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STUDIES ON SENSORY DEPRIVATION : III

PART 5. THE EFFECTS OF SENSORY DEPRIVATION ON THE PERFORMANCE OF THE PROJECTIVE TEST

By

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The experiment had a double purpose: One was to investigate the effects of sensory deprivation on the higher order functions of a human being using a TAT-like projective test. The other was to find what specific motives were aroused by sensory deprivation. The main findings in the performance of TAT-like projective test were as follows: (1) reaction time of initial response and duration of response in the experimental group were shorter than those of the control group; (2) out of affiliation, achievement, and hunger motives, only in affiliation motive there was a difference between two groups. A comparison of the present data with those of Rorschach test revealed that sensory deprivation deteriorated the higher order functions, especially the processes of organizing and verbalizing the cognitive object.

INTRODUCTION

The present study was intended for investigating the effects of sensory deprivation (including so-called social isolation) on the performance of TAT-like projective test and to examine its effects on higher order functions of a human being.

First, it is supposed that sensory deprivation of 24 hrs. will affect both reaction time of initial response and duration of response in the performance of TAT-like projective test. It was said the subjects develop stimulus-hunger during sensory deprivation⁽³⁾, therefore it is predicted that the reaction threshold to the stimulation will decline, then the initial response will be made faster and the duration of response will be made shorter.

Second, (a) the conditions of sensory deprivation are also those of social isolation, therefore it is predicted that affiliation motive will be increased under sensory deprivation⁽⁵⁾. The prediction is partly supported by the facts that our subjects in the past studies showed generally affiliative attitudes to the experimenters after the experimental period⁽²⁾. (b) In our past experiments, many subjects reported hunger-feeling. As in the present study they were given no food during the confinement, an increment of hunger motive is predicted. (c) Since subjects confined in the experimental room without any tasks to be undertaken, achievement motive will get stronger during the confinement.

METHOD

Subjects: The subjects consisted of 10 male undergraduate students in both experimental group and control group respectively.

Procedure: Four TAT-like cards were used, because it was considered that the construction-purpose of standard TAT cards did not answer the purpose of this study and was inadequate to it.

Card 1 and 2 were constructed mainly for hunger motive, card 3 for affiliation motive, and card 4 for achievement motive. And three scoring categories (affiliation, achievement, hunger) were prepared for the response-contents.

The subjects of the experimental group were given TAT-like projective test in experimental situation after sensory deprivation of 24 hrs. The subjects of the control group were tested in ordinary situation. The test was given to the subjects as a test of imagination according to the same procedure as that of TAT test.

RESULTS

(I) Reaction Time

The results are shown in table 1 and 2. The reaction time of initial response and duration of response in the experimental group were shorter in any card than those of the control group, and no evident difference between two groups could be found in qualities and quantities of responses.

Table 1. Mean reaction time of initial response (in sec.).

Card	Exp. G	Cont. G	Difference
I	20.2	21.3	- 0.9
II	9.9	35.9	- 26.0**
III	15.0	19.7	- 4.7*
IV	17.9	11.2	- 3.3
\bar{x}	15.8	24.5	- 8.7**

** $p < .01$, * $p < .05$, t-test.

Table 2. Mean duration time of response (in sec.).

Card	Exp. G.	Cont. G.	Difference
I	86.5	140.0	- 63.5**
II	78.7	127.8	- 49.1**
III	57.0	129.9	- 72.9**
IV	59.0	158.1	- 99.1**
\bar{x}	70.3	139.0	- 68.9**

** $p < .01$, t-test.

(2) Motives

The results are shown in Fig. I. Three scoring categories of affiliation, achievement, and hunger were made on referring to Atkinson's categories⁽¹⁾. These are as follows:

Affiliation N; which implies negative affiliation to the hero (heroine) and the whole

situation.

Affiliation P-; which implies that the hero (heroine) expresses positive affiliation to other persons, but the whole situation is negative.

Affiliation P+; which implies that the hero (heroine) expresses positive affiliation to other persons and the whole situation.

Achievement; which is concerned with the hero (heroine) who tries to achieve something.

Hunger; which is concerned with response related to foods.

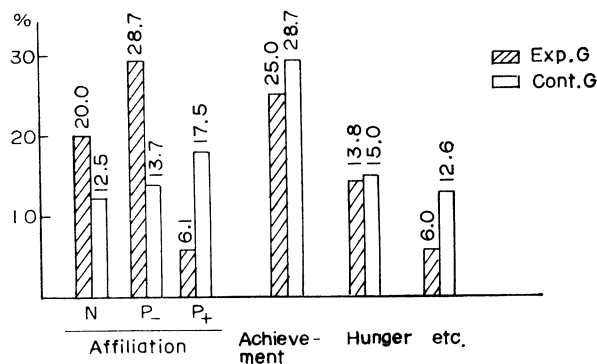


Fig. 1. the percentage of responses classified in categories.

As shown in Fig. 1, negative affiliation increased evidently in the experimental group, with about a half of total responses (N and P-; exp. group 48.7%, cont. group 26.2%). Conversely, positive affiliation decreased in the experimental group (P+; exp. group 6.1%, cont. group 17.5%). There was no apparent difference in achievement and hunger between the two groups.

DISCUSSION

(1) The shortening of the reaction time of initial response and duration of response may imply that the reaction threshold for presented cards declined and the cards obtained higher stimulus values, for the subjects developed stimulus hunger during sensory deprivation of 24 hrs., therefore, the strength of the response increased. Moreover, experimental group could make response without distinctly quantitative and qualitative differences as compared to control group. So, it can safely be said that subjects are made to accelerate their verbal response as a result of sensory deprivation. Such a consideration is not incompatible with what was reported before.

(2) On motives, especially on affiliation motive, we observed during the administration of the test that the attitude of experimental subjects often showed they were willing to communicate the experimenters through the medium of the card. But the theme of imagination-making stories showed negative affiliation, contrary to our presupposition. An ambivalent attitude assumed by the same subjects may be based

on the fact that the experimental confinement instigated the needs for social contact, but at the same time, strong frustration was experienced by the subjects, resulting from blocking the satisfaction of the needs. It is reasonable to think that the results of the TAT-like test reflect the subject's unpleasant experience of frustration, and this negative affiliation is suppressed in the overt behavior.

(3) It is necessary to make a comparison between the results of TAT-like projective test and those of Rorschach test. In Rorschach test, the reaction time of initial response delayed and the total responses increased in the experimental group⁽⁴⁾. As for the initial reaction time, the difference between their results is mainly due to the characteristics of the figure in the tests. The ink blot of Rorschach test is meaningless and ambiguous, so that subjects find it difficult to organize it before making verbal response. However, as TAT's figure contains concrete persons or objects, it is very easy to organize the cognitive objects as a figure. Thus, the delay of initial response time in Rorschach test will indicate that sensory deprivation impairs higher order functions, because the functions of organizing and verbalizing the cognitive objects can be regarded as the higher order function.

It should also be noticed that in TAT-like test, the numbers of responses in the experimental group are nearly equal to those in the control group, in spite of the shorter duration of response in the experimental group, while in Rorschach test, the numbers of responses are greater in the experimental group than in the control, although in the duration of response the two groups are almost alike. The facts will suggest that the response productivity is facilitated by sensory deprivation in both the TAT-like projective test and the Rorschach test.

(4) It becomes necessary to examine the following two points as a result of this experiment; (1) to investigate the effect of experimenter on the reaction time and the response contents, (2) to investigate the reaction time and the response contents to the cards without cognitive objects, by using white card as TAT card. And this experiment must be performed in absence of an experimenter. Those points will be discussed further in the following paper.

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ZUSAMMENFASSUNG

Dieser Versuch wurde angestellt, um den Einfluss von sinnlicher Entziehung auf die Funktionen der hohen Schicht des Menschen und auf einige Motive zu untersuchen. Bei der Ausführung des TAT-gleichen projektiven Tests wurden folgende Unterschiede zwischen Experimentell-Gruppe und Kontroll-Gruppe gefunden.

(1) Die Reaktionszeit der Anfangsantwort und die Durchzeit der Antwort in der experimentellen Gruppe waren kürzer als diejenigen in der kontrollierten Gruppe.

(2) Unter Affiliations-, Erreichungs (achievement)-, und Hunger-Motive wurde die Vermehrung des Affiliation-Motivs in der experimentellen Gruppe beobachtet.

Die Daten wurden mit denjenigen der Rorschachsausführung verglichen. Die folgende Voraussetzung wird aus den besagten Ergebnissen festgestellt: die Funktionen der hohen Schicht des Menschen, die den Wahrnehmungsinhalt organisieren und mit der Sprache ausdrücken, wurden unter sinnlicher Entziehung verschlimmert.