

Investigation of Social Anxiety of Patients with Schizophrenia using virtual avatar

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Introduction

Intro.

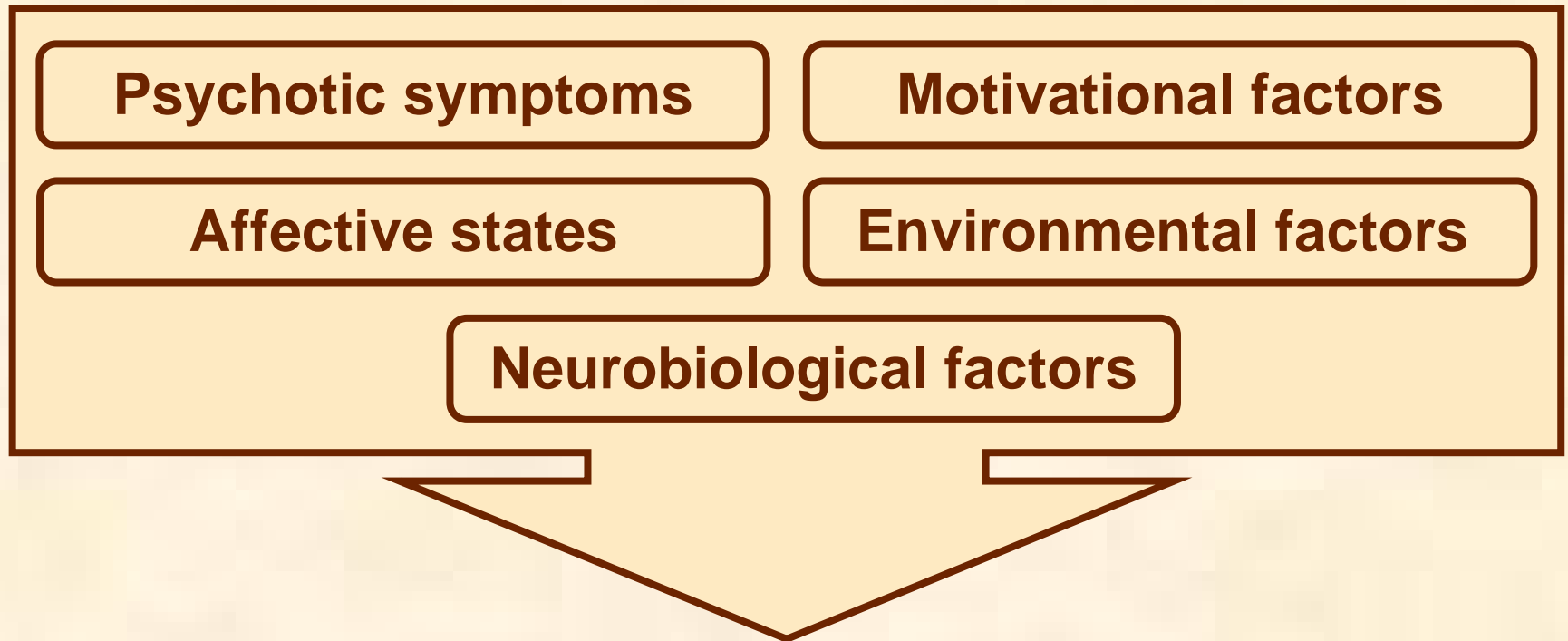
Schizophrenia

- One of the most devastating psychiatric disorders, as it seriously affects higher mental functions, such as thinking, feeling, and perceiving
- Divided into positive and negative symptoms diagnosis and treatment

Positive Syndrome	Negative Syndrome
P1 : Delusion	N1 : Blunted affect
P2 : Conceptual disorganization	N2 : Emotional Withdrawal
P3 : Hallucinatory behavior	N3 : Poor rapport
P4 : Excitement	N4 : Passive/apathetic social withdrawal
P5 : Grandiosity	N5 : Difficulty in abstract thinking
P6 : Suspiciousness	N6 : Lack of spontaneity and flow of conversation
P6 : Hostility	N7 : Stereotyped thinking

Intro.

Factors Affecting Social Function



Difficulties in Social Functioning
(esp. social cognition, facial-affect perception & representation)

Intro.

Deficits of Emotion Perception in SPR

- **Patients with Schizophrenia suffer from cognitive and emotional impairments** (*Goldman et al., 1993*)
 - **Perform more poorly than non-patient and psychiatric controls on tests of facial affect recognition** (*Addington et al., 1998*)
 - **Impairment in facial affect recognition on negative emotion expression was severer than positive. especially, deficits on recognition of fearful emotion** (*Edwards et al., 1999*)
 - **Deficits of emotion perception were more serious in negative emotion expression than positive and neutral emotion expression** (*Corrigan & Penn 2001*)
 - **Relatively, Schizophrenia have a difficulty of perception on dynamic emotion expression** (*Bryson & Lysaker, 1997*)
 - **Little agreement on relationship between emotion perception and negative symptom in patients with Schizophrenia** (*Corrigan & Penn 2001*)
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Purpose

The Purposes of this study are...

- to provide various dynamic emotion expression using VR
- to investigate that interaction with avatars in VE can evoke patient's positive, neutral and negative emotions
- to understand the trait of emotion perception in patients with schizophrenia (esp. social anxiety)
- to investigate the relationship between social anxiety and negative symptom in patient with Schizophrenia

Methods

Subjects

Patients

- 16 men and 14 women
- 30 Patient with Schizophrenia diagnosed by DSM-IV were recruited
- inpatients in the Severance Mental Health Hospital at Yonsei University
- evaluation on symptom severity : Positive and Negative Symptom Scale

Normal

- 16 men and 14 women
- selected on the basis of the matching to patients

VR Task Description

Approach & say 'hello'



Listening avatar's introduction



Introduce oneself



Method

Demonstration 1.



Method

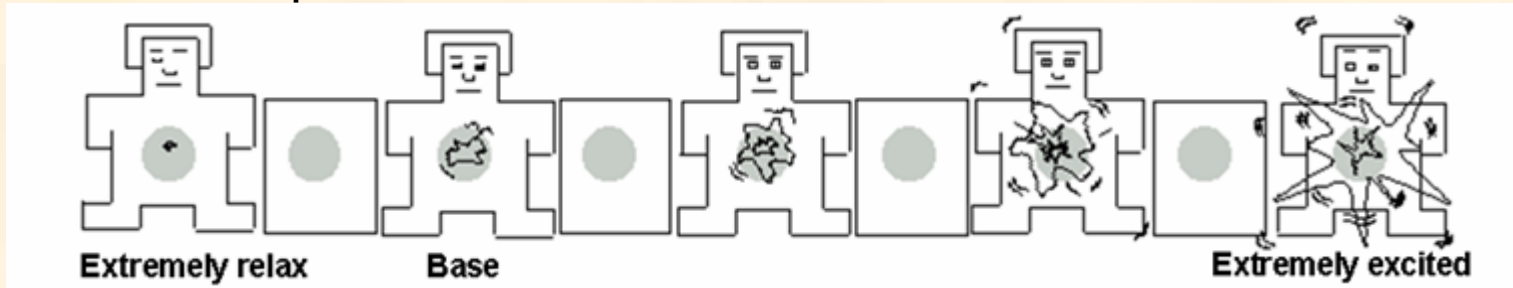
Demonstration 2.



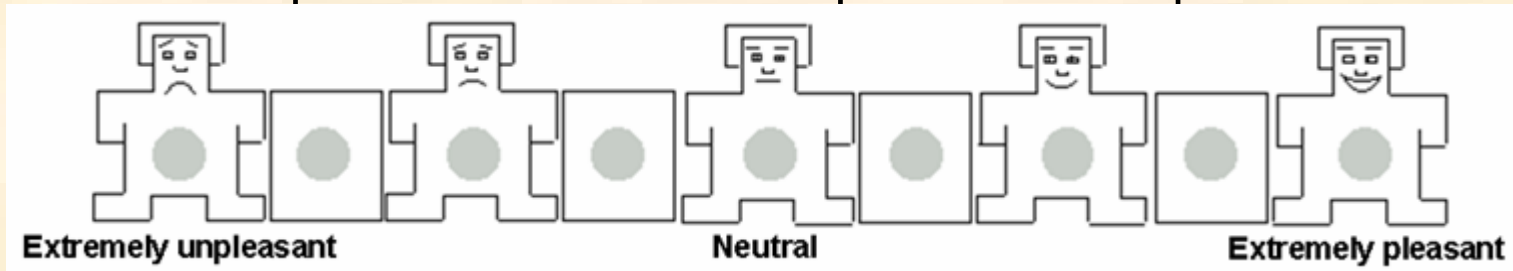
Measurements 1.

Measurements

- **Arousal** : represents an amount of emotional awaken



- **Valence** : represents an amount of pleasant or unpleasant



Measurements 2.

Measurements

- **State-Trait Anxiety Inventory (STAI)** : trait & state anxiety

Trait	relatively stable individual differences in anxiety proneness
State	transitory emotional state or condition

State-Trait ratio	State Anxiety / Trait Anxiety
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- **Positive and Negative Syndrome Scale (PANSS)**
 - : evaluation on symptom severity of Patients with Schizophrenia
 - : positive, negative and general psychopathology score

Results

Result

Demographic Data of Subjects

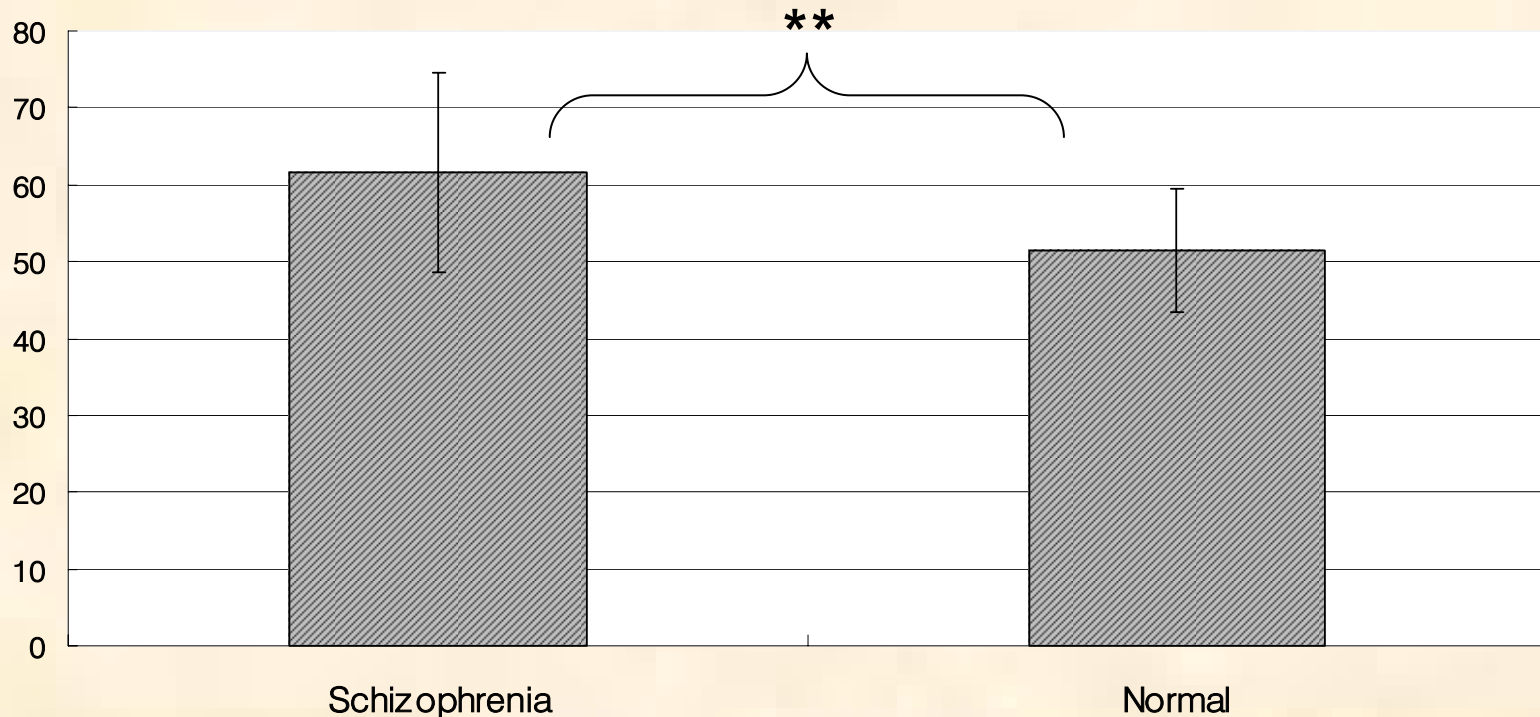
	Schizophrenia	Normal
Age	28.66 ± 5.504	26.3 ± 4.260
Gender	M : 16 , F : 14	M : 16 , F : 14
PANSS		
Negative Symptom	19.14 ± 3.39	
Positive Symptom	20.57 ± 5.06	
General Psychopathology	39.39 ± 6.59	

- The age ($p=.068$) and gender ratio ($p=1.000$) of subjects was not significantly different between normal and patient group.

Result

Comparison of Social Anxiety-Trait

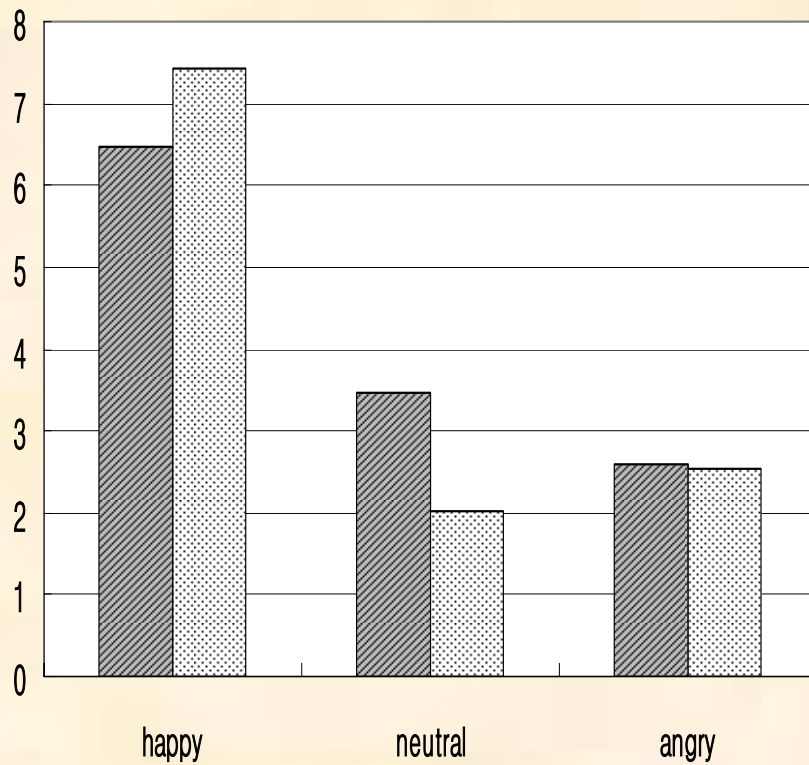
Social Anxiety-Trait Comparison between Schizophrenia and Normal



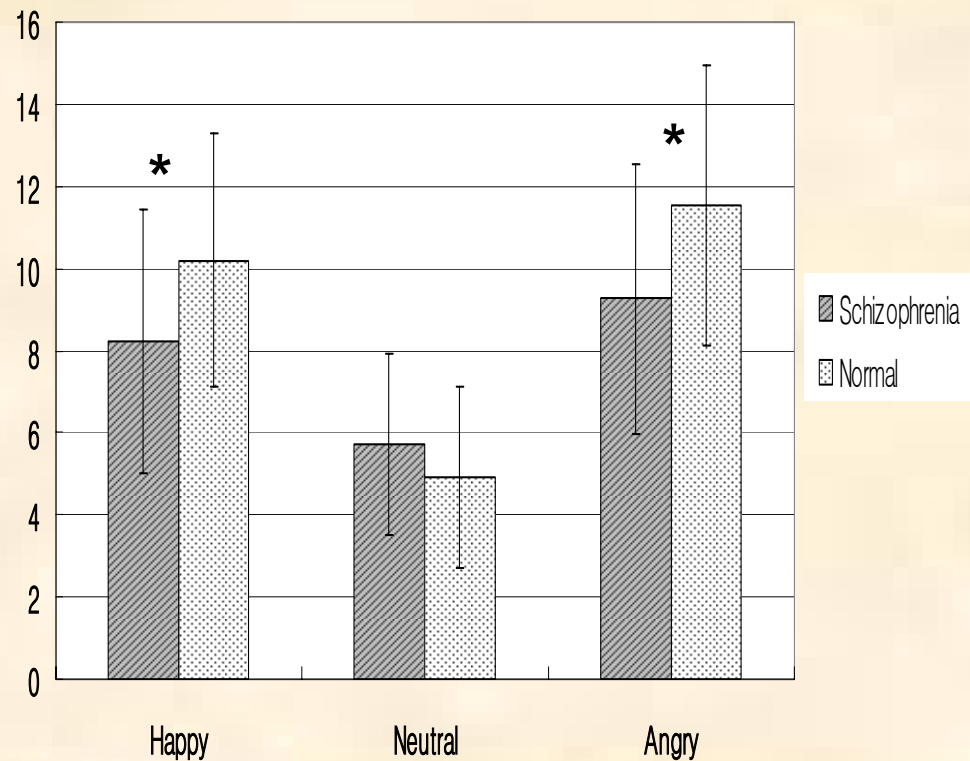
Result

Comparison of Valence & Arousal

Valence



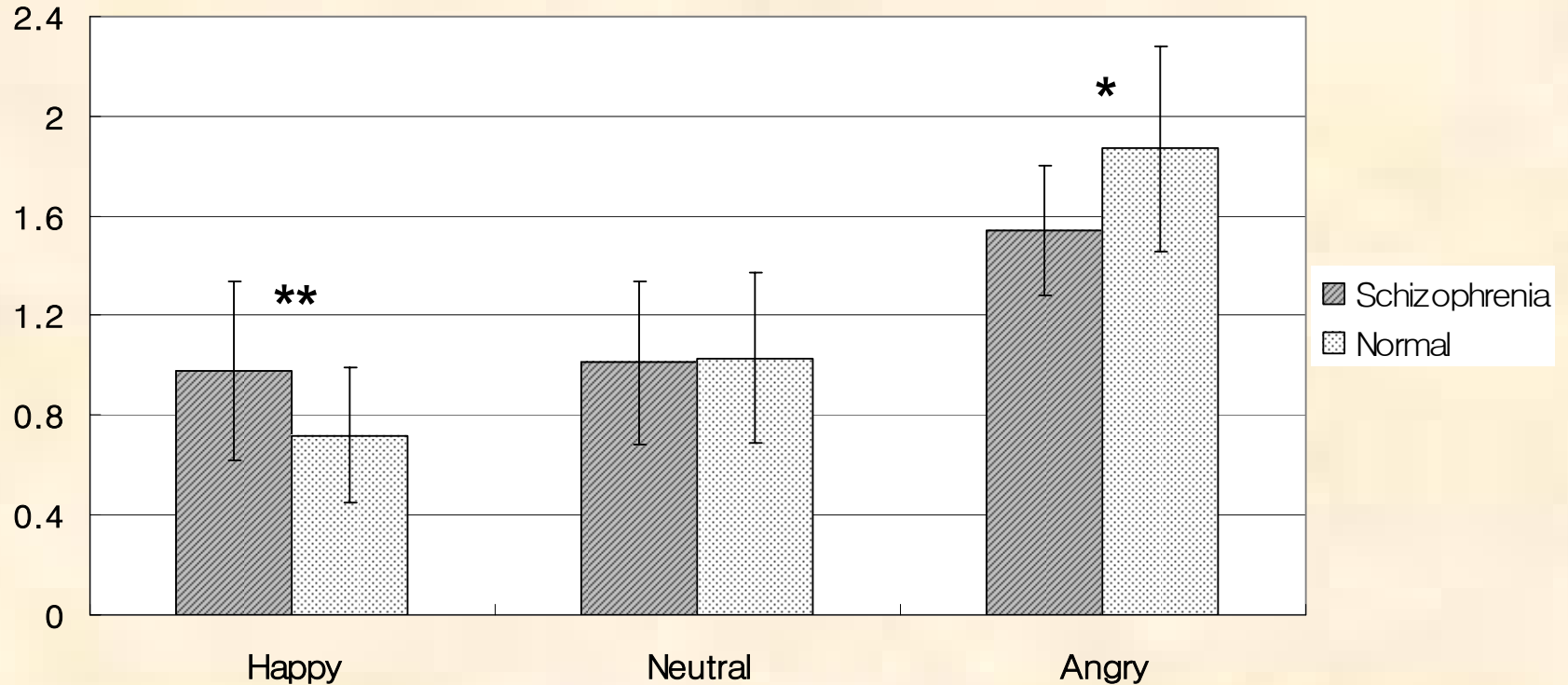
Arousal



Result

Comparison of State and Trait Ratio

The Social Anxiety Ratio



Result

Correlation between Ratio and PANSS

The social anxiety ratio and PANSS

	Positive syndrome	Negative syndrome	General psychopathology
Happy-anxiety ratio	.069 (p=.728)	.476* (p=.010)	.283 (p=.145)
Neutral-anxiety ratio	.060 (p=.763)	.333 (p=.083)	.012 (p=.951)
Angry-anxiety ratio	-.176 (p=.371)	-.370 (p=.052)	-.170 (p=.386)

Conclusion

- Virtual avatar having emotional expression could cause social anxiety of patient's with schizophrenia in virtual social interaction situation
- The less arousal value in patient group represents that the patients have a trouble to perceive an aroused situation (happy and angry)
- Patients felt more social anxiety on happy avatar condition but less social anxiety on angry avatar compared with normal
- The correlation between negative symptom severity and social anxiety ratio could be understood by the fact that the deficit of perceiving emotion interfere to experience an emotional situation.

Thank you !!

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