

A Pharmacological Separation of Buzzer-Shock Pairing and of
the Shuttle-Shock Contingency as Factors in the Elicitation
of Shuttle Responses to a Buzzer in Rats¹

IVÁN IZQUIERDO²

*Departamento de Fisiologia,
Escola Paulista de Medicina,
Rua Botucatu 882,
04023 São Paulo, SP, Brazil*

In previous papers, tyramine (5 mg/kg), LSD (0.3 mg/kg), LSD + dibenamine (10 mg/kg), and diazepam (5 mg/kg) have been found to have opposite effects on the performance of shuttle responses to a buzzer by rats in a so-called "pseudoconditioning" and in a typical "two-way avoidance" test. The main differences between the two tests are that in the former the stimuli are given at random (i.e., without a constant temporal relation or "pairing") and shocks are not contingent upon responses. A state of shock-dependent drive may be assumed to be similarly present, however, in both situations. It was decided to test the effect of these drug treatments on two other experimental paradigms: one in which buzzers and shocks were "paired" (i.e., they partially overlapped) but in which shocks were given on all trials independently of responses (i.e., no "contingency"), and another one in which the buzzer-shock interval was varied at random but shocks were contingent upon shuttling to the buzzer. In the former test, LSD and diazepam increased shuttling to the buzzer, whereas tyramine and dibenamine had no effect and dibenamine partially blocked the action of LSD. In the latter test, tyramine and LSD + dibenamine depressed responding, diazepam increased it, and LSD and dibenamine on their own had no effect. Drug influences on the latter test were very similar to those previously observed on a two-way avoidance situation, which suggests that these drugs may affect two-way avoidance possibly by an action mainly on the "contingency" mechanism. Furthermore, the present data also suggest that drive and what here was called "pairing" and "contingency" are separable factors in the elicitation of shuttle responses to a buzzer in buzzer + shock paradigms.

A rat in a shuttle box will normally not shuttle to a buzzer unless it receives footshocks during the same session (Izquierdo, 1975b). There are

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