

Identification of Anxiogenic Stimuli for Behavioral Performance in the Elevated T-maze

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In the elevated T-maze, a rat can rapidly acquire the conditioned avoidance behavior when remaining in the enclosed area instead of lingering in the open area. Immediately after avoidance conditioning, escape from the open area with a quick motion to enter into enclosed area appeared when the subject was placed at one end of the open area. Previous work examined the effects of anxiolytic drugs on elevated T-maze, the results suggest two types of anxiety disorder could be distinctly related to conditioned avoidance and escape. However, the mechanisms for those two behaviors in elevated T-maze remain unclear. The present study manipulated the height of maze plate, different forms of wall surrounding enclosed and/or open area, and the width of arms in open area to investigate the anxiogenic stimuli for elevated T-maze. Results indicated that the openness in the open area is the predominant factor for anxiogenesis and, in addition, the impact from height perceived by subject may also be involved. In another experiment the procedures of the

two tasks in the elevated T-maze were re-examined and the results excluded the putative confounding effect as derived from different sequences in testing behaviors on this maze. The dose effects of buspirone, known as a serotonergic anxiolytic drug, were evaluated on elevated T-maze and locomotor activity separately. Buspirone injected with low dose (0.3 mg/kg) significantly reduced the conditioned avoidance latency without affecting the escape latency in elevated T-maze. That locomotor activity was not altered by buspirone given at this dose suggests the irrelevance of anxiolytic effect observed from T-maze with locomotion under drug treatment. Together, results of this study provided evidence in regarding the reliability and validity for using elevated T-maze as an animal model of anxiety in psychopharmacology.

Keywords: *conditioned avoidance, escape, openness, anxiolytic drug, rat.*

