

MANUSCRIPT REVIEW BOARD INFORMATION SHEET

MANUSCRIPT TITLE: NICOTINE AS A POSITIVE REINFORCER FOR RATS: EFFECTS OF INFUSION DOSE AND FIXED RATIO SIZE.

AUTHOR(S): Victor J. DeNoble, Paul C. Mela, and Francis J. Ryan

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ABSTRACT

The rate and pattern of lever pressing were studied in twelve rats during 24-hour sessions in which responding resulted in an intravenous infusion of nicotine. Lever pressing was shown to be established and maintained by the response-nicotine contingency. Following prolonged nicotine intake (2.0 - 3.5 mg/kg/session for 10-20 sessions), saline substitution did not result in overt signs of physiological dependence. Effects of 8.0, 16.0, 32.0, and 64.0 µg/kg/infusion of nicotine and of fixed ratio (FR) schedules of 1-8 responses per infusion were determined on response rate and nicotine intake. Under an FR 1 schedule, the number of infusions first increased then decreased as the dose of nicotine was decreased (64.0 - 8.0 µg/kg/infusion). Nicotine intake (mg/kg/24-hr) was directly related to the infusion dose. As the FR size was increased from 1-6, the number of lever presses increased and the number of infusions per 24-hour session (32.0 µg/kg) remained relatively constant. At ratio values greater than six, both the number of lever presses and infusions decreased. These results show that nicotine can function as a positive reinforcer for rats, and that the reinforcing effect is relatively weak compared to other intravenously delivered reinforcers. In addition, the present results extend previous work showing that termination of prolonged exposure to nicotine does not result in a physiological dependence.

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INTERNAL REFEREES:

R. Fagan
R. Paggs

M.R.B. COORDINATOR

T. Yu

PAE/gbj - March 1982

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