assumption that when animals learn to respond differentially to a given cue, the strength of analyzers for other cues is reduced, will also explain why generalization gradients obtained after single stimulus training are steeper if animals are first given differential training, even when the differential training involves a different dimension to that employed in the generalization tests (Honig, 1969).

It would appear, then, that a theory of selective attention can explain why overtraining should sometimes benefit EDS learning. The present findings confirm previous reports of this phenomenon, but unfortunately throw little light on why Mackintosh obtained the opposite result. Mackintosh used much larger stimuli than those employed in the present experiment and it may be that during overtraining his animals learned an external orienting response that was inappropriate to the stimuli used on the EDS.

The finding that overtraining on a discrimination results in better retention of that discrimination when tested after shift learning is scarcely surprising. It is, however, interesting that retention is not affected by whether the interpolated learning involves an EDS or an IDS.

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NOTE

1. This work is part of a project on "Stimulus analyzing mechanisms," supported by the American Office of Naval Research (Contract N62558-4791).

Saline appetite in rats as a function of dry food ingestion

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Thirty-nine albino rats were deprived of food and water for 24 h. Group 1 was given water for 1 h, followed by 1 h of water and dry food; Group 2 was given 1 h of 0.9% saline followed by 1 h of 0.9% saline and food; Group 3 was given 1 h of both water and 0.9% saline followed by the addition of food to the two liquids for 1 h. First-hour and second-hour intakes of water and saline were measured. Results show that rats drank more 0.9% saline than water with a single bottle, with or without food; with double bottles rats drank more saline when no food was given; rats switched to water when food was given. Since rats eat less food when given 0.9% saline than when given water (Hsiao,

1967) the rats may have chosen water in order to eat more food.

Rats drink more isotonic and hypotonic saline solutions than water in single-bottle tests (Hsiao, 1967; O'Kelly, 1954; Stellar, Hyman, & Samet, 1954; Weiner & Stellar, 1951), and in double-bottle tests (Bare, 1949; Richter, 1956; Stricker & Wolf, 1967). However, Deutsch & Jones (1960) reported that after 20-h water deprivation water was preferred to 0.8% saline in a T-maze choice test, though rats drank more saline than water in the double-bottle test. They reported that, after water satiation, rats showed no preference for either liquid in a T maze. Using a double-bottle brief-exposure technique, Falk & Titlebaum

(1963) observed that water-deprived rats revealed no preference for either water or 0.8% saline, but nondeprived rats preferred saline to water. Thus, "saline appetite" seems to depend upon the state of water need, though different testing situations may produce opposite results.

Using a single-bottle technique, Hsiao (1967) reported that food-water deprived rats drank more 0.9% or 1.8% saline solutions than water when no food was given. When given food, rats drank more water than 1.8% saline and less than 0.9% saline, but the increase in water intake from no-food condition to food condition was greater than the comparable increase in 0.9% saline intake. This decrease in saline appetite may be due to dehydration induced by dry food ingestion as shown by Lepkovsky, Lyman, Fleming, Nagumo, & Dimick (1957).

Rats eat less food when given 0.9% or 1.8% saline solutions than when given water (Hsiao, 1967). Thus, when saline and water are given simultaneously with dry food, deprived rats may choose water in order to eat more food.

Saline appetite was studied in this experiment with both single- and double-bottle tests and with either food or no food available to food-water deprived rats.

SUBJECTS AND APPARATUS

Thirty-nine albino rats (18 males and 21 females), about 120 days old, raised in the University of Arizona Psychology Laboratory, were individually housed in a room with constant illumination, with temperature of 72 deg C and humidity about 45%. Each S was trained to drink water from a 100-cc graduated tube with metal tip and to eat powdered food from a 250-cc glass beaker fastened at the corner of the home cage for over a week before the experiment started. The experiment was conducted in Ss' home cages with the drinking tubes and food beakers. Ss had previous experience of food and water deprivation schedules.

PROCEDURE

Subjects were divided into three groups, each containing six males and seven females. After 24 h of food and water deprivation the following procedures were administered to each group: Group 1, 1 h water only followed by 1 h of water and powdered food; Group 2, 1 h 0.9% saline only followed by 1 h of 0.9% saline and powdered food; Group 3, 1 h water and 0.9% saline simultaneously presented followed by 1 h of water, 0.9% saline, and powdered food. The saline bottle was placed to the left of the water bottle by 1.5 in. The saline was prepared by adding 0.9-g NaCl to 100 cc tap water. Data for this experiment consisted of first- and second-hour water and saline intake.

RESULTS

As shown in Fig. 1, when given no food Ss drank more saline than water in both single- and double-bottle tests. With food given Ss still drank more saline with a single bottle, but with double bottles they switched to water. For single-bottle data, analysis of variance shows a statistically significant difference ($p < .05$) for both food/no-food and saline/water comparisons. The slight nonparallelism between the saline and water curves (interaction) is not significant ($p > .05$). For the double-bottle data, analysis shows significant interaction effect with both main effects statistically not significant.

DISCUSSION

The results clearly show that the preference for isotonic saline (0.9%) depends upon the water need induced by dry-food ingestion. The saline curve and water curve with a single bottle are statistically parallel but, using the same Ss as their own control, Hsiao (1967)² showed a steeper increase in water intake from no-food to food conditions than the comparable increase in 0.9% saline or in 1.8% saline intake.

The preference change with double bottles cannot be due to adaptation to saline taste. In his unpublished data, Hsiao found that even in the first hour rats preferred water to saline when they ingested dry food.

Bare (1949), using a 24-h double-bottle test, showed that rats drink more hypotonic or isotonic saline solutions than water when food is available ad lib. However, about 10 cc of water is drunk by rats in addition to the saline solutions. Rats may drink more water while eating food but drink more saline when they are not eating.

Stricker & Wolf (1967) reported that even after injection of strong hypertonic saline rats drink more hypertonic saline than water in a double-bottle test. Comparing the results obtained by Deutsch & Jones (1960), Falk & Titlebaum (1963) and those cited above with the present results it should be noted that water is preferred to isotonic saline in a double-bottle test only when the rat is hungry and is taking dry food meal. Since rats eat less food when given 0.9% saline than water (Hsiao, 1967) they may have chosen water in order to eat more food.

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Fig. 1. One-hour intake of water or 0.9% saline solution in single- and double-bottle tests with or without food available in 24-h food/water-deprived rats.

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NOTES

1. This study was supported by PHS Research Grant MH 15530-01. We thank Eldonna Fisher for editorial and secretarial aid.
2. Also, Hsiao, S. Salted food and saline solutions intake by rats. Submitted to *Journal of Comparative & Physiological Psychology*, 1969.

Impaired acquisition of a successive visual pattern discrimination following hippocampal ablations in cats¹

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($p < 0.004$). Hence, ablation of the hippocampal region severely impairs the acquisition of successive discriminations in cats.

Three groups of mature cats were tested for acquisition of a successive visual pattern discrimination. Ammon's horn and pyriform cortex of Group 1 ($N = 6$) had been ablated. Group 2 ($N = 4$) were sham-operated and Group 3 ($N = 3$) were intact normal animals. Group 1 was significantly inferior to the combined control groups

The literature suggests that lesions of the hippocampal region produce postoperative acquisition deficits that are more severe for successive than for simultaneous problems. Kimble (1963) found that hippocampal rats were impaired on a successive, but not on a simultaneous, brightness discrimination. Stein & Kimble (1966) also found that hippocampectomized rats were not