

THE EFFECTS OF INDUCED ANOREXIA ON THE NUMBER OF BAR PRESSES MADE BY A RAT IN A SKINNER BOX

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ABSTRACT

The present investigator had found in several pilot studies conducted prior to the present series of investigations that nicotine sulfate injected intraperitoneally is a very safe and technically reliable emetic and convulsant. Injections of 0.3 ml per 100 grams of body weight produces a convulsive seizure within a few seconds after injection and convulsed rats show decreased eating for a three-hour period following injection.

Four rats were given preliminary training to press the bar of the Skinner box under continuous reinforcement. When their performance reached a stable level, they were given four experimental conditions in an order that was determined by permuting a 4 x 4 Latin square. Each condition involved injecting the subject intraperitoneally and 5 minutes after his convulsion placing him in the cage component of the Skinner box for 135 minutes. Nicotine sulfate was injected in two of the four conditions and normal saline in the other two conditions. One condition employing saline followed 24 hours of food deprivation. The remaining two conditions were given after *ad libitum* feedings.

Table I indicates the performance of *Ss* during three 45 minute periods of the experiment. The total amount of bar pressing was quite comparable under each of three conditions. However, during the first 45 minutes following the period in which *Ss* were both satiated and drugged, no bar pressing occurred. During the last third of the condition involving food deprivation and saline injection, each of the *Ss* pressed the bar less frequently than during the comparable period following the condition which deprived the animals of food and dosed them with nicotine sulfate. These data indicate that the action of the emetic delays response to food and this delay is particularly evident when the drug and deprivation of food are presented together. Heightened bar pressing during the last third of the condition of food deprivation and nicotine sulfate injection indicates either a recovery from debilitation or a synergic action between the visceral stimulation of the emetic and hunger.

TABLE I
AMOUNT OF BAR PRESSING BY RATS AS A FUNCTION OF SATIATION AND NICOTINE
SULPHATE ADMINISTRATION

Rat ¹	Deprived Rats			Satiated Rats								
	Saline Injected	Nicotine Injected	Nicotine Injected	Saline Injected	Nicotine Injected	Nicotine Injected						
Minutes →	1-45	45-90	90-135	1-45	45-90	90-135						
1	117 ²	28	39	0	2	49	140	20	15	0	0	20
2	0	2	28	139	61	29	0	4	45	0	29	47
3	21	9	40	0	0	47	76	1	33	0	29	43
4	163	66	9	5	17	88	39	0	55	0	0	27

¹ Each rat was employed in all conditions
² Number of bar presses

In an unpublished pilot study not included in the present paper, it was found that rat subjects studied under the same dosage deprivation conditions of the present experiment ran a straight runway faster to obtain food under a condition of food deprivation and nicotine sulfate dosage than under any of the other conditions. This effect was noted three hours following the convulsion which was produced by the drug.