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SINGLE DOSAGE OF CHLORPROMAZINE AND RORSCHACH PERFORMANCE*

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In order to establish chlorpromazine effect on psychological function of normal adults, the authors carried out an investigation using Rorschach test as a main technique. Subjects were 7 students. One week after the control testing was carried out, the same subjects were retested under the influence of chlorpromazine. To verify the psychophysiological effects of chlorpromazine, basal skin resistance and blood pressure were measured before the dosage of drug and placebo, before and after the Rorschach testing and GSR was recorded through the testing.

Conclusions obtained are as follows:

1. In chlorpromazine condition, blood pressure and GSR reduced significantly and basal skin resistance tended to increase, even though there was no significant difference.

2. Concerning the effect of chlorpromazine upon the performance of Rorschach test, their findings may be summarized as follows:

a. R did not change through shift of condition but W decreased in chlorpromazine condition.

b. FC+CF+C showed a decreasing tendency in chlorpromazine testing. On the comparison of this value with that of simply repeated second testing, it was found that chlorpromazine suppressed significantly the increasing tendency of FC brought on by practice effect. And in this experiment, also subjects gave significantly small value of FC+FC' in chlorpromazine condition.

c. M, FM, FC: CF+C, F+%, R+%, W+%, Dd%, Dm%, P% and A%, all these indices indicate no change in the shift of condition.

PROBLEM

Recently chlorpromazine were so widely used as stabilizing agent that it became a matter of course that the study of patient with Rorschach test was obliged to carry out under the influence of this drug. In these cases, therefore, it needed to deduct the drug's effect from the performance feature of patient medicated with chlorpromazine, when we understood his naked or proper psychological state at that time. For that purpose systematic investigation ought to be made on the drug's effect upon different psychological states. In this paper the drug's effect upon the blood pressure, basal galvanic skin resistance, deflections of GSR and Rorschach performance of normal college freshmen were reported.

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The physiological effect of chlorpromazine, in short, were anti-adrenalic action, inhibition of afferent nerves of reticular formation, reduction of metabolism. Laborit observed chlorpromazine intake produced slight decrease of blood pressure (20–30 mm Hg.) in supine normals temporarily.⁽¹⁾ Korentsky found in normal subjects that standing reading of haemodynamometer was significantly lower than supine reading under chlorpromazine dosage.⁽¹⁰⁾ On the other hand, Mitchell and Zax indicated that chlorpromazine increased basal skin resistance.⁽¹⁰⁾ This tendency may be interpreted a reflection of decreased physical activity.

The same phenomenon was found also in the dosage of amytal, Evipan and pentobarbital calcium.⁽⁹⁾ For example, Fujimori pointed out the fact that anaesthetics such as Evipan, Ravonal and Emipan suppress the deflection of GSR and increase the basal galvanic skin resistance.⁽⁶⁾ The experimental result of Lienert and Traxel supported their hypothesis that meprobamate and alcohol as tranquilizing drugs decrease the galvanic skin response.⁽⁵⁾ For the same reason, the reduction of GSR will be observed under the influence of chlorpromazine.

And these physiological symptom, reduction of blood pressure and of GSR and increase of basal skin resistance, will be useful as a criterion to decide whether chlorpromazine actually gives physiological influence to our subjects.

On the psychological syndrome produced by chlorpromazine, Delay and Deniker concluded that acute injection of 25 or 50 mg. of chlorpromazine rendered subject apparently indifferent and made his reaction time longer, emotions and feelings immobile, spontaneity, anxiety and irritability weak but did not give any change to his consciousness and intelligence (“syndrome psychique du 4560 R.P.”).⁽¹⁾ Flügel considered it the characteristics of this drug to reduce the inner tension and give harmony to personality.⁽⁹⁾ Ernst observed that this drug makes a patient indifferent not only to outer world but also to his inner abnormal experience (innere Distanzierung).⁽⁹⁾

From the psychological effects mentioned above, will be resulted the following alternation of Rorschach test performance; under the middle grade dosage of chlorpromazine, decrease of R , $\frac{VIII + IX + X}{R} \times 100$, color response, especially FC, and ΣC , and increase of weight of CF+C in the ratio of FC: CF+C. The present authors planned an experiment described below to examine whether these alternations should really occur or not.

PROCEDURE

Subjects: Seven students applied for our experiment. The mean of their age was nineteen. They were all of medium stature as Japanese and considered to be healthy not only physically but also psychologically. (See Table 13)

Experimental design: Subjects were instructed that they had to be in experiment room at just noon on the appointed day, when they were forbidden to take any food on and after 8 o'clock in the morning. When Ss came into the experiment room, first

measurements are made for blood pressure in supine status and basal galvanic skin resistance. The latter was led by silver electrode fitted upon the third and fourth fingers so Ss to an apparatus manufactured by Takei Kiki Kôgyô Co. Ltd. Soon after the measurements Ss took orally 25 mg. of aderoxin (pyridoxin hydrochloride: Vitamin B₆) in control condition, or 25 mg. of chlorpromazine in experimental condition. Then they were told to sit down in a large comfortable arm chair and not to remove from the seat until the experiment ended, as a rule. The Rorschach experiment began after one and a half hour had passed from drug dosage. In the waiting time they were asked to fill up three sorts of inventories, i.e., (Yatabe-Guilford Personality Inventory (Y-G), Maudsley Personality Inventory (MPI), Tôhoku University Industry Psychology Research Association Personality Inventory (TSKPI).

One and a half hours later from drug intake, two physiological measurements are carried out again and immediately after it Rorschach test is administered in the routine manner. At the same time galvanic skin response (GSR) and verbal response were recorded simultaneously throughout the testing. When Rorschach test was over, the third physiological measurements are made.

Interval between control and experimental testing was just a week and both testings were started at the same hour.

RESULTS

1. Physiological effects of chlorpromazine.

Subjective symptom regarded as chlorpromazine effect was not reported except by only one case. On the contrary, two Ss told they had been more tranquilized in the first testing than the second one, and a subject was observed to be more excited than the first time. Therefore, we may safely say that the "syndrome psychique du 4560 R.P." was scarcely observed subjectively at least in molar observation.

Table 1. Basal skin resistance value in K Ω measured before and after dosage of aderoxin and chlorpromazine and after the Rorschach test.

Condition Ss	Control			CP			
	Before dosage	Before R-testing	After R-testing	Before Medication (A)	Before R-testing (B)	After R-testing	(B)/(A) $\times 100$
Ka	29.0	29.2	28.8	33.8	41.0	33.2	121
H	36.8	23.4	23.0	55.4	44.6	43.2	80
Y	45.2	29.4	28.4	36.4	40.0	31.6	110
Ku	24.0	37.0	30.4	22.6	38.6	31.4	171
Ko	29.0	37.0	34.6	22.4	57.2	49.4	255
T	46.0	35.6	28.8	39.2	42.8	41.0	109
S	25.0	28.8	27.4	29.0	37.6	36.6	130
\bar{X} (Mdn)	33.6 (29.0)	31.5 (29.4)	28.8 (28.8)	34.1 (33.8)	43.1 (41.0)	38.1 (36.6)	126 (121)

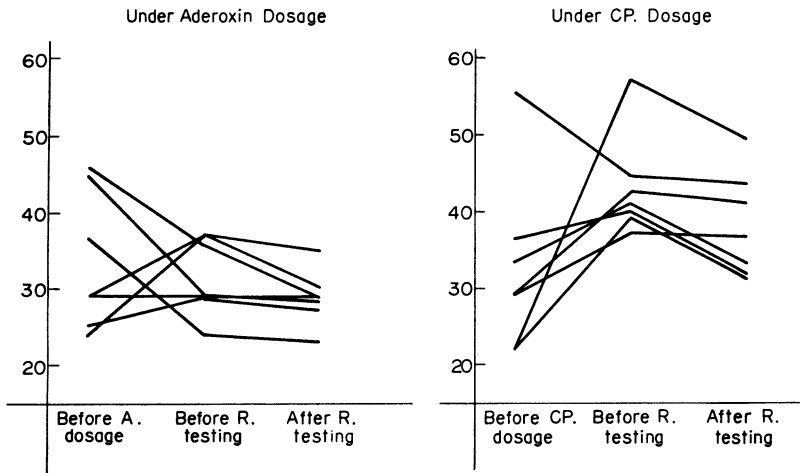


Fig. 1. Alternation of basal skin resistance value ($K\Omega$). A broken line represents the change of value in a subject.

Table 2. Blood pressure in mm Hg. measured before and after dosage of aderoxin and chlorpromazine and after the Rorschach test.

Condition Ss	Control			CP			
	Before dosage	Before R-testing	After R-testing	Before Medication (A)	Before R-testing (B)	After R-testing	(B)/(A) $\times 100$
Ka	72	78	84	124	106	125	85
H	122	90	98	112	106	120	95
Y	124	130	118	114	106	112	93
Ku	116	106	120	126	122	122	97
Ko	124	124	126	132	122	136	92
T	108	108	116	118	110	122	93
S	128	128	124	132	118	138	89
\bar{X} (Mdn)	113.4 (122)	109.1 (108)	111.7 (118)	122.5 (124)	112.9 (110)	127.0 (122)	92 (93)

Basic galvanic skin resistance did not alter systematically under aderoxin dosage, but under chlorpromazine dosage values before Rorschach testing increased in comparison with those before chlorpromazine dosage with only one exception. (See Table 1 and Fig. 1) Here the figures shown in Table 1 were mean value of 5 readings in 30 seconds interval during 2 minutes after the readings were stabilized. This increasing tendency was little short of significant level by T test.

The values of *blood pressure*, in the experimental condition, measured before Rorschach test decreased without exception in comparison with those before chlorpromazine dosage. This decreasing tendency was significant at 95% level of confidence by sign test. (Table 2, Fig. 2)

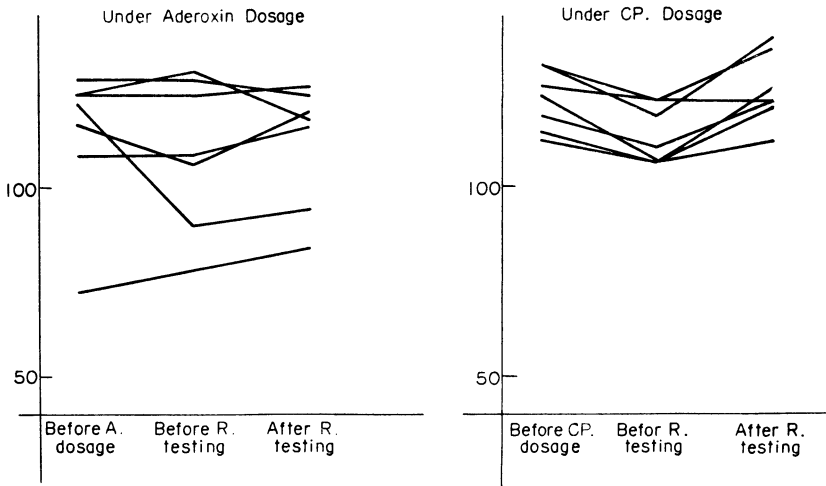


Fig. 2. Alternation of blood pressure (mmHg.).

Table 3. Number of GSR appeared immediately after the presentation of each card and within the first minute.

Cond.	Card No.	1	2	3	4	5	6	7	8	9	10	Σ	
	Ss												
Cont.	Kn	5	4	7	6	8	8	8	9	9	10	74	
	H	4	3	2	5	7	5	5	3	7	5	46	
	Y	7	6	4	2	4	3	3	8	5	6	48	
	Ku	3	2	5	3	4	2	6	6	3	4	38	
	Ko	3	2	4	2	3	2	3	2	3	3	27	
	T	2	5	2	1	2	3	1	1	1	1	19	
	S	3	2	4	2	2	4	1	2	2	6	28	
	\bar{X}	3.9	3.4	4.0	3.0	4.3	3.9	3.9	4.4	4.3	5.0	40.0	$\frac{\Sigma CP}{\Sigma cont.} \times 100$
CP	Kn	6	4	3	4	2	1	3	2	3	2	30	41
	H	1	2	0	2	1	3	1	2	1	2	15	33
	Y	3	1	3	2	1	2	3	2	1	2	20	42
	Ku	4	3	4	3	3	3	2	3	3	4	32	82
	Ko	2	4	1	2	4	1	3	3	3	4	27	100
	T	0	1	1	1	1	0	0	1	0	1	6	32
	S	3	2	2	1	1	0	0	1	1	1	12	43
	\bar{X}	2.9	2.4	2.0	2.1	1.9	1.4	1.7	2.0	1.7	2.3	20.3	51

GSR recorded simultaneously with verbal response was made flat in general under the influence of chlorpromazine. Table 3 indicates the frequency of deflection of GSR during one minute immediately after the presentation of cards. There is no one whose GSR increased in chlorpromazine condition ($p < 0.05$ by sign test). In every card GSR tends to reduce in experimental testing. In card III ($p < 0.01$ by sign test), cards

Table 4. Criteria for classification of temporal relation between verbal response and GSR wave

A	GSR wave appears simultaneously with or immediately after the utterance of verbal response.
B	GSR wave appears before utterance and verbal response is pronounced at the ascent of GSR wave.
C	GSR wave appears before utterance and verbal response is uttered at the peak of GSR wave.
D	GSR appears before utterance and verbal response is given in the descent of GSR wave.
E	Verbal response appears after the deflection of GSR and GSR wave does not reappear until verbal response ends.
AE	Deflections of GSR continuously occur and it is impossible to decide whether the case is A or E.
f	There is no deflection 10 minutes before or after verbal response.
i	Verbal response given spontaneously in inquiry stage.

Table 5. Number of cases of temporal relations of GSR waves to verbal responses which are subject's performance in each condition separately.

Conditions Ss	A		B		C		D		E		AE		f		i		Σ	
	Ct.	CP	Ct.	CP	Ct.	CP	Ct.	CP	Ct.	CP	Ct.	CP	Ct.	CP	Ct.	CP	Cont.	CP
Ka	5	3	3	3	1	1	4	3	0	2	8	0	0	0	0	0	21	12
H	8	8	6	4	2	1	7	5	3	1	6	1	3	19	0	0	35	39
Y	5	7	3	2	2	2	0	0	1	0	2	1	2	5	1	2	16	19
Ku	8	5	1	4	3	0	5	0	1	2	2	1	1	4	0	0	21	16
Ko	15	15	3	5	0	1	3	2	2	0	1	1	2	2	0	0	26	26
T	0	0	0	1	3	1	7	4	0	1	1	0	6	10	0	0	17	17
S	2	2	0	2	0	0	1	1	3	3	5	1	6	9	1	0	18	18
Σ	43	40	16	21	11	6	27	15	10	9	25	5	20	49	2	2	154	147

V, VI and VIII ($p < 0.05$ by T test) and cards VII and IX ($p < 0.05$ by sign test), GSR decreased significantly.

The corresponding temporal relation between utterance of verbal response and wave of GSR was classified according to the criteria listed in Table 4. The number of GSR fallen into each class was shown in Table 5 and 6. In general, GSR's were rendered flat by chlorpromazine. Consequently number of AE case decreased significantly ($p < 0.025$ by T test) and f tended to increase, and the cases where verbal responses appeared at the descent of GSR (D) showed a decreasing tendency. ($p < 0.05$ by sign test)

Table 6. Number of cases of temporal relations of GSR waves to verbal responses which are summed for each card.

Cards	A		B		C		D		E		AE		f		i		Σ	
	Ct.	CP	Ct.	CP	Ct.	CP	Ct.	CP	Ct.	CP	Ct.	CP	Ct.	CP	Ct.	CP	Cont.	CP
1	4	3	2	2	2	1	4	1	1	3	0	0	1	3	0	0	14	13
2	3	6	0	3	0	2	3	0	2	0	1	0	0	3	1	2	10	16
3	5	3	1	4	2	0	2	3	0	0	3	1	1	7	0	0	14	18
4	2	2	2	2	3	1	0	2	1	0	3	0	2	4	0	0	13	11
5	2	3	0	2	1	0	4	1	0	0	4	0	2	6	0	0	13	12
6	8	4	2	2	0	1	5	1	0	0	4	1	2	5	0	0	21	14
7	6	3	3	2	1	0	2	3	1	0	1	0	3	4	0	0	17	12
8	4	2	1	2	1	0	1	1	1	3	3	2	5	3	0	0	16	13
9	2	7	3	0	1	0	3	1	3	2	0	0	1	5	0	0	13	15
10	7	7	2	2	0	1	3	2	1	1	6	1	3	9	1	0	23	23
Σ	43	40	16	21	11	6	27	15	10	9	25	5	20	49	2	2	154	147

2. Alternation of Rorschach performance under the chlorpromazine condition.

Total number of responses (R) given by seven subjects was 154 in control condition and 147 in chlorpromazine dosage. R did not decrease in experimental testing

Table 7. Comparison of between conditions, which were classified for location categories.

Categories	Conditions	Control	Exper.
	Main Classification	W	95
W'		0	1
DW		0	1
W		95	70
D		49	52
d		3	7
D		52	59
dd		0	0
di		1	0
de		0	0
Do		0	0
dr		3	8
Dd		4	8
S		3	10
Sub-Classification	W	3	3
	D	1	0
	Dd	0	3
	S	19	21
		23	27

Table 7, b. Number of W responses of each subject. Compared with each other between conditions. Δ=cont. - exp.

Cond. Ss	Control	Experiment	Δ
Ka	15	8	7
H	22	17	5
Y	13	10	3
Ku	14	5	9
Ko	18	13	5
T	7	8	-1
S	6	7	-1

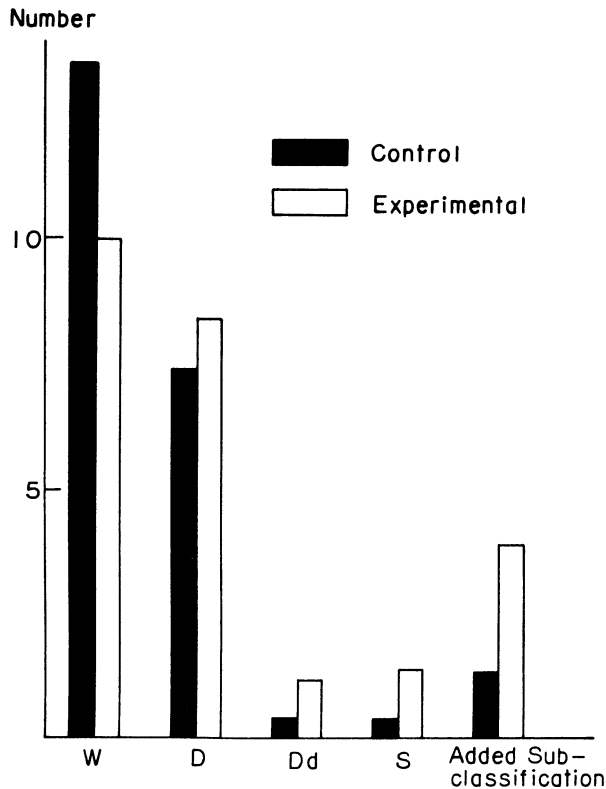


Fig. 3. The average number of response classified for location categories.

significantly. The value of $\frac{\text{VIII} + \text{IX} + \text{X}}{\text{R}} \times 100$ did suffer no change, too. In location categories, number of W decreased significantly in chlorpromazine condition. ($p < 0.05$ by T test. Table 7, b) D and D%, however, did not increase significantly in the same condition. (Table 7) The mean response number of each category was shown graphically in Fig. 3.

Main determinants of response did not vividly change in chlorpromazine dosage. (Table 8) But FC indicated a steady decrease by chlorpromazine effect with only one exception, where FC increased to 1 from 0 in that condition. In fact, the value of $\text{main-FC} + \text{sub-FC} \times 0.5 + \text{main-FC}' + \text{Sub-Fc}' \times 0.5$ significantly decreased in chlorpromazine testing. ($p < 0.05$ by T test. Table 8, b) On the contrary, CF, C'F, C, and C' did not alter systematically through shift of condition. Total of all color responses, when a sub-classification score was summed as 0.5, also seemed to decrease in general, but the tendency was slightly insufficient to 5% significant level.

The other response features (categories) seemed not to be influenced by 25 mg. dosage of chlorpromazine. The mean response number of each determinant category was indicated in Fig. 4.

Table 8. Total numbers of responses in two conditions, which were classified for determinant categories.

Conditions	Control	Exper.
M	21	23
Mflex	0	0
FM	21	16
m	3	4
k	0	0
K	0	1
FK	9	6
F	71	77
Fc	4	2
c	2	0
FC'	2	0
C'	1	0
FC	14	7
F/C	0	1
CF	3	3
C/F	1	0
C	2	1
Csym	0	1

Table 8, b. Summed number of FC+sub-FC \times 0.5+FC' \times sub-FC' \times 0.5 compared with each other between conditions.

Cond.	Control	Experiment	Δ
Ss			
Ka	0	1	-1
H	5	2	3
Y	2.5	0	2.5
Ku	4	0.5	3.5
Ko	2.5	1	1.5
T	2	2	0
S	3.5	3	0.5

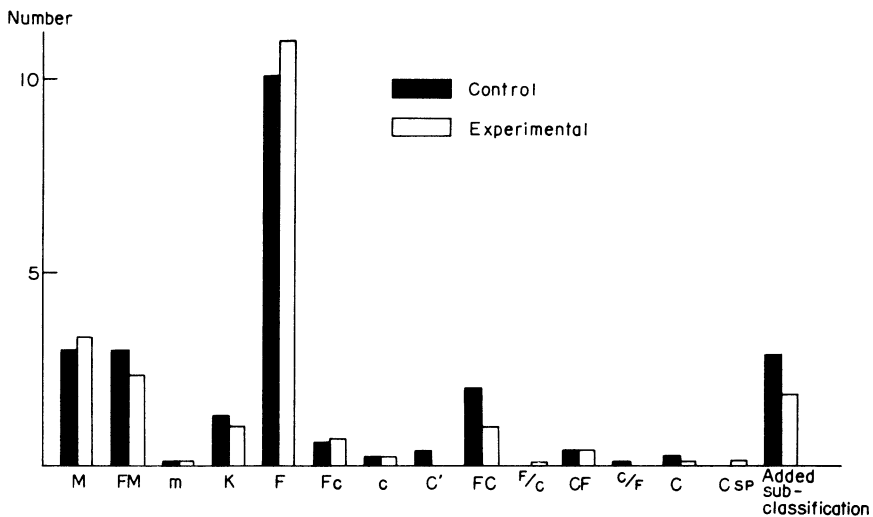


Fig. 4. The average number of responses classified with determinant categories.

The effort to find an alternation feature of content categories accompanying with chlorpromazine dosage was in vain. Table 10 shows the total number of responses classified into content categories. Either A% or P% showed no significant shift owing to chlorpromazine. Here we tried to re-classify the response according to the

Table 9. Total numbers of responses in two conditions, which were added sub-classification for each determinant category

Categories Conditions	Control	Exper.
M	0	2
FM	0	2
m	10	7
k	3	1
K	1	0
FK	2	3
F	0	1
Fsym	0	0
Fc	2	1
c	4	4
FC'	4	3
C'	0	2
FC	3	1
F/C	0	0
CF	1	10
C/F	2	0
C	0	1
Csym	3	2
Fmsym	1	2
Σ	36	42

Table 10. Total numbers of responses classified for content categories, which were compared with each other between conditions

Categories Conditions	Cont.	Exper.
H	18	18
(H)	2	5
Hd	7	10
(Hd)	2	1
A	41	39
(A)	9	6
Ad	12	11
(Ad)	1	2
Atb	4	3
Ats	5	3
AAt	2	3
X-Ray	0	0
Obj	9	14
Pl	9	6
Sex	0	0
Fire	3	1
Cloud	0	0
Lds	8	3
Arch	1	1
Mask	2	1
Expr	2	2
A. Obj	3	1
Abst	1	2
Food	3	1
Map	0	2
Others	10	12
P	30	29
Total No. sub-class.	16	22

Table 11. Contents of classes of content categories.

No. of class	Classification of response content
1	H, (Hd), Hd, (Hd)
2	A, (A), Ad, (Ad), A. Obj.
3	Atb, Ats, AAt, X-Ray, Sex, Flesh, Blood
4	Obj, Ship, Arch, Food
5	Pl, (Pl), Pl. Obj
6	Cloth, Mask, Stat, Doll
7	Wood, Lds, Mount, Rock, Stone, Cave, Shell, Ice, Water, Nature, Scene, Mud
8	Fire, Cloud, Light, Expr, Shadow
9	Pic, Map, Design, Desc, Feeling, Abst, Stamp, Way, Structure, Orn.

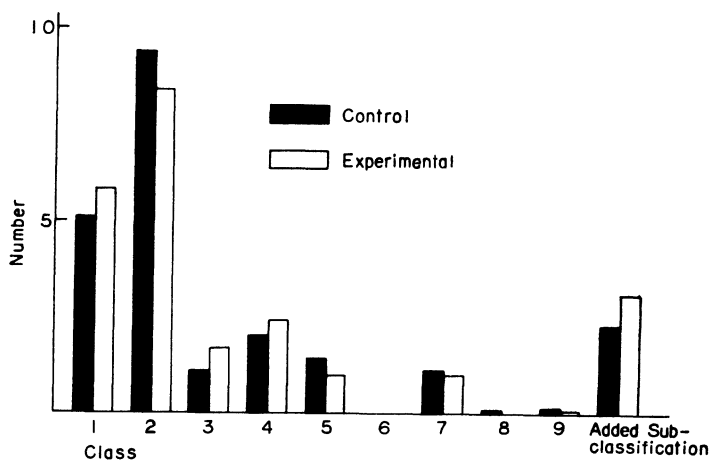


Fig. 5. The average number of responses classified with content categories after criteria shown in Table 11.

criteria indicated in Table 11. Fig. 5 shows the mean response number of each reclassified calss. Again we can find no clear tendency of alternation ascribed to chlorpromazine effect.

But Fig. 5 tells responses which concern with animals (2), plants (5) and nature (7) seems to decrease, while those related to human (1), and physical matter (3) appears to increase. The reason why the apparent shift came out was unknown.

Although responses added sub-classification increase in chlorpromazine condition, the tendency must be largely due to practice effect.

DISCUSSIONS

1. Physiological result ascribed to chlorpromazine effect.

Our experimental result on blood pressure coincided with those of Laborit, Kornetskey and others. But the amount of decrease seems so small. This may be resulted from the relatively small dosage of chlorpromazine. Besides, measuring method and apparatus may have room for improvement.

In spite of the facts that permit us to consider our subjects suffered physiological effect of chlorpromazine, we could not obtain a conclusive result indicating a decreasing tendency of basal galvanic skin resistance. Even though we failed to establish the tendency, we can safely say that our result was in direction of expectation.

Decrease of deflection frequency of GSR in chlorpromazine condition was very clear, but a practice effect must make the amount of reduction larger. Further investigation is needed to separate these two effects. Apart from this question, cards, where the tendency was scarcely observed, were I, II, IV and X. These cards, it may be supposed, have larger stimulus value to bring forth emotional disturbance. If it is the

case, increase of dosage will bring about significant decrease of GSR in these cards.

On the other hand Niimi et al used total number of GSR deflection during a minute immediately after the card presentation as index of emotional disturbance, and observed twenty psychotics showed marked increase of GSR in card VI, VII and VIII, IX, X, and in the same procedure card VIII was accompanied by very large number of GSR ($p < 0.05$) in twenty normal students. Taking account of the results from supplementary experiments, they conclude these cards had larger stimulating value than the others⁽⁷⁾. Comparing their result with ours, we can interpret further that these cards, I, II, and IV possess only so small stimulating value that the frequency of GSR in these cards could not change visibly

2. Psychological syndrome brought forth by chlorpromazine which was reflected on the performance of Rorschach test.

Shift of psychological state which was made by chlorpromazine was summarized at the beginning of this paper. Such a shift could be reflected on the performance feature of Rorschach test in our second testing. But in this feature some practice effect has been included possibly. In order to separate the effects counterpart experiment will be needed. But we have other experiments which were performed under the similar experimental design.^(2,3,8) Thus, we are presumably allowed to substitute them for our counterpart experiment. The first experiment of them had two subject groups; one consisted of 10 Ss and they were subjected to Rorschach test under the alcoholic intoxication one week after the sober testing, the other consisted of 7 Ss and they were subjected to Rorschach test twice in sober condition.⁽²⁾ The results of the latter (Hereafter the series will be called $C_1 \rightarrow C_2$ series) may be suitable for the counterpart of this experiment (Similarly it will be called $C_1 \rightarrow C_{P_2}$ series).

In chlorpromazine condition we saw the decrease of number of W response. Upon this tendency does the repetition of testing bring some effect? The comparison of the results of $C_1 \rightarrow C_2$ with those of $C_1 \rightarrow C_{P_2}$ indicated no significant difference. Therefore the decrease of W in second testing was brought forth by a resultant of chlorpromazine and practice, because simple repetition of testing did not reduce W response significantly.

Even it was insignificant, our result showed the reductive effect of chlorpromazine upon color response. There was found no significant difference between the number of color response excluding sub-classification of C_1 in $C_1 \rightarrow C_2$ and of C_1 in $C_1 \rightarrow C_{P_2}$. However, the difference between the same value of C_2 and C_{P_2} was significant at 95% level of confidence by two tailed T test. But there was no significant difference between C_1 and C_2 in $C_1 \rightarrow C_2$ and C_1 and C_{P_2} in $C_1 \rightarrow C_{P_2}$. In $C_1 \rightarrow C_2$ series, FC increased significantly ($p < 0.05$ by two tailed T test) in second testing. And in $C_1 \rightarrow C_{P_2}$ series FC tended to decrease though it was insignificant. And the discrepancy between FC of C_2 and that of C_{P_2} was significant. ($p < 0.01$ by two tailed T test).

Table 12 shows the general tendency that simple repetition of testing makes num-

Table 12. Comparison of the total color response between several conditions.
(FC+CF+C, only main classification)

Condi- tions	Cont.		Alcohol		Chlorpro- mazine		Alcohol		Ravo- nal	
	Cont. ₁	Cont. ₂	Cont. ₁	Alcohol ₂	Cont. ₁	Chlorpro- mazine ₂	Alcohol ₁	Cont. ₂	Ravo- nal ₁	Cont. ₂
\bar{X}	2.9	3.6	4.7	4.4	2.9	1.9	3.8	10.1	6.3	3.0
Med.	3.0	4.0	5.5	3.5	3.0	2.0	4.0	10.0	4.0	2.5

ber of color response larger and that alcohol and chlorpromazine inhibit this tendency. But Ravonal on the contrary renders color response plentiful. And color responses which increased by repetition are FC and those which increased by Ravona are CF. Chlorpromazine significantly suppresses FC+FC'. Thus it is supposed that middle dosage of chlorpromazine degraded the functions corresponding to the outer world. We have no evidence that chlorpromazine affects CF, C and SC.

Though chlorpromazine reduces physical activity, the result of Rorschach test does not indicate a degradation of psychological activity of intelligence, because W+%, Dd%, Dm%, F+%, R+%, P%, A%, M, FM and the ratio M: FM did not alter.

The decrease of spontaneity was not observed in this experiment. $R, \frac{VIII + IX + X}{R} \times 100$, FC: CF+C did not shift through change of condition. If our subjects were rendered indifferent to the outer and inner world, it is quite natural that preserved intellectual ability can cover such a degradation, because for them to be subjected to Rorschach test is to be forced to solve a series of problems.

3. The normality of subjects.

It is very difficult to verify normality of a person through limited techniques. But we may use the result of Rorschach test and questionnaires to understand their normality. Next, we indicate the results of personality inventories.

Table 13. The scores of subjects in personality inventories.

Ss	Inventories	MPI						Y-G	
		N		E		L			
	Conditions	Cont.	CP.	Cont.	CP.	Cont.	CP.	Cont.	CP.
	Ka	34	24	20	17	5	8	E'	A''
	H	43	40	9	15	6	4	E	E
	Y	39	38	29	27	2	5	B'	AE
	Ku	27	36	35	35	5	3	D'	D'
	Ko	21	20	22	27	2	3	AC	A''
	T	8	3	30	22	3	6	D'	E'
	S	31	34	38	39	5	4	D	BD'

The scores are shown in Table 13.

The MPI scores seems to tell our subjects slightly introvertive and neurotic. But these figures are not so high among Japanese students. Kikuchi and Kitamura made a survey on student group (N=843) and reported the mean value of L was 4.92 (SD 7.67), of E was 23.98 (SD 8.05) and of N was 30.72 (SD 8.26).⁽⁴⁾

Descriptive symbols appeared in the column of Y-G are read as follows; A is read having no special feature, B, aggressive extravert, C, stable introvert, D, extravert, E, unstable introvert.

To our regret, subject H is in a normal range but highly introvertive and may possess some problematic personality dynamics.

Scales of TSKPI were not shown because the questionnaire was constituted as an aptitude test for accident proneness of motor car drivers.

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RÉSUMÉ

Afin de constater l'effet de chlorpromazine sur la fonction psychologique dans les adultes normales, les auteurs ont exécuté un examen à l'aide de Rorschach-test comme l'instrument principal. Les sujets de leur expérience furent 7 étudiants. Après une semaine que l'épreuve a été effectuée, on a retesté les mêmes sujets quand ils étaient sous l'influence de chlorpromazine. Pour éprouver les effets psychophysiologiques des chlorpromazine, la résistance galvanique de peau et la tension artérielle du sang ont été mesurées avant le dosage de chlorpromazine, avant et après le test de Rorschach, et la fluctuation réflexe psychogalvanique s'est enregistrée au cours du test.

En examinant les résultats, on est arrivé à la conclusion suivante:

1. Dans la condition de chlorpromazine, la tension artérielle du sang et la fluctuation du réflexe psychogalvanique sont réduites significativement. La résistance galvanique de peau est susceptible de s'accroître sous l'influence de chlorpromazine, bien qu'il n'y ait pas de différence significative statistiquement.

2. Quant aux effets de chlorpromazine sur le comportement dans le test de Rorschach, leur constatation peut se résumer comme les suivants:

a. R ne se change pas sous toutes les conditions, mais W se réduit significativement dans la condition de chlorpromazine.

b. FC+CF+C montre une tendance à décroître dans l'épreuve sous la médication de chlorpromazine. En comparant cette valeur à celle dans l'épreuve seconde que l'on a répétée d'administrer simplement, on a constaté que la chlorpromazine a réprimé significativement la tendance de l'accroissement de FC que l'effet de l'exercice a produite. Et aussi dans cet examen, la valeur de FC+FC' a décreu significativement dans la condition de chlorpromazine.

c. M, FM, FC: CF+C, R+%, F+%, W+%, Dd%, Dm%, P% et A% tous ces indices ne se sont pas changés à la variation des conditions.

On a discuté les relations entre l'effet de la pharmacologie et les traits du test de Rorschach, et l'effet de l'exercice.