deprivation level should be absent during these relatively brief exposures insofar as Ss will not have time to identify and select the preferred diet. If this hypothesis is incorrect, the increase should remain.

SUMMARY

The data obtained in this study may be interpreted either as showing increased preference discrimination with increased food deprivation (if one assumes that Ss do not select a preferred diet) or as not showing a change in preference discrimination (if one assumes that Ss do select). The latter interpretation does not rule out the possibility of increase or decrease in preference discrimination. It merely says that, if animals are capable of

selecting a preferred diet, these results cannot be interpreted as demonstrating either an increase or a decrease in preference discrimination.

REFERENCES

(See following article.)

NOTES

1. Research carried out at Pioneering Research Laboratory, Behavioral Sciences Division, U.S. Army Natick Laboratories, Natick, Mass. 01760.
2. USPHS (NIMH) Post-Doctoral Fellow, Department of Biology, Clark University. Correspondence address same as in Note 1.
3. Present address: Department of Psychology, University of Georgia, Athens, Ga. 30601.
4. Quinine sulfate (NF), Fisher Scientific Co.; saccharin (insoluble), Eastman Organic Chemicals.

Does food deprivation affect the role of taste in a two-choice preference test? II: Some conclusions¹

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Ss that were food-deprived for 24 h were found previously to show an apparent increase in preference discrimination in a 30-min two-choice test. This increase is not found in 5-min and 10-min tests, at least for the standard diet vs 0.05% QSO₄ diet comparison. It is concluded that the apparent increase in the 30-min test was an artifact of S's ability to identify and select a preferred diet.

In a previous article (Gentile & Hoff, 1970), it was argued that increased preference ratios across deprivation conditions did not necessarily imply a shift in preference or a change in the importance of taste in preference behavior. The data were held to be not inconsistent with the position taken elsewhere by the authors (Hoff & Gentile, 1969) that deprivation has no effect on the role of taste in food intake and preference.

It was proposed that 30-min preference tests measure both preselection sampling of the choice diets and postselection eating of

the preferred diet. The apparent increase in preference demonstrated by the most deprived (24 h) group was hypothesized to be the result of increased postselection eating.

The present investigation was undertaken to show that such an argument is highly plausible. If Ss do select a preferred diet and eat from it exclusively after an initial exploratory period of sampling then preference data cannot be treated as ratio data. Only the period before selection takes place can be so treated. If the hypothesis that food deprivation does not affect the role of taste in preference is correct and the 30-min results are an artifact of selection, then results from the preselection period should fail to show the increased intake ratios found at 30 min.

SUBJECTS

Ss were 24 male albino rats (Holtzman), weighing between 300 and 400 g. Twelve Ss had had previous experience with wet mash diets in a single-choice quinine-adulteration experiment (Hoff & Gentile, 1969). The other 12 were naive.

APPARATUS

The animals were housed and tested in standard laboratory cages. Diets were

presented in ceramic cups with metal lips to reduce spillage.

Stimuli

The choices given to the Ss were two wet mash (50% H₂O) diets made from Wayne Mouse Breeder Meal. The quinine choice contained 0.05% QSO₄.⁴ The standard diet did not contain any additional flavoring substances.

PROCEDURE

The method was identical to that used in the previous experiment (Gentile & Hoff, 1970), with the one change that 5-min and 10-min preference tests were conducted as well as a 30-min test. Twelve Ss were given the tests in the following order: 30 min, 10 min, 5 min. The other 12 were tested in the reverse order (5 min, 10 min, 30 min).

As before, each S was tested once on all deprivation conditions (4, 8, and 24 h), with order of condition counterbalanced between Ss.

RESULTS AND DISCUSSION

Results of the present experiment are given in Fig. 1, in terms of percent preference for the preferred (H₂O) diet. It is clear that the animals in the 5-min test, as predicted, did not show any change in preference ratio as a function of

Fig. 1. Percentage of preference for H₂O diet vs 0.05% QSO₄ diet as a function of hours of deprivation. Results are for 5-min, 10-min, and 30-min preference tests. Estimated percentage preference for the 10- to 30-min period is included with the 30-min test data (see text).

deprivation. After 10 min, there is still no change. The results for the 30-min tests show the expected increase in percentage intake (although only marginally significant) for the 24-h group. This rise was somewhat understated because the 30-min test data included preselection sampling. Therefore, we subtracted the 10-min intakes from the 30-min intakes in order to obtain an estimate of 10- to 30-min intakes. The results are given as Xs in Fig. 1.

The primary purpose of this experiment was to show that the increased intake ratios found previously (Gentile & Hoff, 1970) in a 30-min test were an artifact of postselection intake. This suggestion was confirmed, for the concentration of quinine used, by the results of the 5- and 10-min preference tests.

In summary, there is no good evidence for change in the importance of taste in preference as a function of food deprivation since the apparent changes found in the 30-min test do not show up in 5- and 10-min tests. The changes that do occur in the 30-min test are confined primarily to the 24-h condition. By virtue of the fact that total intake for this condition is greater than for either of the others, it would be expected that postselection eating would be greatest for this group; it may even be that the 24-h group is the only one that eats enough to be able to make a selection in the time allowed. Thus, this change is not inconsistent with the general position that the importance of taste is not affected by length of food deprivation.

The possibility remains (we believe it is remote) that these results apply only to the particular pair of diets tested in the 5- and 10-min tests, that the magnitude of the selection effect is not sufficiently large to account completely for the somewhat larger differences across deprivation conditions found for the other three diets tested in our previous study (Gentile & Hoff, 1970). One may also be disturbed by the failure of the 4- and 8-h groups to show any signs of selection during the 10- to 30-min period. We believe that a certain amount of intake is necessary before a choice can be made and that these groups do not achieve the amount required for this choice. It is also possible, however, that there are other differences in eating style (rate, method of sampling, etc.) among groups that could equally well account for the observed differences in selection.

A proper summary for this article and the two preceding (Hoff & Gentile, 1969; Gentile & Hoff, 1970) would be the following: Attempts to ascertain possible modulation of the role of taste in food

intake and food preference as a function of deprivation are faced with many inherent difficulties. The major problem is defining what one means by such changes. Included in this are the problems of establishing criteria for change and of knowing how to interpret the data one obtains in terms of the behavior of the animal. Our own conclusion that the role of taste is not changed is based primarily on our cumulative failure, in tests we consider fair to both predictions, to find logically convincing evidence for change in either direction.

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Familiarity of target location as a factor in the shock-associated aggression of wild rats¹

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In response to moderate foot shock, wild rats exhibit markedly more aggression toward a familiar inanimate target stimulus placed in a new location than toward the same target in its familiar location. The results are discussed in terms of the relationship between aggressive and avoidance behaviors in wild rats.

Wild rats exhibit a marked tendency to avoid an unfamiliar object introduced into familiar surroundings (Barnett, 1958,

1963; Chitty & Shorten, 1946). They also tend, to a lesser extent, to avoid familiar objects placed in new locations within a known environment (Barnett, 1958, 1963; Calhoun, 1962). Thus, the so-called "new object reaction [Shorten, 1954]," or "neophobic" avoidance response of the wild rat (Barnett, 1958) is elicited by two distinct kinds of alteration in a previously explored, and therefore familiar, environment.

In a recent paper (Galef, 1970), evidence was presented suggesting that the novelty avoidance and aggressive behaviors of wild rats were two manifestations of the