Psychological Equipment

Quartec (1662 Doone Rd., Columbus, Ohio 43221) is advertising several pieces of psychological apparatus. A small animal activity monitor is priced at \$207.50 (SPDT relay output), at \$235 (8 six-digit connector output), and also at \$242.50 (both of the above outputs). Features include a nonmoving platform (any nonconductive cage may be used), adjustable sensitivity control, and others. The same company offers a constant-current lesion maker at \$265 and autoranging logarithmic dc GSRs at \$330; a simpler logarithmic dc GSR unit sells for \$195.

Testan Scientific Instruments (P.O. Box 267, Davis, Calif. 95616) lists a goldfish shuttlebox at \$200 with a student laboratory kit (shuttlebox in easily stored and carried case) at \$400. A double student lab kit costs \$625. The latter device controls two goldfish shuttleboxes and enables the second box to be run independently of the first or yoked to the first. A rat shuttlebox is priced at \$180; with logic control (printed circuit card), the box costs \$225.

Notes

A simple tail removal procedure for studying the role of the tail rattle in mouse aggression

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Tail rattling (rapid shaking of the tail) is an unusual behavior associated with fighting in mice. If the tail happens to strike some object such as the side of the cage, a rattling sound is heard. The behavior is related to aggression and has even been used as part of a formula devised to be a primary measure of aggression in mice (Beeman, 1947); however, the actual function of the behavior is in question. Crowcroft (1966) hypothesized that the tail rattling occurs when a conflict exists within a S, and Scott and Fredericson (1951) state that it

appears to be a warning signal which occurs when a mouse is hesitating between attack and escape. Scott (1966) also suggests that it is a signal conveying a warning or threat, but Scott also states: "...there is no evidence that other mice react to it in this way." The question seems open as to what function this behavior serves or even if it affects other mice. One way to approach this question experimentally would be to surgically remove the tail from some Ss and observe possible changes in the behavior of their fighting partners. Surgical removal has several problems associated with it (i.e., deep anesthesia is required, excessive bleeding, chewing of stitches by the Ss, and danger of infection). Therefore, the purpose of this paper is to present a simpler manner of tail removal for research on the function or effects of the behavior of tail rattling.

SUBJECTS

Seven Swiss Webster white mice served as Ss. They were of mixed sexes, and all were approximately 4 months old.

PROCEDURE

S was anesthetized with ether and placed with its tail through a small hole in a piece of cardboard. Then liquid nitrogen was poured over the tail. Following the initial freezing period, Ss were observed daily for signs of pain, infection, and for the general condition of the tail. Each S received one of the following periods of application of liquid nitrogen: 1, 3, 4, 10, 10, 10, or 15 sec.

RESULTS AND DISCUSSION

No behaviors were observed which would suggest the presence of pain, except that one S was seen to bite the cage top following recovery from the anesthesia. This was observed only once and for only a very few seconds.

The 1-sec application of liquid nitrogen resulted in no frosting, but about 2 days later, a small discoloration appeared; however, no deterioration occurred. With the 3- or 4-sec application of the liquid nitrogen, the tail was frosted on the top side only. Five to 6 days later, there was some burn-like tissue

damage, but the tail did not sever. The Ss receiving 10 or 15 sec of exposure showed solid frosting, stiffness, and clean separation lines between the frosted and nonfrosted areas. The total tail fell off between 5 and 13 days following freezing. At the time of severing, the stub was well scabbed over and healing was in progress. Although no prophylactic doses of antibiotics were given, no signs of infection were noticed. The entire process appeared to be nonstressful. Two mice delivered healthy litters approximately 19 days after the freezing treatment. Both litters were cared for normally, which would tend to indicate normal conditions. About 8 weeks of recovery resulted in a fully healed tail stub.

The question of control procedures for the tail removal would appear to be a difficult one. Freezing periods too short for complete removal may be a control; however, there is the possibility that the complete freezing procedure may destroy the nerves in the tail, resulting in the lack of pain, while partial freezing might destroy only some of the nerves. From the present observations, it would appear that partial freezing procedure would be acceptable, since there were no signs of pain from any of the Ss during recovery.

An alternative control procedure would be to freeze the tip of the tail completely. This would allow for similar effects on the S, while allowing the behavior of tail rattling to be unimpeded.

The advantages of the freezing procedure include: lack of bleeding, lack of danger of infection, minimal stress to the organisms, and simplicity of operation.

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