

DISSOCIATION IN THE MODULATORY EFFECTS OF ENVIRONMENT ON HEROIN-INDUCED PSYCHOMOTOR SENSITIZATION VS. HEROIN SELF-ADMINISTRATION

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Rationale: We have previously shown (1) that the magnitude of psychomotor sensitization to repeated intraperitoneally administration of heroin is much greater in rats that were transferred to the test cages immediately before treatment (novelty group) than in rats that were kept in the test cages at all times (home group). The goal of the present study was to determine whether this environmental manipulation could also affect the reinforcing properties of heroin. **Methods:** Eighty-seven rats received an intrajugular catheter using standard surgical procedures and were then assigned to one of two environmental conditions. The rats in the home condition were housed and tested in cages equipped with two retractable levers, one of which was active. The rats in the novelty condition were transferred to these cages only for the self-administration sessions. All rats were then trained to self-administer one of three doses of heroin: 0.0125, 0.025, or 0.05 mg/kg per infusion. On sessions 1-7, the schedule requirement was gradually increased from fixed ratio (FR) 1 to FR5. On sessions 8-10, the rats were given the possibility to self-administer three additional doses of cocaine or amphetamine. On session 12, the rats underwent a break-point session during which the number of responses required to obtain a single infusion was progressively increased. On session 13, all rats received a non-contingent intravenous infusion of 0.1 mg/kg of heroin and their locomotor activity was recorded for 1h. **Results:** Surprisingly, the rats in the home group self-administered more heroin and exhibited a higher break-point than the rats in the novelty group. The test conducted at the end of the experiments indicated, however, greater heroin-induced psychomotor activity in the novelty than in the home group. **Conclusions:** The present study indicates that environmental context exerts a powerful modulatory control over the reinforcing effects of heroin. The direction of this modulation, however, was opposite to that seen with psychomotor activity, here and in a previous study (1). The present findings appear to be at odd with the hypothesis that the neuroadaptations responsible for psychomotor sensitization are the same responsible for drug addiction, as suggested by some authors (2).

1) Giovanna P., Conversi D., Caprioli D., Del Bianco P., Nencini P., Cabib S., Badiani A. (2007) *Neuropsychopharmacology*, in press.

2) Robinson T.E. and Berridge K.C. (1993) *Brain Res. Rev.* 18:247-91.