

## 경증 및 중증 외상성 뇌손상 환자의 성격평가 질문지 프로파일

권 석 준\*<sup>†</sup> · 노 승 호\*

## Personality Assessment Inventory Profiles of Patients with Mild and Severe Traumatic Brain Injury

Seok-Joon Kweon, M.D.,\*<sup>†</sup> Seung-Ho Rho, M.D., Ph.D.\***ABSTRACT**

**Objectives** : This study was designed to investigate the characteristics of personality changes and emotional distress using the Personality Assessment Inventory (PAI) in patients with traumatic brain injury(TBI), divided into mild (MTBI) and severe (STBI) groups according to the severity of injury.

**Methods** : The subjects were consisted of 25 patients with MTBI, 25 patients with STBI, and 25 normal controls. They were interviewed with the PAI. The data were analyzed by  $F^2$  test, analysis of variance and *Tukey* test.

**Results** : The results were the followings. First, Negative Impression in validity scales was elevated above cutoff point(T score 70) in both MTBI and STBI groups. Second, the clinical scales of which scores elevated above the cutoff point were Somatic Complaints, Anxiety, Anxiety - Related Disorders, Depression, and Schizophrenia in the MTBI, and Somatic Complaints and Depression in the STBI. Third, the clinical subscales above the cutoff point were Conversion, Somatization, Health Concerns, Affective Anxiety, Physiological Anxiety, Traumatic Stress, Cognitive Depression, Affective Depression, Physiological Depression, Thought Disorder, and Affective Instability in the MTBI, and Health Concerns, Cognitive Depression, Affective Depression, and Physiological Depression in the STBI. Fourth, Suicide Ideation in treatment scales was the only scale above the cutoff point in the MTBI and the others of the treatment and interpersonal scales in the MTBI and all of these scales of the STBI were not elevated above the cutoff point. Fifth, the scales of which scores showed significant difference between the MTBI and the STBI were Somatic Complaints, Anxiety, Depression, and Suicide Ideation, the subscales were Conversion, Somatization, Health Concerns, Affective Anxiety, Physiological Anxiety, Physiological Depression, and Psychotic Experiences.

**Conclusion** : These results suggest that the patients with MTBI had more somatic and anxiety symptoms, depressed mood, and suicidal ideation than the patients with STBI. These characteristics are generally consistent with clinical observation and findings from previous studies of the patients with TBI, and the PAI seems to be a beneficial adjunctive assessment tool for the evaluation of patients with traumatic brain injury.

**KEY WORDS** : Mild and severe traumatic brain injury · Personality assessment inventory.

*Department of Psychiatry, Wonkwang University School of Medicine, Iksan, Korea*

\*교신저자 : , 570 - 711 344 - 2  
) (063) 840 - 6120, ) (063) 840 - 6169 E - mail) sj - kwon3821@hanmail.net

서 론

(traumatic brain injury ; TBI)

12)13) 가  
PTSD 가  
Leininger 14)

가  
가 50% 1)2) 가  
, PTSD,

가 가 TBI  
가 TBI  
TBI 가  
가 TBI  
TBI 가  
가

3-5) TBI (Minnesota Multiphasic Personality Inventory ; MMPI)가 가  
TBI MMPI  
가 15-18)  
TBI MMPI 1940 Kraepelin  
1980  
(Diagnostic and Statistical Manual of Mental Disorders ; DSM)

MMPI 가  
8)9)가  
30%가 19)20)  
9) MMPI가  
TBI 가 (Personality Assessment Inventory ; PAI)가  
(Posttraumatic stress disorder ; PTSD) . PAI Morey<sup>21)</sup>가  
10)

11) Liter Shordone DSM - -R 가  
가 PTSD 가  
가 , ' - '

4 , 2)

가 , 3) MTBI STBI

22) TBI , PAI

PAI가 , 344 T 17 가 73

PAI 가 PAI MTBI STBI

가 25 .

가 PAI 244 TBI 25

23)24)

PAI TBI

가 ,

PAI TBI

2. 검사도구

Morey<sup>21)</sup>가 , 22)

PAI . PAI 344

가 “

” “ ” “ ”

4 . 4

, 11 , 5 , 2

22 31

PAI

.76, .77, .73

.77 -.91 22)

### 연구 대상 및 방법

#### 1. 연구 대상

2001 3 1 2004 5 30

TBI

227 PAI

116

(Mild TBI ; STBI)

MTBI) (Severe TBI ; STBI)

50

MTBI 1) (Loss of consciousness ; LOC) 30 , 2)

(Posttraumatic amnesia ; PTA) 1 , 3)

(Glasgow Coma Scale ; GCS)

13~15 , 4)

, STBI 1) LOC 1 , 2) PTA 7

, 3) GCS 3~8 , 4)

.25) 1)

가 18 65 , 2)

6 , 3) 6

, 1)

( , ,

), ,

#### 3. 자료수집과 연구절차

PAI

LOC, PTA,

GCS ,

LOC PTA ,

MTBI STBI

PAI .

#### 4. 실험설계 및 통계처리

, , 가

2

F

. TBI PAI ,

MTBI, STBI, PAI, 가, ANOVA, Tukey test, SPSS version 11.5, p<.05, 결과, 1. 인구통계학적 및 임상적 특성 비교, MTBI, STBI, 48%(12), STBI 16%(4), 28%(7), MTBI 41.5(±9.1), STBI 36.4(±12.2), 2. PAI 전체적도별 특성 비교, PAI, MTBI, STBI

Table 1. Demographic data and clinical characteristics

	MTBI(n=25)	STBI(n=25)	Normal(n=25)
Sex(%)*			
Male	13(52)	21(84)	18(72)
Female	12(48)	4(16)	7(28)
Age(years, M ± SD)	41.5 ± 9.1	36.4 ± 12.2	36.1 ± 15.9
Education(years, M ± SD)	10.4 ± 3.8	11.2 ± 3.2	12.5 ± 2.3
Employment status(%)			
Employed	12(48)	15(60)	16(64)
Unemployed	12(48)	5(20)	3(12)
Others(e.g. student)	1(4)	5(20)	6(24)
Marital status(%)			
Married	19(76)	11(44)	16(64)
Not married(e.g. single, divorced, widowed)	6(24)	14(56)	9(36)
Cause of injury(%)			
Motor vehicle accident	18(72)	20(80)	
Industrial accident	7(28)	5(20)	
Purpose of Evaluation(%)			
Rehabilitation	11(44)	8(32)	
Disability assessment	14(56)	17(68)	
Cognitive functions(M ± SD)			
Verbal IQ	86.9 ± 16.0	82.9 ± 12.8	
Performance IQ	85.3 ± 14.5	81.4 ± 13.7	
Full scale IQ	85.7 ± 16.0	81.2 ± 13.1	
Memory quotient	83.6 ± 17.3	77.2 ± 16.3	
Duration after injury(months, M ± SD)	16.7 ± 18.2	16.7 ± 14.9	

MTBI : Patients with mild traumatic brain injury, STBI : Patients with severe traumatic brain injury, IQ : Intelligence quotient, \* : p<.05

**Table 2.** Comparison of PAI full scales among groups

PAI full scales	MTBI(n=25)	STBI(n=25)	Normal(n=25)	F	Tukey
Inconsistency(ICN)	53.0(10.3)	50.2( 9.1)	59.4(13.4)	4.49*	B/C
Infrequency(INF)	56.8(14.6)	50.5( 9.9)	53.8(14.9)	1.41	N.S.
Negative impression(NIM)	83.9(19.6)	75.4(17.2)	55.6(15.5)	17.15**	A,B/C
Positive impression(PIM)	33.8(12.3)	35.4(19.3)	47.5( 9.3)	6.89**	A,B/C
Somatic complaints(SOM)	86.8(13.0)	70.7(16.0)	52.5( 9.7)	42.64**	A/B/C
Anxiety(ANX)	77.5(13.3)	64.9(17.4)	51.3( 7.7)	23.94**	A/B/C
Anxiety related disorder(ARD)	74.2(13.7)	65.4(18.1)	52.4(10.3)	14.35**	A,B/C
Depression(DEP)	84.0(13.2)	75.2(15.7)	50.9( 8.4)	44.81**	A/B/C
Mania(MAN)	57.3(11.4)	55.8(13.5)	51.5(11.1)	1.55	N.S.
Paranoia(PAR)	67.6(19.2)	63.6(17.4)	52.2( 9.5)	6.27**	A,B/C
Schizophrenia(SCZ)	75.9(17.0)	66.2(18.2)	53.1(12.0)	12.83**	A,B/C
Borderline features(BOR)	70.0(15.5)	67.8(17.9)	52.9( 9.2)	10.1**	A,B/C
Antisocial features(ANT)	56.24(13.5)	61.0(14.3)	55.0(11.6)	1.46	N.S.
Alcohol problems(ALC)	49.2(11.7)	56.8(11.6)	52.3( 8.9)	3.11	N.S.
Drug problems(DRG)	65.6(14.9)	60.9(13.9)	57.3(15.7)	1.99	N.S.
Aggression(AGG)	63.5(13.8)	64.1(16.4)	53.0(13.4)	4.55*	A,B/C
Suicide ideation(SUI)	80.6(19.5)	67.9(18.0)	53.2(10.4)	17.32**	A/B/C
Stress(STR)	66.1(11.5)	68.6(12.0)	49.7( 8.9)	22.31**	A,B/C
Nonsupport(NON)	65.1(15.4)	60.0(11.7)	52.7(10.5)	6.04**	A/C
Treatment rejection(RXR)	33.3(11.1)	35.0(14.3)	50.5(10.4)	15.32**	A,B/C
Dominance(DOM)	43.6( 9.1)	46.0(14.4)	47.4(12.0)	.650	N.S.
Warmth(WRM)	50.6(13.8)	47.9(11.7)	49.1(11.3)	.316	N.S.

PAI : Personality assessment inventory, MTBI : patients with mild traumatic brain injury, STBI : patients with severe traumatic brain injury, ( ) : standard deviation, A : MTBI, B : STBI, C : Normal, N.S. : Not significant, \* :  $p < 0.05$ , \*\* :  $p < 0.01$ , The virgule separates groups significantly different from one another

2 , 가 .  
 1 . PAI T 가 70  
 PAI F MTBI NIM 83.9  
 ICN( $p < 0.05$ ), NIM( $p < 0.01$ ), PIM ( ± 19.6) , SOM 86.8 ( ± 13.0),  
 ( $p < 0.01$ ) , ICN DEP 84.0 ( ± 13.2), ANX 77.5 ( ± 13.3) ,  
 STBI , NIM, PIM SUI가 80.6 ( ± 19.5) . STBI  
 TBI 가 . NIM 75.4 ( ± 17.2) ,  
 SOM, ANX, ARD, DEP, PAR, SCZ, BOR DEP 75.2 ( ± 15.7), SOM 70.7 ( ± 16.0)  
 (  $p < 0.01$ ). 70  
 ARD, PAR, SCZ, BOR TBI 가 . T 가 50  
 , SOM, ANX, DEP 70 .  
 가 . AGG( $p < 0.05$ ), PAI T 가 50  
 SUI( $p < 0.01$ ), STR( $p < 0.01$ ), NON( $p < 0.01$ ), RXR( $p < 0.01$ ) PIM DOM, MTBI ALC, RXR,  
 , AGG, DOM, STBI RXR WRM, WRM  
 STR, RXR TBI , .  
 SUI 가 , NON PAI ,  
 MTBI 가 . , T 가 50

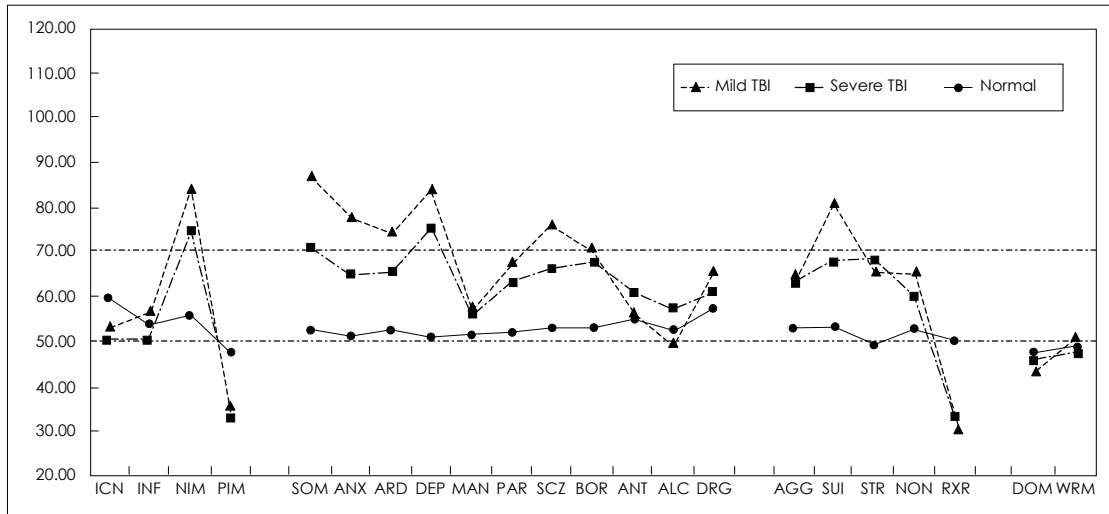


Fig. 1. Profiles of PAI full scales in groups.

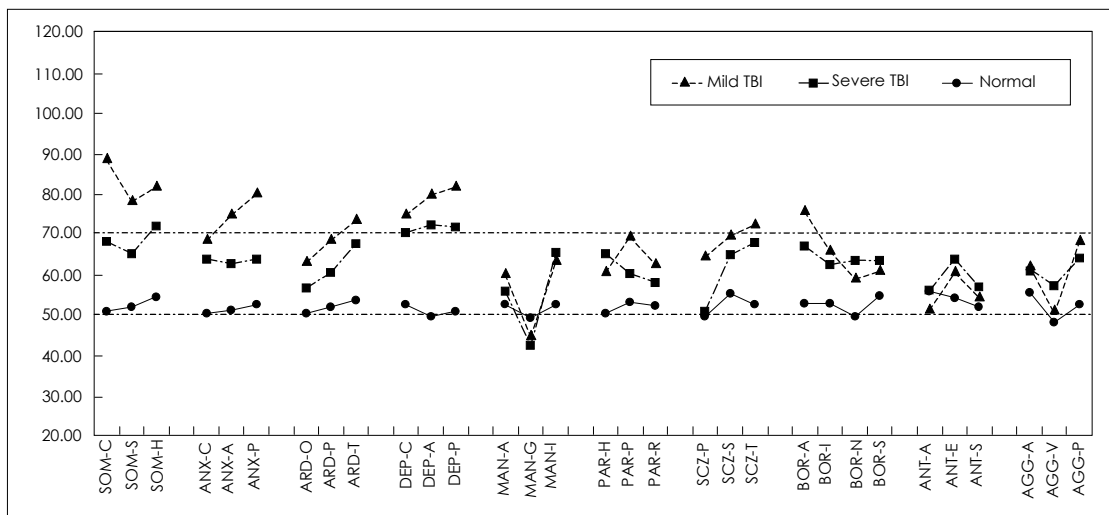


Fig. 2. Profiles of PAI subscales in groups.

RXR 가 TBI PIM 가 SOM ANX ARD  
 DEP가 MAN  
 (floating profile)  
 STBI MTBI MTBI AGG  
 ANT, SUI STR NON RXR  
 ALC MTBI 가 STBI  
 ICN INF 가 50  
 가 NIM 가 70~80  
 PIM 30  
 3. PAI 하위척도별 특성 비교  
 PAI  
 3 , 2

**Table 3.** Comparison of PAI Subscales among groups

PAI Subscales	MTBI(n=25)	STBI(n=25)	Normal(n=25)	F	Tukey
Conversion(SOM-C)	88.1(17.8)	67.9(17.7)	50.8(11.2)	34.66**	A/B/C
Somatization(SOM-S)	77.8( 7.4)	64.9(13.6)	51.7(10.1)	37.57**	A/B/C
Health concerns(SOM-H)	81.4(14.2)	71.8(16.0)	54.3( 8.7)	26.75**	A/B/C
Cognitive(ANX-C)	68.2(11.4)	63.4(16.3)	50.2( 8.8)	13.71**	A,B/C
Affective(ANX-A)	74.6(15.3)	62.4(17.7)	50.9( 9.0)	16.77**	A/B/C
Physiological(ANX-P)	79.6(13.7)	63.6(15.2)	52.2( 8.7)	28.67**	A/B/C
Obsessive-compulsive(ARD-O)	62.8(14.0)	56.5(14.9)	50.1(12.2)	5.31**	A/C
Phobias(ARD-P)	68.2(15.5)	60.2(16.3)	51.9( 9.8)	8.34**	A/C
Traumatic stress(ARD-T)	73.2(14.5)	67.4(16.4)	53.4(10.8)	12.96**	A,B/C
Cognitive(DEP-C)	74.6(14.7)	70.1(13.7)	52.3( 9.7)	20.81**	A,B/C
Affective(DEP-A)	79.4(14.8)	71.9(16.9)	49.4( 8.0)	32.07**	A,B/C
Physiological(DEP-P)	81.4( 9.4)	71.4(14.0)	50.7( 7.4)	53.94**	A/B/C
Activity level(MAN-A)	59.8( 9.3)	55.5(14.3)	52.2(10.9)	2.66	N.S.
Grandiosity(MAN-G)	44.3(10.8)	42.3(10.5)	48.9(10.4)	2.59	N.S.
Irritability(MAN-I)	63.0(14.0)	65.3(17.1)	52.5(11.5)	5.66**	A,B/C
Hypervigilance(PAR-H)	60.2(14.7)	64.8(14.6)	50.2(11.1)	7.58**	A,B/C
Persecution(PAR-P)	69.2(24.8)	60.0(18.8)	52.8(10.1)	4.70*	A/C
Resentment(PAR-R)	62.1(14.3)	57.7(15.8)	52.0( 9.7)	3.48*	A/C
Psychotic experiences(SCZ-P)	64.1(17.7)	50.7(14.7)	49.2(13.1)	7.25**	A/B,C
Social detachment(SCZ-S)	69.2(17.5)	64.6(15.7)	55.0(11.8)	5.73**	A/C
Thought disorders(SCZ-T)	72.1(12.5)	67.8(16.0)	52.2(10.6)	15.63**	A,B/C
Affective instability(BOR-A)	75.4(12.8)	67.0(16.7)	52.5(10.6)	18.14**	A,B/C
Identity problems(BOR-I)	65.5(15.3)	62.2(16.8)	52.6(10.3)	5.42**	A/C
Negative relationships(BOR-N)	58.6(15.2)	63.2(14.9)	49.2( 9.3)	7.09**	B/C
Self-Harm(BOR-S)	60.4(16.3)	63.2(16.3)	54.5(11.2)	2.27	N.S.
Antisocial behaviors(ANT-A)	51.0(11.1)	55.9(13.0)	55.7(11.1)	1.43	N.S.
Egocentricity(ANT-E)	60.2(13.4)	63.4(16.3)	54.0(11.6)	2.97	N.S.
Stimulus-seeking(ANT-S)	53.8(12.7)	56.8(14.0)	51.8( 9.5)	1.07	N.S.
Aggressive attitude(AGG-A)	61.6(12.1)	61.0(15.0)	55.4(11.5)	1.77	N.S.
Verbal aggression(AGG-V)	50.1(10.3)	56.9(13.3)	48.0(12.3)	3.75*	B/C
Physical aggression(AGG-P)	67.8(16.2)	63.7(17.2)	52.4(13.0)	6.57**	A,B/C

PAI : Personality assessment inventory, MTBI : Patients with mild traumatic brain injury, STBI : Patients with severe traumatic brain injury, ( ) : standard deviation, A : MTBI, B : STBI, C : Normal, N.S. : Not significant, \* : p<.05, \*\* : p<.01, The virgule separates groups significantly different from one another

PAI SOM A, AGG - P TBI  
 (p<.01), ANX(p<.01), ARD(p<.01), DEP(p<.01), PAR , ARD - O, ARD - P, PAR - P,  
 (p<.01), SCZ(p<.01), BOR(p<.01), AGG(p<.05) PAR - R, SCZ - S, BOR - I MTBI ,  
 MAN - I(p<.01) BOR - N AGG - V STBI  
 SOM - C, SOM - S, SOM -  
 H, ANX - A ANX - P, DEP - P PAI SOM, ANX, ARD, DEP  
 가 , SCZ - P MTBI STBI TBI  
 , ANX - C, ARD - T, 가 MTBI , STBI ,  
 DEP - C, DEP - A, MAN - I, PAR - H, SCZ - T, BOR -

TBI 6-1-3 , 8)  
F-8-1-6-3-7  
, 29) 3-  
고 찰 1-2-7 , 30) 6  
1-3-2-7 .  
TBI , F  
, 가 , (1 : Hs) (3 : Hy)  
(7 : Pt),  
(2 : D), (8 : Sc)  
MMPI  
, TBI , 1(Hs), 2(D), 3(Hy), 7(pt) 8(Sc)  
, 가 가 Wooten<sup>31)</sup> Gass Rus-  
sel<sup>32)</sup>  
TBI TBI PAI  
MTBI STBI PAI NIM PIM  
ICN INF 가  
RXR ' (cry for help) '  
(20~30%), (50%),  
(10~20%), (10~20%),  
15 24  
, 가 2~3  
26)27) TBI 40  
가 76%,  
24% 가  
가 62%  
18-65  
가  
68% 2  
28)  
TBI 가 MMPI  
17)  
F-8- PTSD



가

STBI NIM PIM

SOM, DEP

SOM - H, DEP - C, DEP - A, DEP - P가 70

MTBI 가

PTSD PAI TBI

PTSD

가

3

16.7

STBI

STBI

MTBI

가

TBI

PAI

가

결 론

PAI

MTBI STBI

1) NIM MTBI STBI

T 가 70

2) PAI 70 MTBI

SOM, ANX, ARD, DEP, SCZ , STBI

SOM DEP

3) PAI 70 MTBI

SOM - C, SOM - S, SOM - H, ANX - A, ANX - P, ARD - T, DEP - C, DEP - A, DEP - P, SCZ - T, BOR - A , STBI SOM - H, DEP - C, DEP - A, DEP - P

4) MTBI SUI

70 STBI 70

5) MTBI STBI

SOM, ANX, DEP, SUI SOM - C, SOM - S, SOM - H, ANX - A, ANX - P, DEP - P, SCZ - P

TBI PAI

중심 단어 :

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□ 부    록 □

성격평가 질문지(Personality assessment inventory ; PAI) 척도

(Inconsistency ; ICN) (Infrequency ; INF) (Negative impression ; NIM) (Positive impression ; PIM)
(Somatic complaints ; SOM) (Conversion ; SOM-C) (Somatization ; SOM-S) (Health concerns ; SOM-H) (Anxiety ; ANX) (Cognitive ; ANX-C) (Affective ; ANX-A) (Physiological ; ANX-P) (Anxiety-related disorders ; ARD) (Obsessive-compulsive ; ARD-O) (Phobias ; ARD-P) (Traumatic stress ; ARD-T) (Depression ; DEP) (Cognitive ; DEP-C) (Affective ; DEP-A) (Physiological ; DEP-P) (Mania ; MAN) (Activity level ; MAN-A) (Grandiosity ; MAN-G) (Irritability ; MAN-I) (Paranoia ; PAR) (Hypervigilance ; PAR-H) (Persecution ; PAR-P) (Resentment ; PAR-R) (Schizophrenia ; SCZ) (Psychotic experiences ; SCZ-P) (Social detachment ; SCZ-S) (Thought disorder ; SCZ-T) (Borderline features ; BOR) (Affective instability ; BOR-A) (Identity problems ; BOR-I) (Negative relationships ; BOR-N) (Self-Harm ; BOR-S) (Antisocial features ; ANT) (Antisocial behaviors ; ANT-A) (Egocentricity ; ANT-E) (Stimulus-seeking ; ANT-S) (Alcohol problems ; ALC) (Drug problems ; DRG)

(Aggression ; AGG)  
    (Aggressive attitude ; AGG-A)  
    (Verbal aggression ; AGG-V)  
    (Physical aggression ; AGG-P)  
    (Suicide ideation ; SUI)  
    (Stress ; STR)  
(Nonsupport ; NON)  
    (Treatment rejection ; RXR)

(Dominance ; DOM)  
(Warmth ; WRM)