treatment conditions ate significantly more than did control Ss (Newman-Keuls, $p < .05$). There were no differences among the treatment groups in food consumption (see Fig. 1).

Separate single-factor analyses were performed on each successive 5 min of each test session. These analyses were conducted to determine if there were any specific within-session patterns of consummatory behavior that differed from those displayed in Fig. 1. Specific within-session differences did occur during the first 5 min of the first treatment session. Ss in the 100- and 110-dB conditions exhibited significant reductions in food consumption relative to that of Ss in the 90-dB and no-sound control conditions ($F = 7.07$, $df = 3/56$, $p < .01$; Newman-Keuls comparisons, $p < .05$). No other within-session differences appeared.

Analyses performed on the pre-session warm-up data did not reveal any systematic differences in the number of food pellets consumed by Ss in the four conditions. In addition, there were no systematic differences in pre-session body weight among the conditions.

There were no significant differences in total session eating behavior among Ss in the three white-noise conditions utilized. The most striking finding of the present research was that no substantial inhibition of eating occurred. In contrast to inhibition, there was a marked facilitative effect on the second sound treatment day. This facilitation is similar to effects previously reported, when mild levels of electric shock were presented to Ss in an appetitive situation (e.g., Sterritt & Shemberg, 1963; Sterritt, 1965).

It is possible that failure to produce inhibition was a function of the relatively long testing sessions and that the most aversive aspects of sound underwent some adaptation. The fact that an initial period of inhibition occurred in the 100- and 110-dB conditions, which gave way to facilitation, provides some support for this possibility. It is possible to suggest that the facilitative effect is in part an artifact produced by the delivery of white noise from above, which forced animals' heads down to the feeding cup area. Observation of the Ss strongly indicates that this is not the case. The onset of white noise typically produced initial behaviors which were incompatible with eating (e.g., face washing), which were then followed by a rapid approach to the foodcup.

In summary, the current data suggest that the presentation of substantial durations of white noise as an aversive stimulus in an appetitive

situation is of little value where the primary concern is with measuring disruptive effects. Inhibitory effects are small and of short duration. The present project provides no substantive information regarding possible processes underlying the observed facilitative effect, and this finding itself appears to be worthy of future exploration.

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Effects of strain differences and D-amphetamine sulfate on avoidance performance*

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The purpose of this experiment was to investigate strain differences and amphetamine effects on avoidance performance of the Maudsley MR and MNR strains of rats. It was predicted that with amphetamine avoidance performance of the nonreactive strain would be enhanced more than that of the reactive strain. There was no significant difference in performance between the two strains; however, groups which received amphetamine had better performance than those receiving placebo.

Strain differences are known to influence avoidance performance of rats (Zerbolio, Reynierse, & Denny, 1965; Wilcock, 1968). D-amphetamine sulfate, a stimulant drug, has been shown to have a facilitating effect on avoidance performance (Hearst & Whalen, 1963; Kulkarni & Job, 1967). In a strain by drug avoidance learning study, Powell, Martin, & Kamano (1967) reported differential effects of amobarbital sodium on performance of the Tryon strains. Avoidance performance of the S1 strain was facilitated more by 20 mg/kg and debilitated less by 40 mg/kg than was that of the S3 strain. Open field testing indicated that these strains also differed in emotionality, with the S1s found to be more emotional than the S3s; thus, it was inferred that the drug effects interacted with emotionality. Since amobarbital normally has a depressant effect on activity, with d-amphetamine the opposite results might be expected, e.g., amphetamine should improve performance of relatively nonemotional rats and should hinder performance of more emotional rats. Such a hypothesis is in

keeping with the inverted U-shaped function.

This study investigated the effects of d-amphetamine sulfate on the avoidance performance of the Maudsley reactive (MR) and nonreactive (MNR) strains of rats, which are said to differ in emotionality (Broadhurst, 1969).

SUBJECTS

The Ss were 24 female Maudsley rats, 12 from the MNR and 12 from the MR strain. Each strain was divided into equal drug and placebo groups. Ss were 80-120 days old, were maintained on food and water ad lib, and were housed individually throughout testing.

APPARATUS

The apparatus was a shuttlebox, 24 x 3½ x 5 in., constructed of clear Plexiglas with a grid floor. The top of the box was hinged for inserting and removing the animals. The box was divided into two sections by a black cloth curtain. A Hunter timer was used for timing response latency and the CS-US interval. An Eico audiogenerator produced the CS (tone = 400 cycles/sec). Testing took place in a dimly lighted room.

PROCEDURE

Each S was subjected to 20 trials of

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Fig. 1. Total number of avoidance responses emitted by all Ss during the 5-day period.

Fig. 2. Escape latency (mean number of seconds) for each of the four groups over the 5-day period.

avoidance conditioning per day for 5 consecutive days. Each trial consisted of CS (tone) onset, followed 5 sec later by the UCS (shock = 300 microA), which continued until S crossed the curtain into the other side of the shuttlebox, or if S failed to avoid, for a maximum of 20 sec. The intertrial interval ranged from 15 to 45 sec with a mean intertrial interval of 30 sec.

Drug Ss were given an IP injection of 2 mg/kg of d-amphetamine sulfate (dissolved in normal saline at a 10-mg/cc solution) 20 min prior to testing. Placebo Ss received an equivalent injection of normal saline.

RESULTS AND DISCUSSION

A Strain by Drug analysis of variance, using the 5-day testing period as a repeated measure (Winer, 1962), was conducted for both the number of avoidance responses and the escape latencies (mean number of seconds to make an escape and/or avoidance response). Figure 1 presents the total number of conditioned avoidance responses (CARs) given by each of the four groups over the 5-day period. There was no significant effect of strain ($F = 1.67$); however, the difference between drug and placebo groups was significant ($F = 31.42$,

$p < .01$), with the amphetamine Ss emitting more CARs than did placebo Ss. The Strain by Drug interaction was negligible ($F = 0.62$).

Figure 2 depicts the mean escape latencies for the four groups. Again there was no significant effect of strain ($F = 1.47$), but differences between the drug and placebo groups were significant ($F = 29.21$, $p < .01$), with the drug groups having shorter latencies than the placebo groups. The Strain by Drug interaction was not significant ($F = 1.19$).

The results of this study are consistent with those of Hearst & Whalen (1963) and Kulkarni & Job (1967) in that d-amphetamine did have a facilitating effect on avoidance performance. While there was some tendency for the less emotional MNR strain to perform better under amphetamine as was predicted, these differences were not significant. There are several possible reasons for the failure of the results to confirm the hypothesis. First, the Ss used in the study were females. Powell, Martin, & Kamano (1967) found that females of the Tryon strain were less emotional than males. Thus, in the present study, differential effects of emotionality and amphetamine could have been obscured by sex. Secondly, the MRs

were younger than the MNRs; finally, the limited results could be due to use of only one drug dosage level. Replication of this study, with rats of more equal age and using a wider range of drug levels, might reveal that male Ss yield results which are both more reliable and more in keeping with the hypothesis.

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