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NOTES

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2. The Crg1 designation identifies the substrain as the one maintained by the Cancer Research Genetics Laboratory, University of California, Berkeley.

The effect of rearing condition on dominance and emotionality in rats

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Group-raised Ss were compared to socially isolated Ss on measures of dominance (weight gain during food competition) and emotionality (open-field test). Group-reared Ss were less emotional than isolated Ss. Although the group-reared Ss were dominant on the early trials, difference between groups faded over the 12 days of testing.

The effect of rearing conditions on dominance has produced conflicting data in the literature. Rosen & Hart (1963) reported that one socially reared subspecies of deer mice, "bairdii," dominated isolate-reared deer mice of the same subspecies. Uyeno & White (1967) found, on the contrary, that isolate-reared male Wistar rats dominated their socially reared littermates under "survival motivation" conditions. The following experiment was designed to assess the effect of rearing conditions on male Sprague-Dawley rats.

METHOD

Twenty-four 45-day-old Sprague-Dawley rats were randomly divided into one group of 12 individually caged Ss and one group of 12 group-caged Ss (four Ss per cage). All Ss were maintained on ad lib food and water. At 93 days of age, all Ss were tested in a 4 x 4 ft open field. Four photo cells positioned to divide the field into nine equal squares monitored S's activity during a 5-min testing session. At 94 days of age, all Ss were placed on a 23.5-h food deprivation schedule. Ten days later a practice trial was given to each rat to familiarize him with food placement and cage. Test trials began the next day; the procedure and apparatus was the same as that employed by Hoyenga & Rowe (1969). Each socially reared S was paired once with each isolate-reared S.

Competitions were carried out over 12 successive days, one 2-min test session per day. Pairs of Ss competed in different random orders from one testing day to the next. The mean weights of the 12 isolate- and group-reared Ss were 333.0 g and 339.5 g, respectively. All Ss were fed for ½ h after the test session.

RESULTS

A t test showed that isolate-reared Ss were significantly less active in the open field than were socially reared Ss ($t = 3.37$, $df = 2$, $p < .01$). An analysis of variance showed no significant difference between groups for dominance. Ss in both groups became more effective competitors across days, producing a significant increase in weight gained during competition with

Fig. 1. Weight gain during 12 days of competition.

practice ($F = 64.36$, $df = 5/110$, $p < .01$). The socially reared Ss initially tended to dominate their isolate-reared competitors, but by Day 9 the differences had faded. This accounts for the significant Group by Days interaction ($F = 3.38$, $df = 5/110$, $p < .01$). Sign tests comparing the win-loss record of each S indicated that two socially reared Ss were consistent winners and none were consistent losers; there were three consistent losers among the isolate-reared Ss and no consistent winners ($p < .05$). The intercorrelations between four variables (weight gain during competition, change in weight across the 12 competition days, original body weight, and open-field activity) were examined for both isolate and socially reared Ss. For both socially reared and isolate-reared Ss, the larger Ss were more dominant and gained more weight in competition ($r = .41$). The only other significant correlation indicated that the more active socially reared Ss lost more weight than the less active socially reared Ss over the 12 days of competition ($r = -.61$).

DISCUSSION

While some increase in food consumption may be due directly to a decrease in S's fear and task practice, much of the improvement appeared related to the diminished amount of attention paid to the socially reared S by the isolate-reared S. The isolate-reared Ss during the early trials tended to smell, push, climb over, and in general thoroughly explore the "novel" socially reared S rather than eat. Not only did such behavior reduce the isolate Ss' eating, but it also severely disturbed feeding of the socially reared S. As the isolate-reared S became familiar with the socially reared S, such behavior tended to decline and both became vigorous competitors for the food.

In studies where the same pairs compete over several days (Hoyenga & Rowe, 1969), Ss tend to consistently win or lose. The present data suggests, however, that when competition is between pairs of Ss unfamiliar with each other, few Ss (5 out of 24) become consistent winners or losers.

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