

Studies on Sensory Deprivation: III. Part 3. With Reference to Genetic Process of Perception

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STUDIES ON SENSORY DEPRIVATION : III

PART 3. WITH REFERENCE TO GENETIC PROCESS OF PERCEPTION

By

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In order to investigate the effect of 24 hours sensory deprivation upon the genetic process of perception, subjects were asked to copy Figures 4 and 8 of Bender Gestalt Test for the tachistoscopically restricted exposure time duration. And it was found that the sensory deprivation deteriorated the perceptive organizing ability, while it lowered the perceptive threshold.

In the present paper we investigated the effect of sensory deprivation upon genetic process of perception. We adopted Bender Gestalt Test as a means of investigating the organizing process of perception under the sensory deprivation.

In the previous experiment⁽¹⁾, the following results were obtained:

a) When the method of copying was used, Figures 4 and 8 of Bender Gestalt Test were suitable for analyzing the perceptual process, because they could be completely copied by subject, when enough time was given him, and they were not too easy to copy.

b) Sensory deprivation deteriorated somewhat the "Gestaltung" of subjects.

On the basis of the previous study, we designed an experiment. The purpose of this experiment is to answer the following question. What does it mean that sensory deprivation deteriorated the "Gestaltung"? In other words, it is asked whether the subject under sensory deprivation finds it difficult to sense the stimulus figures or to organize the sensed ones, or both.

METHOD

Subjects; The subjects in the experimental group are 10 male undergraduates of Tohoku University. They are tested about an hour after 24 hours sensory deprivation. The subjects in the control group are 12 male students.

PROCEDURE

Figures are tachistoscopically presented, one at a time. Exposure time duration is 5 ms., 11 ms., 18 ms., 50 ms., and 200 ms.

Subjects are instructed to watch the exposed figure and to copy it on a sheet of paper with pencil as correctly as they can.

RESULTS AND DISCUSSION

Copied figures were evaluated by Pascal's criteria⁽³⁾. Table 1 represents the

Table 1. Mean Score of Each Exposure Time Duration (Comparison of Exp. G. with Cont. G.)

Exposure time	St. Fig. 4			St. Fig. 8		
	Exp. G.	Cont. G.	t	Exp. G.	Cont. G.	t
5 ms.	15.1	18.3	0.838	14.6	12.5	0.674
11 ms.	14.1	13.8	0.075	7.9	11.9	1.026
18 ms.	15.7	11.4	1.162	7.2	6.8	0.125
25 ms.	8.9	9.0	0.031	5.7	9.4	1.156
50 ms.	10.5	8.4	0.618	9.2	6.3	0.967
200 ms.	8.5	6.5	0.870	6.5	6.1	0.167
sum.	72.8	67.6	0.311	51.1	53.9	0.212

results of experimental group and control group for each exposure time duration. The main findings are as follows.

- a) Both experimental and control group show that the longer the exposed time duration becomes the lower the score is, i.e. the better achievement is obtained.
- b) There is no significant difference between experimental group and control group.
- c) But it is noticed that the control group shows a linear decrement of score in general, while the experimental group represents an irregular decrement.
- d) The control group tends to show the better result at the longest exposure time duration, 200ms, than the experimental group.

Table 2 shows a comparison between the results of the present experiment and those of the previous experiment in which figures had been presented until copying was completed. a) There is no significant difference between the two experimental groups. b) But in the two control groups, especially in case of Figure 4, the score of the present experiment is remarkably larger than that of the previous experiment ($P < .01$).

Table 2. Comparison between the Results of the Present Experiment and those of the Previous Experiment

exposure time	St. Fig. 4			St. Fig. 8		
	unlimited	200 ms.	t	unlimited	200 ms.	t
Exp. G.	6.3	8.5	0.917	5.0	6.5	0.882
Cont. G.	1.6	6.5	*2.882	4.2	6.1	1.118

These results appear to show that while the sensitivity of subject to perception in the experimental group is unchanged, or preferably becomes sharper than in the control group, the perceptive organizing ability of subject in the experimental group becomes duller than in control group. In other words, these facts can be interpreted as follows: the subject in the experimental group becomes sensitive to the visual stimulus, i.e. subject's perceptive threshold goes down. This interpretation will be

supported by other results in our studies, which indicated the lowering of threshold in two point discrimination⁽²⁾ and in gustatory sensation under the sensory deprivation.

Accordingly, it can be said that although in the experimental group the subject's perceptive threshold goes down, his organizing ability is deteriorated, and the subject in the control group is disturbed in perceiving stimulus figures by the restricted exposure time duration, although his organizing ability is not deteriorated. Therefore it is supposed that if the exposure time duration becomes longer than 200 ms., the difference between experimental group and control group may probably be greater than that in this experiment.

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ZUSAMMENFASSUNG

Die Figuren 4 und 8 von Bender Gestalt Test wurden während der tachistoskopisch beschränkten Vorzeichungszeit nachgezeichnet, um die Wirkung der 24 Stunden lang sinnlichen Entziehung auf das genetische Verfahren der Wahrnehmung (Akutalgenese) zu erforschen.

Die Vpn. der Versuchsgruppe bestanden aus 10 Studenten und diejenigen der Kontrollgruppe aus 12.

Aus den Versuchsergebnissen folgt: Die sinnliche Entziehung setzte die Reizschwelle herab, und verschlechterte die Gestaltung.