

기분과 성격특성이 정신생리적 반응에 미치는 영향

Effect of Mood and Personality Characteristics on Psychophysiological Responses

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ABSTRACT

Objectives: This study examined the effect of mood and personality characteristics on psychophysiological responses measured by a biofeedback system in a normal population.

Methods: Fifty healthy volunteers without any history of medical or psychiatric illnesses participated in this study. We measured the Spielberger trait anxiety inventory, Beck depression inventory, and Eysenck personality questionnaires in these subjects. Using the J&J biofeedback system, we also measured skin temperature, electrodermal response, forearm and frontal electromyography (EMG)s in 3 experimental conditions of baseline, stress, and recovery phases.

Results: Trait anxiety did not show any significant correlation with psychophysiological responses except stress response in forearm EMG levels ($r=0.282$, $p<0.05$). Depressed mood was negatively correlated with forearm EMG levels in baseline ($r= -0.299$, $p<0.05$) and recovery phases ($r= -0.314$, $p<0.05$). Subjects with relatively high levels of depressed mood showed different stress and recovery responses in frontal EMG levels compared with those with relatively low levels of depressed mood ($F=4.26$, $p<0.05$). Extroverted subjects showed higher levels of forearm EMG than introverted ones in stress phase.

Conclusion: Mood and personality characteristics in healthy subjects are closely related with psychophysiological responses measured by a biofeedback system. We suggest that mood and personality characteristics should be considered as important variables in analyzing abnormal psychophysiological responses in some psychiatric patients. *Sleep Medicine and Psychophysiology* 2001 ; 8(1) : 59-66

Key words: Anxiety · Depression · Personality characteristics · Psychophysiological responses · Biofeedback.

서 론

본 연구는 정상인 집단에서 기분과 성격특성이 정신생리적 반응에 미치는 영향을 조사하였다. (skin conductance)를 측정하였다. (1). (state) (2). Spielberger (3) (trait) (4, 5).

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가 (autogenic training) (16,17).
 가 (6).
 가 (7).

가 (8 - 11). **연구대상 및 방법**

1. 연구대상

가 Eysenck(12) 가 , 가 Eysenck (ascending reticular activating system) (ascending reticular activating system) 가 (cortical arousal)

2. 연구 도구 및 방법

1) 검사절차

(13). Biofeedback (psychophysiological disorder) 가 (arm chair) Biofeedback 가 (biofeedback) 가 (feedback) J & J (I - 410 model, Poulso) sensor (14,15). (baseline) . 5 (stressful (psychosomatic disorder) (neurotic syn- task) , 5 (recovery) 가

(frontalis muscle)
(brachioradialis proximal)
가 (thermi-
stor)
(electrodermal sensor)
Biofeedback
(1) (STAI : State - Trait Anxiety Inventory)
(18) Spiel- system
berger 27가 100 - 7 (Serial number
(STAI - T) seven subtraction) (Digit
span : forward and backward) 200
가 4 7 1
20

가 (5). 4) 결과처리
(skin temperature),
(electrodermal response), (fo-
rearm EMG), (frontal EMG)
Eysenck Eysenck 3
가 Eys- repeated measures ANOVA
6 , 81
enck I (19).
(psychoticism : P) - (extraversion - intro- Pe-
version : E) (neuroticism : N) arson
(lie : L) (addiction : A) (criminality : C)
6 81
(20). (stress response)
(reco-

(3) Beck (BDI : Beck Depression Inven- very response)
tory) BDI 10 , 10 ()
21 , , ,) , (, ,
4 ,) /
0 3 가 3
0 63 t - test
BDI (21) repeated measures ANOVA
Beck 0~9 , 10~15 SPSS 9.0 version
, 16~63 (22).

결 과

3) 생리적 반응 측정 및 스트레스 과제
Biofeedback system J & J I - 410 model Program 1. 연구 대상의 특징
(Neurodata, Inc.) (μ mhos) 1 (±
(), (μ V)) 26.2 ± 4.3 20, 30 가 ,

18 , 32 가
15.7 가

가

10 10 /

가

(2).

Table 1. Characteristics of subjects (N=50)

Sex	M	18
	F	32
Age (years ; mean ± S.D.)		26.2 ± 4.3
Education (years)		15.7 ± 1.6
Mean scores of psychological scales (± S.D.)		
STAIT		43.2 ± 10.2
BDI		9.5 ± 7.3
E-E		10.2 ± 4.0
E-N		10.1 ± 5.0

S.D. : standard deviation
STAIT : State-Trait Anxiety Inventory, trait form
BDI : Beck Depression Inventory
E-E : Extraversion-introversion of Eysenck personality questionnaire
E-N : Neuroticism of Eysenck personality questionnaire

Table 2. Comparison of mean scores of psychological scales between low (N=10) and high (N=10) groups

	Group	Mean (± S.D.)	t-value	p-value
STAIT	Low	31.8 (4.3)	- 10.5	<0.001
	High	59.2 (7.1)		
BDI	Low	2.1 (1.0)	- 7.8	<0.001
	High	20.8 (7.5)		
E-E	Low	4.4 (2.0)	- 14.0	<0.001
	High	15.5 (1.6)		
E-N	Low	4.0 (0.8)	- 20.0	<0.001
	High	17.7 (2.0)		

Abbreviations as 1

Table 3. Physiological measures during experimental phases (N=50)

	Baseline	Stress	Recovery	df	F	P
Temp()	34.4 (1.9)	33.3 (2.0)	33.7 (2.4)	2	30.7	<0.01
EDR(μ mho)	13.3 (7.0)	21.7 (8.8)	19.4 (9.6)	2	93.5	<0.01
EMGa(μ V)	3.3 (1.5)	3.8 (1.7)	2.8 (1.3)	2	10.9	<0.01
EMGb(μ V)	2.7 (1.1)	4.7 (2.1)	2.3 (0.8)	2	58.2	<0.01

repeated mesuares ANOVA ; Temp : skin temperature ; EDR : electrodermal response ; EMGa : forearm electromyography ; EMBg : frontalis electromyography

Table 4. Relationship between psychological rating scales and physiological measrues during experimental phases (N=50)

	TEMP			EDR			EMGa			EMGb		
	Baseline	Stress	Recovery	Baseline	Stress	Recovery	Baseline	Stress	Recovery	Baseline	Stress	Recovery
STAIT	.043	.065	.023	.016	.056	.020	-.193	.056	-.134	.028	-.153	-.050
BDI	.028	.079	.025	-.130	-.194	-.149	-.299*	-.079	-.314*	.054	-.193	-.062
E-E	.142	.207	.057	-.121	-.104	-.182	.233	.337*	.106	.333*	.054	.036
E-N	-.025	.002	.141	.164	.165	.182	-.040	.008	.052	.093	.055	.031

Statistics(correlation coefficient) by Pearson's correlation analysis. Abbreviations as 1 & 3

* : p<05

2. 실험 도중의 정신생리적 반응의 변화양상

, , 3
3
(F=30.7, p<.001),
(F=93.5, p<.001). (F=10.9, p<.001)
(F=58.2, p<.001)
가

3. 기분과 정신생리적 반응의 관계

4
(r = -.299, p<.05 ; r =
-.314, p<.05).
가
(t=2.627, p<.05 ; t=2.615, p<.05)
가
(1).

4. 성격특성과 정신생리적 반응의 관계

(F=4.26, p<.05)

(r=.282, p<.05),

(5).

가

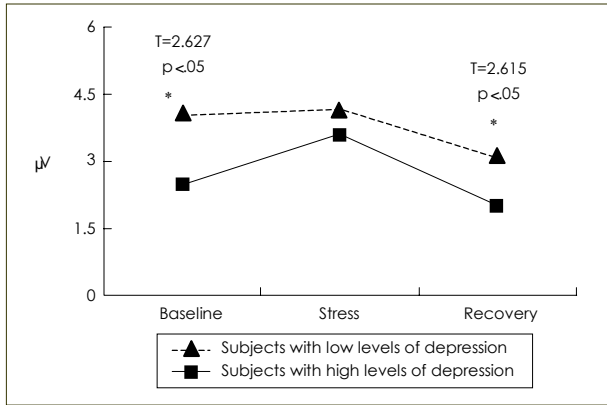


Fig. 1. Forearm electromyography levels during 3 experimental phases in subjects with high and low levels of depression.

가

(r=.337, p<.05) ,

(r=.333, p<.05)

가

(4).

(t=.509, p<.05)(2),

가

(t= -2.480, p<.05 ; t= -3.

136, p<.01)

(3).

고 찰

가

가

(13, 23).

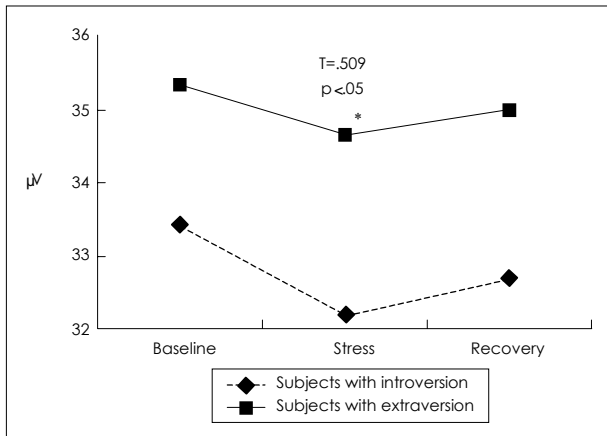


Fig. 2. Skin temperature levels during 3 experimental phases in subjects with introversion and extraversion.

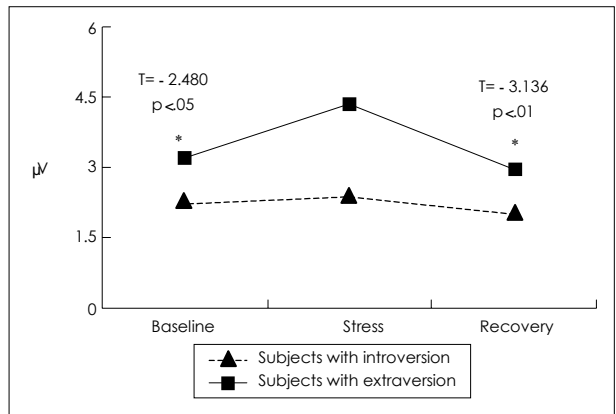


Fig. 3. Forearm electromyography levels during 3 experimental phases in subjects with introversion and extraversion.

Table 5. Relationship between psychological rating scales and physiological response patterns (N=50)

	Temp		EDR		EMGa		EMGb	
	Stress response	Recovery response	Stress response	Recovery response	Stress response	Recovery response	Stress response	Recovery response
STAIT	.059	.071	.079	.076	.282*	.163	-.175	-.142
BDI	.130	.042	-.161	-.068	.229	.164	-.230	-.179
E-E	.178	.077	-.014	.213	.167	.238	-.120	.042
E-N	.065	.098	.060	-.079	.054	-.032	.008	.045

Statistics(correlation coefficient) by Pearson's correlation analysis. Abbreviations as 1 & 3 * : p<.05

결 론 :

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중심 단어 :

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요 약

목 적 :

방 법 :

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J & J

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t - test, rep-

eated measures ANOVA, Pearson

결 과 :

($r=0.282, p<0.05$),

($r= -0.299, p<0.05$; $r= -0.314, p<0.05$).

가

($F=4.26, p<.05$).

가

20. 이현수. 아이젠크 성격검사 요강. 서울, 학지사;1997
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