIENTS	282	3	P	N	I	-	-	-	73.2
		4	P	N	I	M	-	-	80.4
		5	P	N	I	M	A	-	84.8
		6	P	N	I	M	A	F	89.2
FEMALE PSYCHIATRIC PATIENTS	180	3	P	N	I	-	-	-	73.1
		4	P	N	I	M	-	-	79.7
		5	P	N	I	M	F	-	85.5
		6	P	N	I	M	F	A	88.8
MALE FORENSIC PSYCHIATRIC PATIENTS	170	3	P	N	M+A	-	-	-	76.8
		4	P	N	I	M	-	-	83.2
		5	P	N	I	M	F	-	87.2
		6	P	N	I	M	F	A	91.0
FEMALE FORENSIC PSYCHIATRIC PATIENTS	63	3	P	N+F	I	-	-	-	76.8
		4	P	F	I	M	-	-	83.8
		5	P	N	I	M	F	-	88.2
		6	P	N	I	M	F	E	91.6

P=Psychoticism, N=Neuroticism, I=Introversion-Extroversion, M=Masculinity-Femininity,

F=Overcontrol, A=Antisocial, E=Emotion

TABLE IV - PSYCHOTICISM

SCA	NORM M ED 9-12	NORM M ED 13-	NORM W ED 9-12	NORM W ED 13-	MALE Pt	FEMALE Pt	MALE FORS P	FEMALE FORS P
L	-24	-23	-29	-39	-28	-24	-30	-04
F	85	58	87	73	88	87	92	68
K	-66	-60	-63	-69	-62	-63	-55	-15
HS	38	30	33	33	49	46	57	24
D	-08	-03	02	-06	-11	-03	-07	12
HY	-08	-06	-02	00	-07	01	05	21
PD	51	22	60	21	29	48	45	77
MF	10	12	-01	05	08	-07	17	02
PA	68	31	83	46	60	85	78	86
PT	67	63	72	71	61	63	69	37
SC	82	76	87	84	83	83	84	59
MA	83	88	78	78	75	80	81	22
SI	17	12	14	25	20	13	19	17

TABLE V - NEUROTICISM

SCA	NORM M ED 9-12	NORM M ED 13-	NORM W ED 9-12	NORM W ED 13-	MALE Pt	FEMALE Pt	MALE FORS P	FEMALE FORS P
L	.07	-.04	.09	-.11	-.00	.02	.07	.19
F	.09	.22	.16	.13	.08	.10	.06	.10
K	.12	.09	.03	.16	.26	.13	.17	.44
HS	.85	.79	.86	.82	.78	.82	.73	.76
D	.55	.47	.55	.54	.60	.64	.78	.62
HY	.88	.90	.91	.94	.90	.92	.92	.90
PD	.21	.26	.20	.26	.26	.37	.33	.54
MF	-.02	.09	.12	.06	.15	.13	.06	.15
PA	.06	.17	.07	.16	.19	.20	.21	.10
PT	.10	.18	.14	.25	.26	.31	.25	.19
SC	.13	.19	.14	.20	.14	.20	.13	.09
MA	.06	-.02	-.05	.02	-.09	-.05	-.13	-.10
SI	.01	.05	-.00	.01	.15	.12	.22	.21

TABLE VI - INTROVERSION-EXTROVERSION

SCA	NORM M ED 9-12	NORM M ED 13-	NORM W ED 9-12	NORM W ED 13-	MALE Pt	FEMALE Pt	MALE FORS P	FEMALE FORS P
L	-.10	-.02	-.00	-.06	-.01	.04	-.02	-.05
F	.19	.24	.12	.19	.08	.06	.12	.14
K	-.40	-.48	-.37	-.41	-.27	-.36	-.27	-.40
HS	.15	.30	.19	.23	.21	.13	.17	.35
D	.40	.71	.68	.64	.65	.62	.44	.59
HY	-.15	.02	-.03	-.07	.13	.09	-.00	.13
PD	-.02	.06	.07	.04	.15	.05	.12	.04
MF	.04	.08	.01	-.03	.04	.01	.01	.02
PA	-.07	.20	.02	.15	.11	.09	.01	.26
PT	.45	.60	.45	.49	.44	.49	.39	.63
SC	.31	.39	.24	.24	.26	.28	.25	.40
MA	-.11	-.17	-.20	-.38	-.25	-.17	-.03	-.12
SI	.94	.93	.92	.89	.91	.93	.92	.91

TABLE VII - MASCULINITY-FEMININITY

SCA	NORM M ED 9-12	NORM M ED 13-	NORM W ED 9-12	NORM W ED 13-	MALE Pt	FEMALE Pt	MALE FORS P	FEMALE FORS P
L	-.02	.01	.06	-.05	-.04	.13	-.04	.03
F	-.05	-.04	-.04	.12	-.06	-.11	.01	-.08
K	-.26	-.08	-.01	-.11	-.12	-.01	-.07	.14
HS	.03	-.04	.09	.07	.08	.05	.05	.09
D	.08	.10	-.06	-.00	.09	.03	.03	.06
HY	-.08	.13	.09	.03	.14	.12	.04	.15
PD	-.02	.16	.04	.12	.05	.10	.14	-.02
MF	.98	.97	.98	.99	.97	.98	.98	.98
PA	.19	.04	.16	.00	.17	.01	.17	.11
PT	.14	.09	-.05	-.02	.14	-.03	.08	-.12
SC	.13	.04	-.05	-.05	.12	-.05	.09	-.08
MA	.02	.15	-.09	.03	.06	.01	.15	-.08
SI	.01	.02	.05	-.03	.01	.01	.00	.06

TABLE VIII - OVERCONTROL

SCA	NORM M ED 9-12	NORM M ED 13-	NORM W ED 9-12	NORM W ED 13-	MALE Pt	FEMALE Pt	MALE FORS P	FEMALE FORS P
L	92	93	90	83	91	91	90	93
F	01	-16	-16	-02	-06	-11	-13	-23
K	45	45	56	40	58	54	70	50
HS	-12	-23	-12	-22	-14	-13	-16	04
D	-04	14	11	-15	02	15	-04	23
HY	21	10	16	08	12	08	25	20
PD	-18	-20	-20	-22	-13	-27	-09	-04
MF	-04	-00	05	-05	-07	10	-07	04
PA	09	-06	11	27	-12	08	-13	07
PT	-38	-11	-38	-20	-48	-37	-48	-31
SC	-25	-18	-32	-19	-34	-32	-37	30
MA	-33	-14	-39	-28	-42	-37	-39	-23
SI	-09	-08	-09	00	-07	-03	-11	-07

TABLE IX - ANTI SOCIAL CHARACTER

SCA	NORM M ED 9-12	NORM M ED 13-	NORM W ED 9-12	NORM W ED 13-	MALE Pt	FEMALE Pt	MALE FORS P	FEMALE FORS P
L	-08	-19	-12	-07	-14	-15	-09	-25
F	17	51	05	37	25	15	14	57
K	-02	-10	15	04	03	14	05	-47
HS	02	14	-16	09	06	-08	-10	36
D	62	26	21	38	24	18	26	-31
HY	22	27	22	22	24	21	15	-14
PD	73	78	69	85	85	69	77	01
MF	05	11	02	09	08	04	08	-09
PA	54	76	26	65	55	25	28	24
PT	21	29	01	15	12	07	04	46
SC	20	36	08	25	15	08	10	59
MA	-06	21	03	11	13	-06	08	88
SI	03	06	-04	03	08	-02	06	-02

*The points in the tables 4-9 have been saved.

TABLE X - A REVIEW OF MMPI RESULTS IN LITERATURES

AUTHOR	COUNTRY	SAMPLES & CASES	FACTORS					
			1	2	3	4	5	6
Welsh 1952	USA	P.	A	R	F	P	-	-
Eichman 1961	USA	P.	A	R	N	P	-	-
Kassebaum 1959	USA	N.	E	I	T	-	-	-
Block 1965	USA	-	ER	EC	-	-	-	-
Montag 1977	ISRIAL	2145	A	R	I	-	-	-
Hobi 1972	W. GERM.	N. 180	P	I	N	M	C	F
Pancheri 1972	-	NP. 468	P	N	F	I	M	-
Butcher 1976	7 COUNT	N. 2788	P	F	I	M	-	-
Butcher 1976	3 COUNT	P. 2031	P	N	F	M	-	-
Zou 1988	CHINA	N. 633	P	N	I	F	A	M
Zou 1988	CHINA	P. 695	P	N	I	F	A	M

P. = Patient; N. = Normal subject; A = Anxiety; R = Repression; C = Cyclothymic; E = Ego strength; ER = Ego resiliency; EC = Ego contral; T = Tender-mind; P = Psychoticism; N = Neuroticism; I = Introversion-extroversion; M = Masculinity-femininity; F = Overcontrol; A = Antisocial

TABLE XI - THE MAIN DIMENSION IN MMPI AND EPQ

MMPI	EPQ
PSYCHOTICISM NEUROTICISM INTROVERSION OVERCONTROL MASCULINITY ANTISOCIAL	PSYCHOTICISM NEUROTICISM EXTROVERSION LIE

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