

ABSTRACT

The Role of the Mesolimbic System in the Mediation of Sensory-Motor Behaviour

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Current developments in recent years have drawn attention to the possible functional role of the nucleus accumbens septi (ACB) as a limbic-motor interface. Thus, it is possible that this nucleus may be the link between the initiation of goal-directed behaviours and the motor control of such behaviours.

The study was designed therefore to evaluate the role of the ACB in the higher-order processing of the goal-directed, avoidance behaviour of rats. Rats were subjected to a series of electric foot-shocks for a period of three minutes in one arm of a Y-maze, and then subsequently returned to the Y-maze for the same period where their exploration of the maze was then examined. In order to assess the role of the ACB, rats were lesioned at the level of the ACB either before training or after training was completed. Their behaviour was subsequently compared with controls which underwent no shocking and were sham-operated. The study also examined the role of the ACB in the spontaneous motor activity of these rats in order to better determine the effect of this nucleus on motor activity.

The results of the study indicated that lesions to the ACB produced dishabituation and an exacerbation in the fear-motivated response of these rats. Interestingly, accumbens-lesioning was without effect in reducing the motor activity of the animals. It appears therefore that the nucleus accumbens septi is necessary to facilitate recovery from an aversive experience.

The relevance of these findings to the disruption in sensory-motor functioning and implications for psychopathology are discussed.