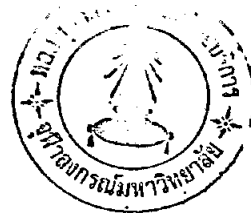


Chapter I



Background of the Problem

Tolman¹ (1959) hypothesized that an organism usually learned the succession of stimuli or "signs" that led to the goal. His theory stresses the notion that an organism learns relations among stimuli rather than relations between stimulus and response *per se*. How stimuli are helpful for learning (or leading to goal) is of interest and is to be studied in this experiment. Stimuli in this study were arranged in two characteristics: heterogenous and homogenous. These stimuli were to be located in a restricted "field" or "ground" on the apparatus designed especially for this study.

Definition of terms

1. Heterogenous characteristic of stimuli (or environment) in this study was the six black wooden blocks and the six white wooden blocks provided in the "field" or "ground".

2. Homogenous characteristic of stimuli (or environment) was the twelve wooden blocks provided in the "field" were black or white (contingent on a group of rats).

3. Learning was defined as the improvement of speed of running (in seconds) intern of the mean time of the first three running trials and the last three running trials.

¹James Deese, and Steward H. Hulse, The Psychology of Learning (Tokyo : Kogahusha Company, Ltd., 1958), pp. 77-8.

Purpose of the Study

The major purpose of this study was to investigate the effect of heterogenous characteristic of environment in comparison with homogenous one over learning in rats.

Scope of the Study

This study is limited to :

1. A group of 41 female rats.
2. An apparatus designed particularly for the study.
3. Drive was associated with 24 hours of water deprivation.
4. Special food for experimental rats available from F.E.

Zeullig Company, Thailand.

Hypothesis

Heterogenous characteristic of environment yields better learning than homogenous characteristic of environment.

Usefulness of the Study

1. An evidence of how stimuli influences learning in rats.
2. Give knowledge and suspects for further investigation.

Review of Literatures

There was no research that directly related to this study because the apparatuses used in the previous studies were usually

mazes (T or Y) which were basically different from the one used in this study. However, some information concerning two variables in this study, the color of stimuli and animal drive, were thought appropriate to be discussed about briefly.

Since Tolman stated this construct* in 1959, many investigators had been trying to substantiate his challenging statements in both positive and negative manners. This study was not concerned with what Tolman called "cognitive map" so the criticism of "cognitive map" was abandoned.

Kendler² (1947), in his study of irrelevant-incentive learning, did the experiment to test the hypothesis that the more distinctive the cues associated with the two alternative choices (in a maze), the more readily animals would learn "what leads to what". He used a maze in which the left half of the stem and all doors, walls and floor on the left were painted black, whereas the right half of the stem and the right alley were left unpainted. There was a black curtain in the entrance to the left alley and a white curtain in the right alley. Though, the behavior of the behavior of the rats did not show the evidence to support the above hypothesis, Kendler observed that rats tended to prefer black

²Henry Goldstein et.al., (ed.) Controversial Issues in Learning (New York : Appleton-Century-Crofts, 1965), p. 91.

* See Background of the Problem.

alley and curtain to those which were white.

Rollins³ (1965) found that every one of his 36 rats exhibited a preference for the alley painted black.

Tolman⁴ (1947) has indicated the relationship between the color of the stimuli and the hesitating looking-back-and-forth, sort of behavior (Vicarious trial and error, VTE) of rats at a choice-point in the maze before going one way or the other.

He reported that in his visual discrimination experiment in which an animal was put on the jumping stand and faced with two doors which differed in some visual property such as black and white, or vertical stripes and horizontal stripes. One of such pair was the correct door leading to food. If the difference of two doors was pertinent such as between black and white, the animals showed more hesitating, looking-back-and-forth behavior. But if the difference of two doors was not much such as gray and black, the animal did less such behavior.

³Ibid.

⁴Edward C. Tolman, "Cognitive Maps in Rats and Men," Readings for Introductory Psychology (New York : Harcourt, Brace & World, Inc., 1965), pp. 215-6. (Edited by Richard C. Teevan and Robert C. Birney).

Tolman and Mimium⁵ (1942) did another experiment with the same apparatus and obtained the same results.

Jackson⁶ (1943) reported that the difficult maze units produced more such behavior and also stated that the more "stupid"^{**} rats did more such behavior.

It should be noticed that the behavior expressed by the animals in those three experiments was the same but the apparatuses used in Tolman, and Tolman and Mimium's experiment were different from the one used in Jackson's experiment. So, no possible conclusion for the effect of the stimuli was reached.

In studying the effect of thirst and hunger drive, some reports are:

Hays⁷ (1949), from an experiment on irrelevant motivation, reported that irrelevant learning in rats occurred more readily when it was carried out under hunger than that under thirst. He found that his rats trained under 18 hours of water deprivation failed to respond appropriately to food in an alley if tested when

⁵Ibid.

⁶Ibid., p. 218. \

⁷Goldstein et.al., op.cit., pp. 89-90.

^{**}In Jackson's term.

hungry, but rats trained under 23 hours' food deprivation responded appropriately to water if tested under thirsty condition.

Kendler⁸ (1947), however, reported the opposite result. He found that neither the animals trained under thirst nor trained under hunger in his experiment gave evidence of irrelevant-incentive learning.

Christie⁹ (1965) found that rats trained under hunger responded appropriately in irrelevant-incentive learning experiment under both hunger and thirst test trials.

⁸Ibid.

⁹Ibid.