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STUDIES ON SENSORY DEPRIVATION: II.

PART 4. WITH REFERENCE TO THE GENETIC PROCESS OF PERCEPTION (1)

by

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Bender Gestalt Test was used as preliminary study to investigate the organizing process of perception (Actual Genese) under the condition of sensory deprivation. Ss of experimental group were 11 and those of control group were 14. The experiment gave the following results: 1) Figure 4 and 8 of Bender Gestalt Test were not influenced by motor factor in copying under the condition of sensory deprivation and therefore they were suitable for analyzing the perceptual process by method of copying. 2) Sensory deprivation deteriorated the "Gestaltung".

It has been considered that perception is organized by the interaction of personal frame (past experience, needs, physical condition, etc.) and environmental frame (external stimuli and configuration of them). If one is temporarily given an abnormal situation in which the usual contact with environmental frame is interrupted, perceptual function will be somewhat affected. Thus, a study of the organizing process of perception, namely Actual Genese (6,7,8,9) will be helpful to the examination of the effects of sensory deprivation with a view-point of the stratification theory of personality and of the theory on the control function of ego (3,4).

The purpose of our experiment in this paper is as follows: 1) To find suitable stimulus figures for the study on Actual Genese. If it takes too much time to test after sensory deprivation, the first and the last test condition will be different. Therefore, stimulus figures must be restricted to some suitable ones. They also must have an appropriate degree of difficulties. 2) To investigate effect of sensory deprivation upon Actual Genese when the subjects were given enough time to perceive and copy the figures.

Method

Nine figures of Bender Gestalt Test are used. These figures have advantages in getting objective evaluation not only qualitatively but also quantitatively, for example, by the developmental criteria for evaluation by Bender (1) or by the scoring method by Pascal (5).

Subjects: The subjects in experimental group are 11 volunteers, male undergraduates of Tohoku University. They are tested immediately after 48 hour sensory deprivation. The subjects in control group are eight volunteers, male students

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who are not given the sensory deprivation, and six subjects in experimental group who are retested about 6 months after the sensory deprivation. Therefore the total number of subjects of the control group is fourteen.

Procedure: After other two or three tests finished at most within 30 minutes, our experiment is performed. Experiment is carried out in a dark room. Stimulus figures are tachistoscopically presented in order.

Subjects are instructed to watch the exposed figures and to copy each of them on a 18×13cm paper by pencil as correctly as they can. Figures are presented until subjects complete their copying. The time needed for copying is not limited at all. Subjects copied all figures within 20 minutes at the most.

Results and Discussion

In referring to the evaluation criteria of Bender, and the scoring system of Pascal, the latter was preferred in the main, as Pascal's method quantified the results. The scoring procedures, for example, in the case of figure 1 are as follows;

- 1) The figure is not drawn horizontally (2 points)
- 2) Dots, lines and circles are mixed (More than two) (3 points)
- 3) The whole figure is drawn by lines (2 points)
- 4) The whole figure is drawn by circles (8 points)
- 5) By the number of dots,
Deviation up to 2 dots (2 points)
Deviation up to 4 dots (4 points)
2 points are added for every 2 dots.
- 6) Written on two lines (8 points)
- 7) Overdrawn (Large dots or circles are mixed) (2 points)
- 8) Every correction of failure in copying (3 points)
- 9) Rotation (Unhorizontal, more than 45 degrees rotated) (8 points)
- 10) Dots are less than six (8 points)

By the sum of these weighting scores figures are evaluated. Therefore, it follows that with the increase of the scores, the "Gestaltung" deteriorates. Table 1 represents the result of experimental group by Pascal's scoring method. The total score of each subject (Z score) ranged from 32 points to 109 points. According to Pascal the average Z score of the normal subject is about 47 points and that of the neurotic is about 60 points. Consequently it may be said that in our experimental group subjects who show a fairly high Z score are included. For example, subject N.G. showed 109 points of Z score. Only 5.3% of the subjects even in the neurotic group marked such score.

Table 2 shows the result of control group by Pascal's scoring method. The results of experimental group might have been compared and examined upon

Table 1. The result of experimental group by Pascal's scoring method.

Figures Ss	Figures								Total
	1	2	3	4	5	6	7	8	
MG	2	16	3	20	21	0	0	0	62
UD	6	3	22	4	4	7	9	0	55
KT		2	16	6	7	10	8	5	
I T	5	18	14	1	5	4	11	8	66
T Z	6	15	9	1	2	2	7	12	54
ON				14		8	11	3	
F S	0	3	3	1	5	10	8	2	32
S G	5	3	11	11	7	12	8	6	63
A B	5	11	21	12	6	4	11	6	76
N G	7	28	18	3	17	20	8	8	109
G T	3	0	6	4	4	5	11	3	36
Total	39	97	107	57	71	64	73	45	553
Mean	4.33	10.78	11.89	6.33	7.89	7.11	8.11	5.00	61.44

Pascal's criteria on the whole, but now we compared them with the results of control group, because we considered there would be delicate differences in experimental procedure between Pascal's and ours and moreover the scoring of the effect of sensory deprivation was the point in this experiment.

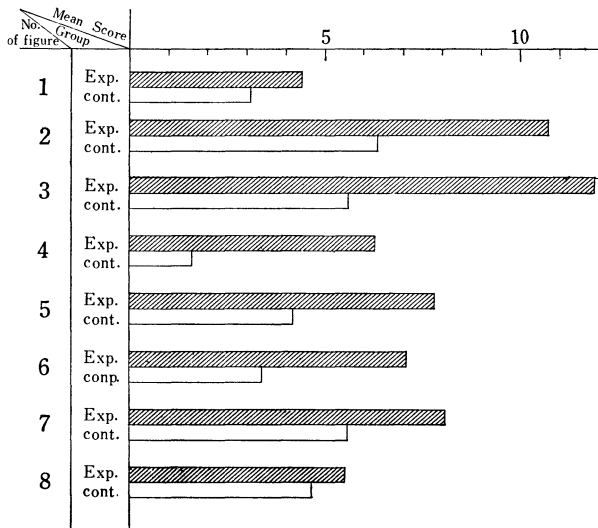


Fig. 1. Mean scores of each figure

As for the scores of two groups, the experimental group got 61.44 points and the control group 34.14 points on the average. Though both of them were included in the normal range by Pascal's criteria, Z score in experimental group was remarkably higher than in control group ($P < .01$). That is, as shown in Table 3., Z score in experimental group was higher by 27 points than in control group.

Table 2. The result of control group by Pascal's scoring method.

Ss	Figures								Total
	1	2	3	4	5	6	7	8	
KT	3	0	21	0	5	0	8	4	41
IT	5	14	16	0	7	7	11	8	68
ON	3	3	0	0	2	5	0	8	21
SG	2	2	10	3	2	5	3	7	34
AB	6	3	7	3	4	7	9	2	41
NG	5	23	5	1	2	2	11	8	57
SE	5	0	3	0	6	5	12	3	34
TD	0	10	2	6	4	2	1	5	30
KZ	5	21	3	3	8	5	11	3	59
OH	5	3	0	3	7	3	9	4	34
MU	2	8	0	3	5	3	2	2	25
SM	3	0	5	0	3	4	0	0	15
SG	0	0	3	0	0	0	0	0	3
BM	0	2	3	1	4	0	1	5	16
Total	44	89	78	23	59	48	78	59	478
Mean	3.14	6.36	5.57	1.64	4.21	3.43	5.57	4.21	34.14

Table 3. Comparison of the scores of experimental group with those of control group.

	Total Score	Mean	<i>t</i>	<i>p</i>
Exp. G.	553	61.44	3.19	< .01
Cont. G.	478	34.14		

Table 4 and Fig. 1 represent the scores of two groups for each figure. It is clear that scores in experimental group were higher than in control group for all figures. Especially the scores of figure 3 and 4 are statistically significant in

the difference between two groups.

Concerning the selection of suitable stimulus figures for investigation on the Actual Genese the figures must satisfy the following condition: the figures

Table 4. Mean scores of each figure (Comparison of experimental group with control group).

Figures	Group		t	p
	Exp. G.	Cont. G.		
1	4.33	3.14	1.29	<.3
2	10.78	6.36	1.70	<.2
3	11.89	5.57	2.21	<.05
4	6.33	1.64	2.74	<.02
5	7.89	4.21	1.95	<.1
6	7.11	3.43	2.04	<.1
7	8.11	5.57	1.44	<.2
8	5.00	4.21	0.56	<.6

to be copied must be completed by subject, if enough time is given him, but they must not too much easy to copy. Figure 8, and 4 will satisfy this condition.*

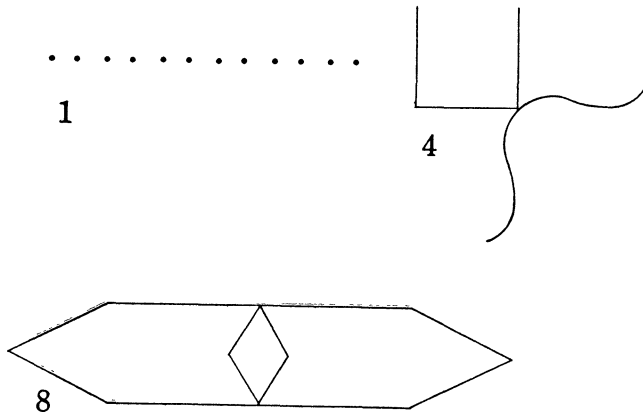


Fig. 2. Figures of Bender Gestalt Test

These results are summarized as follows:

- 1) Suitable figures for Bender Gestalt Test were suggested as stimulus

* The experiments using these figures by the time graded method will be reported in our futue paper.

figures for further investigation of the organizing process of perception.

2) In copying under time-unlimited condition, it was found that the scores in the experimental group were higher than in the control group. That means the sensory deprivation deteriorated the "Gestaltung".

Now it is generally thought Bender Gestalt Test enable us to make subject express his inner state projectively, while at the same time both perceptual process and motor function take part in copying the stimulus figures. Accordingly, if we mainly research into the influence of sensory deprivation on perceptual aspect, the factor of motor function must be controlled. Among figures copied in enough time under the condition of sensory deprivation, those which had low scores and were copied almost completely are considered not to be influenced by the sensory deprivation on motor process. If Actual Genese is pursued by using such figures, the motor factor will be able to be controlled even in the copying method. In our next paper we are going to report the results of investigation of these points and then the organizing process of perception under the condition of sensory deprivation.

References

- (1) Abt, L. E., & Bellak, L. Projective psychology; Clinical approaches to the total personality. New York: Grove Press, 1959, 322-356.
- (2) Billingslea, F. Y. The Bender Gestalt Test; A review and a perspective. Psychol. Bulletin, 1963, 60, 233-251.
- (3) Kikuchi, T., Kitamura, S., and Oyama, M. Rorschach performance in alcoholic intoxication. Tohoku Psychologica Folia, 20, 45-71.
- (4) Kitamura, S. Studies on sensory deprivation: I. Preliminary studies, Part 1. Introductory remarks. Tohoku Psychologica Folia, 22, 1-4.
- (5) Pascal, G. R., and Stutzel Barbara, J. The Bender Gestalt Test. New York: Grune & Stratton, 1951.
- (6) Piaget, J., Smith, G., Brengelmann, J. C., & Leibowitz, H. W. Aktualgenese (Microgenesis of perception); A Symposium. Acta Psychologica, 1961, Vol. XIX, 81-103.
- (7) Sander, Friedlich. Funktional Struktur, Erlebnisganzheit und Gestalt. Arch. f. d. ges. Psychol., 1932, 85.
- (8) Sander, Friedlich. Experimentelle Ergebnisse der Gestaltpsychologie, Bricht über den 10 Kongress der Gesellschaft für experimentelle Psychologie im Jahre 1927, Jena, 1928.
- (9) Wolfgang von Moers-Messmer, Ein Beitrag zur Typologie des Gestalterlebens. Z. exper. angew. Psychol., 1958, Band V, 394-427.

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Zusammenfassung

Bender Gestalt Test war als Vorversuch gebraucht, um das genetische Verfahren der Wahrnehmung (Actual Genese) unter der Bindung der sinnlichen Entziehung zu erforschen. Die Vpn. der Versuchsgruppe bestanden aus 11 Studenten,

und diejenigen der Kontroll-Gruppe waren 14.

Aus der Versuchsergebnissen folgt: 1) Der motorische Faktor hatte keinen ungünstigen Einfluss auf die Nachzeichnung der Figuren 4 und 8 im Bender Gestalt Test sogar unter der Bedingung der sinnlichen Entziehung. Also erwiesen sich diese Figuren als angemessen dafür, das Verfahren der Wahrnehmung mit der Nachzeichnungsmethode zu untersuchen. 2) Die sinnliche Entziehung verschlechterte die "Gestaltung".