

만성 정신분열병 환자들의 인지 기능과 정서 인식 능력의 관련성*

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The Relationship between Neurocognitive Functioning and Emotional Recognition in Chronic Schizophrenic Patients*

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ABSTRACT

Objective : The present study examined the association between basic neurocognitive functions and emotional recognition in chronic schizophrenia. Furthermore, to Investigate cognitive variable related to emotion recognition in Schizophrenia.

Methods : Forty eight patients from the Yongin Psychiatric Rehabilitation Center were evaluated for neurocognitive function, and Emotional Recognition Test which has four subscales finding emotional clue, discriminating emotions, understanding emotional context and emotional capacity. Measures of neurocognitive functioning were selected based on hypothesized relationships to perception of emotion. These measures included : 1) Letter Number Sequencing Test, a measure of working memory ; 2) Word Fluency and Block Design, a measure of executive function ; 3) Hopkins Verbal Learning Test - Korean version, a measure of verbal memory ; 4) Digit Span, a measure of immediate memory ; 5) Span of Apprehension Task, a measure of early visual processing, visual scanning ; 6) Continuous Performance Test, a measure of sustained attention functioning. Correlation analyses between specific neurocognitive measures and emotional recognition test were made. To examine the degree to which neurocognitive performance predicting emotional recognition, hierarchical regression analyses were also made.

Results : Working memory, and verbal memory were closely related with emotional discrimination. Working memory, Span of Apprehension and Digit Span were closely related with contextual recognition. Among cognitive measures, Span of Apprehension, Working memory, Digit Span were most important variables in predicting emotional capacity.

Conclusion : These results are relevant considering that emotional information processing depends, in part, on the abilities to scan the context and to use immediate working memory. These results indicated that mul-

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multifaceted cognitive training program added with Emotional Recognition Task(Cognitive Behavioral Rehabilitation Therapy added with Emotional Management Program) are promising.

KEY WORDS : Schizophrenia · Neurocognitive functioning · Emotional recognition · Working memory.

서론

Bleuler¹⁾가 (affective disturbance)

2-4)

가

. Kee ¹¹⁾

, Schneider ¹²⁾

. Bryson ¹³⁾ Bell - Lysaker

가

가

가

5-7)

가

가

Mueser ⁸⁾

28

, Addington ¹⁴⁾

. Ihnen ⁹⁾

26

. Kee ¹¹⁾

. Kee ¹⁰⁾ 94

. Feinberg

15)

가
 가
 14)
 가
 가
 16)
 가
 가

연구대상 및 방법

1. 피험자

2002 5 2002 9
 18~45 DSM -
 (American Psychiatric Association, 1994)

2. 측정 도구

1) 신경인지기능

가
 (1) : ,
 (Executive function : visuconstructive
 functioning, verbal fluency)
 가
 KWIS
 (Korean Wechsler Adult Intelligence Scale)¹⁷⁾
 (block design) 가 ,
 Chicago Word Fluency Test(
)¹⁸⁾ 가 .
 (semantic word fluency)
 (phonemic word fluency)
 .
 (2) , (Verbal memory function-
 ing)
 가 K - HVL T(Hop-
 kins Verbal Learning Test - Korean Version)¹⁹⁾
 .
 (3) (Working memory functioning)
 Letter Number Se-
 quencing Test(Wechsler)²⁰⁾
 가 .
 (4) (Immediate memory functio-
 ning)
 KWIS (Digit Span)가 .
 (5) , (Early
 visual processing)
 Asarnow Nuechterlein²¹⁾ Span of Ap-
 prehension(SPAN) Program for IBM - Compatible
 Microcomputers Version 5.3
 3 12 가
 ‘ T ’ ‘ F 가 ,
 ‘ T ’ ‘ F ’
 (7) (Sustained attention)
 UCLA CPT(Continuous Per-
 formance Test)²²⁾ 가 . CPT
 DS - CPT

dom single digits)
 (visual vigilance task) “0”
 1
 25% 1 80
 6 480
 . CPT
 (hit rate : HR),
 (false alarm : FAR),
 (sensitivity : A),
 (response bias : B)

2) 정서 인식 과제(Emotional Recognition Task : ERT)¹⁶⁾

30
 가
 가
 가
 가
 가
 가

(1) (Emotional recognition)
 6가
 가
 가
 가
 가
 3가
 가

2가
 가

(2) (Emotional discrimination)
 6가

(3) (Contextual recognition)
 가 18

(quasiran- 6가
 . , , , , , ,
 , , , , , , ,
 (4) (Emotional capacity)
 , , , , , , ,
 .

3. 연구 설계 및 통계분석

48
 , , , , , ,
 (partial correlation) ,

, , , , , ,
 , , , , , ,
 가

(hierarchical regression analysis)
 , , , , , , ,
 , , , , , , ,
 25%, 25%
 가

T - test

연구 결과

1. 인구 통계학적 자료

42.15(±6.95)
 , 14 , 34 ,
 9.81(±3.34) .
 25.48(±6.12) ,
 27.02(±6.98) .
 6.04(±5.25) , 34.47(±
 28.55) , 16.67(±7.55)
 (1).

2. 정서 인식, 정서 변별, 맥락 인식, 정서 능력과 신경 인지 기능간의 상관관계

(Partial Correlation)
 , , , , , , ,
 CPT
 K - HVLT

(K - HVLТ), () ,
)
() ,

(2).

1) 정서 인식을 종속변인으로 한 위계적 회귀 분석 결과

3. 정서 인식, 정서 변별, 맥락 인식, 정서 능력에 대한 신경 인지 기능과 관련된 변인들의 설명.

21%

2%

6

Span

(3).

CPT

() ,

2) 정서 변별을 종속변인으로 한 위계적 회귀 분석 결과

32%

10%

1% 가

Table 1. Demographic data and baseline characteristics of all patients

Characteristics	Subjects (n=48)
Male/Female	14/34
Age	42.15(6.95)
Duration of education	9.81(3.34)
Age at first onset of illness	25.48(6.12)
Age at first admission	27.02(6.98)
Number of admission	6.04(5.25)
Duration of present admission	34.47(28.55)
Duration of illness	16.67(7.55)

=.39, $p<.01$),

1% 가

14% 가 (

가 (4).

Table 2. The relationship between neurocognitive functioning and emotional measure

	Emotional recognition	Emotional discrimination	Contextual recognition	Emotional capacity
Digit Span	.1320	.1430	.2023	.2226
Block Design	.2446	.0820	.4776**	.4351**
K-HVLT(immediate recall sum)	.0341	.2380	.1742	.1986
K-HVLT(recall)	-.0757	.2838	.1729	.1767
K-HVLT(recogniton)	-.0180	.1960	.1878	.1809
Word fluency(semantic)	.0630	.1408	.3315*	.2923*
Word fluency(phonetic)	-.1102	-.0006	.3440*	.2095
Working memory	.2155	.4059**	.3627*	.4334**
Span(number 3)	.0908	.2157	.3018*	.3002*
Span(number 12)	.1068	.0355	.3617*	.2982*
Cpt(hit rate)	-.1131	.1995	.1570	.1309

* : $p<.05$, ** : $p<.01$

3) 맥락 인식을 종속변인으로 한 위계적 회귀 분석 결과

(5).
 38% 11%, 1% 가
 2%,
 16% 9% 가
 0.1% 가

Table 3. Hierarchical regression analysis predicting emotional recognition

Predictor	B	SE B	R ²	R ²	F change
1 Early visual processing			.02	.02	.467
SPAN 3	.01	.03	.04		
SPAN 12	.02	.05	.11		
2 Sustained attention			.05	.03	1.353
CPT	-.98	.84	-.19		
3 Working memory			.13	.07	3.457
Letter number sequencing test	.11	.06	.29		
4 Immediate memory			.13	.00	.000
Digit span	-.001	.11	-.003		
5 Verbal memory			.13	.01	.123
K-HVLT(immediate recall)	.02	.06	.05		
K-HVLT(recall)	-.08	.15	-.14		
K-HVLT(recognition)	.07	.15	.09		
6 Executive function			.21	.07	1.063
Block design	.14	.10	.30		
Semantic	.02	.04	.10		
Phonetic	-.06	.04	-.37		

Table 4. Hierarchical regression analysis predicting emotional discrimination

Predictor	B	SE B	R ²	R ²	F change
1 Early visual processing			.10	.10	2.507
SPAN 3	.059	.03	.52*		
SPAN 12	-.059	.04	-.33		
2 Sustained attention			.12	.01	.684
CPT	-.60	.73	.13		
3 Working memory			.26	.14	7.488*
Letter number sequencing test	.13	.05	.39**		
4 Immediate memory			.26	.01	.429*
Digit span	-.06	.09	-.13		
5 Verbal memory			.31	.05	.815
K-HVLT(immediate recall)	.003	.05	-.01		
K-HVLT(recall)	.07	.12	.13		
K-HVLT(recognition)	.09	.12	.14		
6 Executive function			.32	.01	.140
Block design	.01	.08	.02		
Semantic	-.001	.03	-.08		
Phonetic	-.01	.03	-.07		

* : $p < .05$, ** : $p < .01$

Table 5. Hierarchical regression analysis predicting contextual recognition

Predictor	B	SE B		R ²	R ²	F change
1 Early visual processing				.16	.16	3.984*
SPAN 3	.02	.07	.07			
SPAN 12	.16	.11	.34			
2 Sustained attention				.16	.001	.027
CPT	.30	1.85	.03			
3 Working memory				.27	.11	6.095*
Letter number sequencing test	.30	.12	.35*			
4 Immediate memory				.27	.01	.282*
Digit span	-.13	.24	-.10			
5 Verbal memory				.29	.02	.335
K-HVLT(immediate recall)	-.06	.13	-.09			
K-HVLT(recall)	.08	.31	.06			
K-HVLT(recognition)	.23	.31	.13			
6 Executive function				.38	.09	1.535
Block design	.34	.21	.32			
Semantic	-.02	.08	-.04			
Phonetic	.08	.09	.22			

* : $p < .05$

Table 6. Hierarchical regression analysis predicting contextual recognition

Predictor	B	SE B		R ²	R ²	F change
1 Early visual processing				.16	.16	3.984*
SPAN 3	.02	.07	.07			
SPAN 12	.16	.11	.34			
2 Sustained attention				.16	.001	.027
CPT	.30	1.85	.03			
3 Working memory				.27	.11	6.095*
Letter number sequencing test	.30	.12	.35*			
4 Immediate memory				.27	.01	.282*
Digit span	-.13	.24	-.10			
5 Verbal memory				.29	.02	.335
K-HVLT(immediate recall)	-.06	.13	-.09			
K-HVLT(recall)	.08	.31	.06			
K-HVLT(recognition)	.23	.31	.13			
6 Executive function				.38	.09	1.535
Block design	.34	.21	.32			
Semantic	-.02	.08	-.04			
Phonetic	.08	.09	.22			

* : $p < .05$, ** : $p < .01$

4) 정서 능력을 종속 변인으로 한 위계적 회귀 분석 결과

가 . , 17%
 38% . 가 ($r = .54$, ** $p < .01$),
 13% 1% 가

Table 7. Comparison of emotional recognition test between upper 25% and lower 25% in working memory

	Upper 25%(n= 13)	Lower 25%(n= 19)	t	p
	Mean(sd)	Mean(sd)		
Emotion recognition	4.46(1.66)	3.58(1.35)	1.655	.108
Emotion discrimination	4.08(1.19)	2.89(1.29)	2.632*	.013
Contextual recognition	10.85(3.72)	8.37(2.69)	2.191*	.036
Emotion capacity	19.38(5.74)	14.84(3.53)	2.777**	.009

* : $p < .05$, ** : $p < .01$

가 (6).

25%, 25% T

4. 작업 기억 점수를 기준으로 상위 25%, 하위 25% 나누어 두 집단간 차이 비교

(25%)

(25%)

가

(7).

가 SPAN, CPT, Kee¹¹⁾, CPT

논 의

12-14)23)

가

16)

가

, Baddeley

24)

25)

25%,
가

가 25%,

중심 단어 :

참고문헌

1. Bleuler E. Dementia praecox or the group of schizophrenia (tran. Zinkin, J). International Universities Press:1950, New York.
2. Heimberg C, Gur RE, Erwin RJ, Shtasel DL, Gur RC. Facial emotion discrimination: III. behavioral findings in schizophrenia. *Psychiatry Res* 1992;42:253-265.
3. Morrison RL, Bellack AS, Mueser KT. Deficits in facial-affect recognition and schizophrenia. *Schizophr Bull* 1998;14:67-84.
4. Kerr SL, Neale JM. Emotion perception in schizophrenia: Specific deficit or further evidence of generalized poor performance? *J Abnorm Psychol* 1993;102:312-318.
5. Schneider F, Heimann H, Himer W, Huss D, Mattes R, Adams B. Computer based analysis of facial action in schizophrenic and depressed patients. *European Analysis of Psychiatry and Clinical Neuroscience* 1990;40:67-76.
6. Kerr SL, Neale JM. Emotion perception in schizophrenia: Specific deficit or further evidence of generalized poor performance? *J Abnorm Psycho* 1993;102:312-318.
7. Salem JE, Kring AM. More evidence for Generalized Poor Performance in Facial Emotion Perception in schizophrenia. *J Abnorm Psychol* 1996;105:480-483.
8. Mueser KT, Doonan R, Penn DL, Blanchard JJ, Bellack AS, Nishith P, Deleon J. Emotion recognition and social Competence in chronic Schizophrenia. *J Abnorm Psychol* 1996;105:271-275.
9. Ihnen GH, Penn DL, Corrigan PW, Martin J. Social perception and social skill in schizophrenia. *Psychiatry Res* 1998;80:275-286.
10. Kee KS, Green MF, Mintz J, Brekke JS. Is Emotion Processing a Predictor of Functional Outcome in Schizophrenia? *Schizophrenia Bull* 2003;29:487-497.
11. Kee KS, Kern RS, Green MF. Perception of Emotion and neurocognitive functioning in Schizophrenia: What's the link? *Psychiatry Res* 1998b;81:57-65.
12. Schneider F, Gur RE, Shtasel DL. Emotion Processing in Schizophrenia: Neurobehavioral probes in relation to

- psychopathology. *Schizophr Res* 1995;17:67-75.
13. Bryson G, Bell M, Lysaker P. Affect recognition in Schizophrenia: A function of global impairment or a specific cognitive deficit? *Psychiatry Res* 1997;71:105-113.
 14. Addington J, Addington D. Facial affect recognition and information processing in schizophrenia and bipolar disorder. *Schizophr Res* 1998;32:171-181.
 15. Feinberg TE, Rifkin A, Schaffer C, Walker E. Facial discrimination and emotional recognition in schizophrenia and affective disorder. *Arch Gen Psychiatry* 1986;43:276-279.
 16. 이수정. 문제해결 과제를 이용한 정서 인식력 검사의 개발. *한국 심리학회지, 사회 및 성격* 2001; 15:65-86.
 17. 전용신, 서봉연, 오창우. 한국판 웨슬러 지능 검사 실시 요강; 1963. 서울, 중앙교육연구소.
 18. 신경인지기능 연구회. 임상 신경인지 기능 검사집; 1997.
 19. 강연욱. 치매의 신경심리학적 평가: 서울 신경심리학 검사(SNSB); 2001.
 20. Wechsler B. The Wechsler Adult Intelligence Scale. Third edition: The Psychological corporation. WAIS; 1997.
 21. Asarnow RF, Nuechterlein KH. The Span of Apprehension (SPAN) Program for IBM-Compatible Microcomputers, Version 5.3; 1999, Los Angeles, Authors.
 22. Nuechterlein KH, Asarnow RF. Degraded stimulus Continuous Performance Test (DS-CPT) Program for IBM-Compatible Microcomputer, Version 8.12.; 1999, Los Angeles: Authors.
 23. Kohler CG, Bilker W, Hagendoorn M, Gur RE, Gur RC. Emotion recognition deficit in schizophrenia: Association with symptomatology and cognition. *Biol Psychiatry* 2000;48:127-136.
 24. Baddely AD. Working memory. *Science* 255;1992. p.556-559.
 25. Green MF, Marshall BD. Jr., Wirshing WC, Ames D, Marder SR, McGurk S, Kern RS, Mintz J. Does risperidone improve verbal working memory in treatment resistant schizophrenia? *Am J Psychiatry* 1997;154:799-804.
 26. 황태연, 김형섭, 이우경, 한은신, 강대엽, 황혜리. 리스페리돈이 만성 정신분열병 환자들의 인지 기능 및 정신사회 재활 성과에 미치는 영향. *정신분열병 클리닉* 2004;7:2004.