

Pragmatic Competence and Mood in Schizophrenics

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Abstract

Objective: We evaluated the cognitive ability and the mood in schizophrenics in comparison with the controls, using the pragmatics and the psychological testing in 40 inpatients with schizophrenia and 30 normal controls. And the relation between the cognitive ability and the mood in the schizophrenics also examined. **Result:** In the pragmatic test, marked differences in the correct answer rate between the schizophrenics and controls were observed especially in questions with irony and periphrasis. The score of the self described depression scale (SDS) had significant correlation with other variables only in the group of high pragmatic scores. The score of Pragmatic-contextual-comprehension test (PCCT) in the group with high pragmatic scores only showed inverse relation with the score of Masked Depression Inventory (MDI). **Discussion:** The poor correct answer rates in schizophrenics on the pragmatic test suggested that impaired others-monitoring exists in schizophrenic group. Marked differences between the two groups were irony and periphrasis. This suggests that “lack of self-evidence” appears to characterize the thought in schizophrenics. The SDS score had no significant relation with other variables in the group with low pragmatic ability. The group with high pragmatic ability only showed inverse relation with the Masked Depression Inventory. These facts suggest that the patients with better others-monitoring ability show better self-monitoring ability than the patients with poor others-monitoring ability.

Key Words: schizophrenia, pragmatic competence, mood, others-monitoring

The cognition process in schizophrenics has been studied by various approaches such as event-related potentials or exploring ocular movements etc., and the data have been steadily accumulated. Our study in schizophrenic criminals^{[1] [2]} suggested that the changes in the logic structure with progression of the disease be important, in addition to pathologic experiences and enhanced impulsive aggression due to changes in personality, as a factor that drives schizophrenics to crimes. From the phenomenological aspect, we evaluated pragmatics, depression, aggression and confusion in schizophrenics in comparison with normal controls to help the clarification of aggression and qualitative logic structure in schizophrenics.

In addition to genetically defined biological disharmony, there appears to be destruction of the pre-existing view of the world and its reconstruction caused by the disorders of feelings and emotions from the background of the peculiar logic structure in schizophrenics. Evaluation of the relationship between the disorder of the qualitative logic and psychological conditions such as anger and anxiety may be of value. Though some researchers suggested similarity in thought between schizophrenics and infants, is it possible that regression of feelings due to psychic trauma induces regression of cognition in schizophrenics who achieved or were achieving normal development? Since there are various cognitive neuro-psychological studies on thought or speech disorders that induce logic disorders in schizophrenics, we will take a general view of a part of their achievements and concentrate our analysis on one point.

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Thought and Speech Disorders

It has been discussed whether speech abnormalities in schizophrenics are due to the thinking process or due to the abnormal speech function. Andreasen et al. [3] evaluated the speech function in schizophrenics in terms of sentence construction, meaning of words and conversation, and they found that the impairment existed in the conversation function and in the use of integration rules in the sentence combination methods. The impairment in the structure of conversation as the highest level speech in schizophrenics were also reported by Frith et al. [4] [5] [6]. This speech disorder may partly induce disorder in the form and contents of thought.

Pragmatics is the study of speech as a measure to transmit desires or thought of the self or others. In “pragmatics”, Sperber and Wilson [7] stated that the conversation is not established until the speaker estimates the knowledge and intention of the listener while the listener estimates the intention of the speaker directly or metaphorically based on the knowledge and belief in the speaker. Recognition of this intention of communication is distorted in schizophrenics; the failure in cognition causes withdrawal while the excessive cognition causes delusion of reference. In other words, they attributed thought disorders in schizophrenics to communication disorders. These abnormalities in “monitoring of intention” are classified into monitoring of the self and monitoring of others. The former induces incoherence and the latter induces incomprehension of metaphors and ironic expressions [8]. Such abnormalities have two sides, i.e., decipherment and inference. It is difficult for the schizophrenics to give consideration to the context and guess the intention of the speaker [9], which are regarded as disorders of ego-consciousness.

There have been many studies on language and formal thought disorder concerning the cognitive inhibition, impairment. [10] [11] [12]. Docherty et al. [13] said that some types of referential disturbances are traitlike and may be reflective of vulnerability as well as manifest the illness. Regarding to this vulnerability, Nakai [14] suggested that Schizophrenics have some disturbances of fluctuation in the differential circuit of the brain. The authors suggested that there were some stable changes in the logical structure concerning the thought of schizophrenics and called them “the qualitative change of the logical structure” [1] [2].

Nevertheless, there are little studies on relation between pragmatics and mood in schizophrenics. Based on the findings in pragmatic studies, the schizophrenic group and the control group were compared in terms of the degree of understanding of metaphors and the findings in psychological tests. In addition, from the aspect of the criminal psychiatry, the association of “pragmatics” and the psychological states (aggression, confusion and depression) were evaluated. The association among “pragmatics” (others-monitoring), “aggression”, “confusion”, and “depression” in the course of arousal of criminal behavior can be assumed.

In normal persons, when the pragmatic ability is low (that is, disorder of others-monitoring is present), misunderstanding and incomprehension might be expected to occur in conversation, which promotes anxiety and aggression, while “the disorder of others-monitoring” and “anxiety and confusion” are reduced by equilibration by ego. In schizophrenics with advanced negative symptoms represented by apathy, a low pragmatic competence (disorder of others-monitoring) indicates decreases in anxiety, aggression, and depression. In schizophrenics with positive symptoms, that could be explained as follows. The unclear understanding of the situation induces confusion and anxiety, which arouses excessive emotion. And then the mutual enhancement of excessive emotion and the disorder in others-monitoring promotes aggression, which results in criminal behavior.

METHODS

Subjects: The experimental group consisted of 40 inpatients with chronic schizophrenia at general mental hospitals. The control group consisted of 30 staff members of two general mental hospitals.

Intervention procedure: As a pragmatic test, the Pragmatic-contextual-comprehension test (PCCT) reported by Oishi et al. [15] was used. The PCCT is a questionnaire that evaluates the ability to perform appropriate conversation with understanding of ironies, subjunctives, and double negatives among metaphors from the context (others-monitoring). Depression was evaluated by the Self described Depression Scale (SDS) and the Masked Depression Inventory (MDI), which consists of both physical and psychological questions. Aggression and confusion were evaluated using only corresponding items (aggression-hostile; POMS-AH; confusion; POMS-C) of the Japanese version of Profile of Mood States: (POMS) [16]. The measurement was performed in 2000.

Statistical analysis: Results 1 was analyzed by the T test (bilateral test), Results 2 by the chi square test (Pearson), Results 3 by the T test (bilateral test). For calculation, the SPSS11.0.J was used.

RESULT

1. General tendency

The general tendency is shown in Table 1. The mean age did not differ between the schizophrenic group (45.6 ± 12.8 years old) and the control group (50.2 ± 14.7 years old). The number of correct answers in PCCT was significantly higher ($p < 0.001$) in the control group (9.1 ± 1.2) than in the schizophrenic group (5.1 ± 2.7). Regarding the POMS score, the schizophrenics showed significantly lower ($p < .05$) scores than controls in POMS-AH. Concerning the degree of depression, the SDS score and the MDI score in the schizophrenic group were significantly higher (SDS; $p < .01$, MDI; $p < .05$) than those in the control group, which showed the normal limit or slight depression.

Table 1. Mean difference in six variables between schizophrenics & controls

Variables / groups	schizophrenics (N=40)		controls (N=30)	
	mean	S.D.	mean	S.D.
age	45.6	12.8	50.2	14.7
PCCT score	5.1	2.7 ***	9.1	1.2
POMS AH score	11.3	10.8 *	17.0	10.1
POMS C score	10.7	6.4	10.0	5.3
SDS score	43.2	9.0 **	36.6	8.2
MDI score	13.2	6.5 *	11.0	5.8

(Independent t test)

*** $p < .001$

** $p < .01$

* $p < .05$

2. Results of the PCCT

The correct answer rate for each question in PCCT is shown in Table 2. The number of correct answers was significantly higher in the control group than in the schizophrenic group. Marked differences in the correct answer rate between the two groups were observed especially in questions with irony and periphrasis (schizophrenics; 32-52%, controls; 86-100%, $p < .001$).

The sentences with double negative were difficult for both schizophrenics and controls to understand correctly. The entire question included "I don't know." answer category, the average answer rate of this category in schizophrenics was 18.8% and that in controls was 3.0%.

Table 2. Correct answer rate of schizophrenics and controls in PCCT

PCCT items	schizophrenics N=40(%)	controls N=30(%)	χ^2 df	p
A: (irony),	32.5	86.7	20.385 1	.000
B: (irony),	37.5	86.7	17.078 1	.000
C: (irony)	45.0	93.3	17.775 1	.000
D: (periphrasis)	47.5	86.7	11.454 1	.001
E: (omission)	55.0	90.0	10.000 1	.002
F: (subjunctive)	67.5	96.7	9.115 1	.002
G: (subjunctive)	80.0	100	6.774 1	.009
H: (periphrastic blame)	62.5	100	14.318 1	.000
I: (double negative)	27.5	73.3	14.452 1	.000
J: (periphrasis)	52.5	100	19.559 1	.000

*** p<.001
** p<.01
* p<.05

3. Association among tests

Association between two tests was examined. Correlation of each two tests was demonstrated in Fig1.

Strong correlation was seen among POMS-AH, POMS-C, SDS and MDI in both groups. In the schizophrenic group, the age and SDS score had inverse relation ($r=-.344$). On the other hand, in the control group, the age had inverse relation with the PCCT score ($r=-.386$), and the POMS-AH score had correlation with the SDS score ($r=.625$).

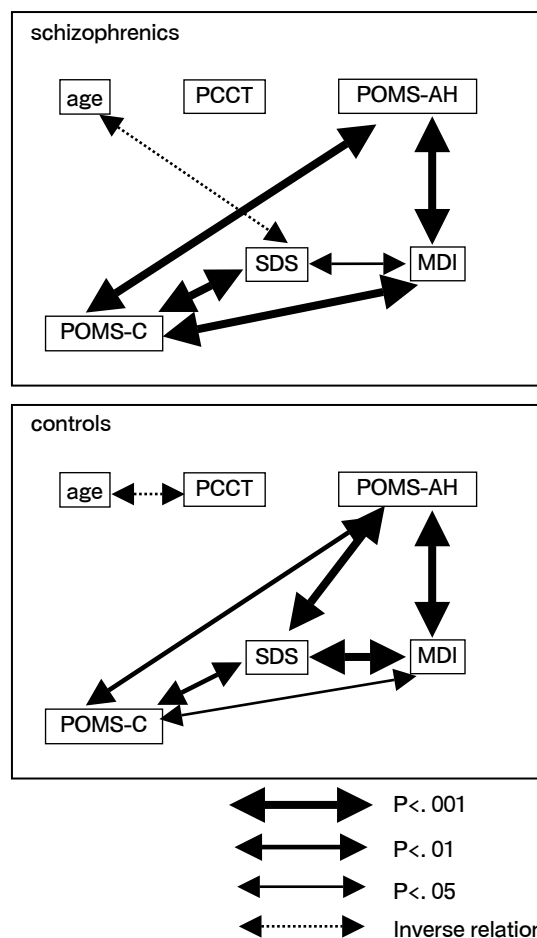


Figure 1. The relations among six variables in schizophrenics and controls

4. Difference between high PCCT score group and low PCCT score group.

Regarding pragmatics, a few differences were found in result 1-3. The author divided schizophrenics into two

groups. One is a high PCCT group, which consisted of patients who got the PCCT score equal to or over six of ten, and a low PCCT group, which consisted of patients who got under five.

As shown in Table 3. the MDI score showed significant difference between high PCCT group and the low group ($t=2.311$ $df=38$ $p=.026$). The high PCCT group showed higher score than the low PCCT group.

Regarding to correlation of six variables (age, PCCT, POMS-AH, POMS-C, MDI, SDS), POMS-AH, POMS-C and MDI had correlation in both groups. The SDS score had significant correlation with other variables only in the high PCCT group. Concerning to the PCCT, only the high PCCT group showed inverse relation with MDI (Figure 2).

Table 3. Mean difference between high and low PCCT groups

Variables / groups	High PCCT group of schizophrenics (PCCT score ≥ 6) (N=20)		low PCCT group of schizophrenics (PCCT score <6) (N=20)	
	mean	S.D.	mean	S.D.
age	46.0	13.7	45.2	12.2
PCCT score	7.4***	1.2	2.8	1.5
POMS AH score	11.8	10.5	10.8	11.4
POMS C score	11.6	6.6	9.9	6.4
SDS score	44.8	9.6	41.7	8.2
MDI score	15.4*	6.1*	10.9	6.2

*** p<.001
 ** p<.01
 * p<.05

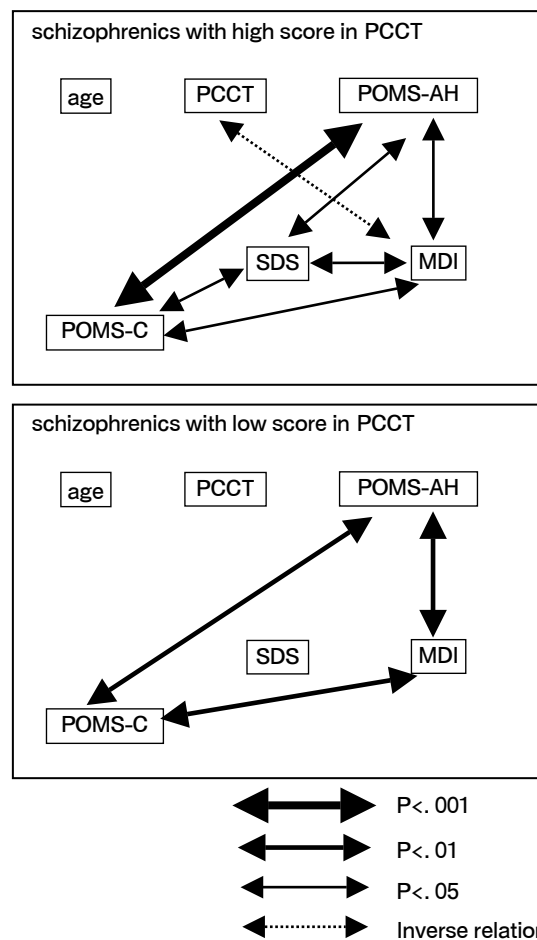


Figure 2. The relations among six variables in schizophrenics with high and low PCCT scores

DISCUSSION

1. The number of correct answers in PCCT was significantly lower in the schizophrenic group than in the control group, which suggests that the presence of disorder in others-monitoring abilities exists in the schizophrenic group. Psychological aspect of depression was more marked in the schizophrenic group than the controls. However, masked depression didn't show any difference between both groups. In addition, aggression was less in schizophrenics. These results suggest that disorder in others-monitoring abilities have relation to depressive state and lowering in aggression or vice versa.
2. Regarding to PCCT, marked differences between the schizophrenic group and the control group were observed in irony and periphrasis. These results are compatible with the result of Langdon R et al. [17]. These results suggest that the absence of the predisposition that normal people commonly have, i.e., "lack of self-evidence" appears to characterize the thought in schizophrenics. Loss of simple commonly accepted ideas may be a problem. In addition, the schizophrenics frequently chose "I do not know." answer category, which indicates the presence of psychological confusion.
3. In both groups, aggression, confusion and depression had strong relation one another. Though aggression and depression had strong correlation in controls, the schizophrenics showed no relation between them. This suggests that aggression might not lead depression or vice versa in schizophrenics. In the control group, there was an inverse relationship between others-monitoring ability and age. This suggests that others-monitoring ability might decrease according to aging in normal people. In the schizophrenic group, age and SDS score had inverse relation. This indicates that impairment in self-monitoring abilities grow more serious by aging.
4. The high PCCT group showed higher score in MDI. There were not any other differences in both groups. This suggests that the patients with better others-monitoring ability notice their physical conditions. Regarding to correlation of six variables, POMS-AH, POMS-C and MDI had correlation in both groups. This suggests that aggression, confusion and physical symptoms of depression have relation one another. However, SDS score had significant correlation with other variables only in high PCCT group. This suggests that the patients with poor others-monitoring ability fail to notice their psychological conditions properly. That is, the patients with poor others-monitoring ability might show poorer self-monitoring ability than the patients with better others-monitoring ability.

CONCLUSION

The schizophrenics were inferior to the controls in the understanding of metaphors and had impairment in the ability to accurately understand the intention of conversation. The schizophrenics frequently chose "I do not know" as an answer, which suggests that the strong feeling of confusion might exist. Lack of the ability to recognize the situation might induce vague anxiety and depression.

The tendency that disorder in others-monitoring abilities causes confusion and depression rather than aggression may explain the number of crimes that schizophrenics commit is less than normal people. In this sense, confusion does not necessarily have direct connection to aggression in schizophrenics.

An inverse relation was observed between others-monitoring and age in the control group but not in the schizophrenic group. This suggests that others-monitoring ability be decreased in normal aging especially over

fifty's. However, this hypothesis needs more detailed studies.

It is suggested that the patients with poor others-monitoring ability show poorer self-monitoring ability in their psychological state. This finding suggests two possibilities. One is that the psychological state regulates the decrease in communication ability. The other is that a decrease in communication ability induces a certain psychological state and then the state become stationary irrespective of former psychological state. In the former possibility, "Stress Vulnerability Hypothesis"^{[18] [19] [20] [21]} and "Affect Logic"^{[22] [23] [24]} are the dominant explanatory theory. The latter possibility is based on some unknown biochemical process or on the mysterious etiology of schizophrenia. What is important is whether the stationery state persists eternally or not. Interventional studies on this problem are necessary. Depending on the results of such studies, new treatment approaches in schizophrenics will be required to improve not only their quality of life but also their cognition.

Since the patients with high others-monitoring ability showed less depression, the improvement in cognition is expected to contribute to the alleviation of stress in schizophrenics.

In the treatment of schizophrenics, in addition to the present drug therapy, the psychological consideration and arrangement of the treatment and the living environments are important for improving not only their quality of life but also their cognition.

From the results of this study, we could not determine whether the bi-polarization of the results of psychological tests evaluated according to the PCCT score is associated with differences in sex, the disease type, or mental symptoms. Further more detailed studies are necessary on this point.

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統合失調症者の語用論的能力と気分

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要約 :

目的：統合失調症者の認知と気分の関係について、正常統制群との比較及び、語用論得点の高低差から検討した。方法：語用論検査と心理検査を40名の入院統合失調症患者と30名の統制群に実施し、両群で比較した。さらに、語用論得点により統合失調症群を2つに分け、高得点群と低得点群間での比較検討も実施した。結果：語用論検査では、特に反語と迂言法で、統合失調群と統制群との間で正解率に有意な差がみられた。また、統合失調群内の比較では、SDS 得点では、語用論得点の高い群でのみ他の変数と有意な相関を示し、語用論得点の低い群は、SDS と他の変数との間に有意な相関を示さなかった。また、語用論得点の高い群のみが、語用論得点と MDI 得点との間に逆相関を示した。考察：語用論検査での正解率の低さは、統合失調症群において、他者モニタリングの障害が存在することを示唆している。統合失調群と統制群との間の反語と迂言法における著しい正解率の相異は、『自明性の喪失』が、統合失調症者の思考を特徴付けていることが示唆された。統合失調症群内の比較から、他者モニタリングに優れた患者は、他者モニタリングに劣る患者よりも、自己モニタリングにおいても優れていることが示唆された。

キーワード：統合失調症、語用論能力、気分、他者モニタリング