Reply to Sheldon¹

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Sheldon (1968) advanced several criticisms of the interpretation of an experiment that I carried out (Lester, 1967a). In that experiment, rats on elevated mazes were as orderly in their exploration as rats in enclosed mazes but were less active as measured by the number of arms that they entered. Rats in elevated mazes tended significantly to repeat choices initially in the maze more than did rats in enclosed mazes. Let me consider Sheldon's criticisms in order.

(1) Can it be assumed that rats in elevated mazes are more fearful than rats in enclosed mazes? Sheldon cites Halliday (1967) that defecation scores support such an assumption. However, freezing is an alternative measure of fearfulness and the reduced activity of rats in elevated mazes also supports my assumption. It should be noted that defecation has been criticized as a measure of fearfulness (Bindra & Thompson, 1953) and that intercorrelations between different measures of fearfulness appear to be low (Candland et al, 1967).

(2) Can it be assumed that locomotor activity is a measure of the rats' exploratory behavior? First, I used the activity measure to support my assumption that elevated mazes increase the fear level of rats compared to enclosed mazes. I used the alternation measure to investigate exploratory behavior as in my other research (Lester, 1967c, d).

Secondly, I have pointed out that both locomotor and latency measures of exploration are confounded with the general activity of the animals (Lester, 1967b, 1968). The least confounded measure of exploration is the orderliness measure.

(3) Sheldon asserts that elevated and enclosed mazes present the rats with very different sensory environments, in particular in intramaze vs extramaze stimuli. (Can we be sure that the mazes present such different environments to the rats or is this merely an anthropomorphic assumption on our part?) Sheldon reports data that indicate that rats spend one third of their time with their heads over the edge of an elevated maze. During these times they are inactive from a locomotion point of view.

This supports my criticism (Lester, 1967b, 1968) of the use of locomotion as a measure of exploration. Such a measure fails to identify within maze unit exploration and identifies only between maze unit exploration.

In addition, Sheldon is on shaky ground in his assertion. Walker et al (1955) found that intramaze cues were more important in the determination of alternation behavior than extramaze cues. Douglas (1966) found no extramaze cue to be important in the determination of maze alternation. The only cues used were avoidance of own odor trail (an intramaze cue) and a tendency to move in an opposite spatial direction to that recently moved in. Thus, Sheldon's objection that extramaze cues become more

important in elevated mazes needs considerable experimental support before it can be assumed to be so. Certainly, the importance of extramaze cues in enclosed mazes is minimal.

Because the behavior of a rat differs in two locales does not prove that the two locales are different sensory environments. Both mazes present a three-dimensional array of stimuli. The precise nature of this array is not of crucial significance for my general theory (Lester, 1967b, 1968).

Although I have no data to support this, I would guess that rats would behave differently in enclosed mazes with perspex roofs than in enclosed mazes with large-mesh wire roofs. The mesh would elicit considerable investigatory behavior from the rats. However, I would not like to assert that the two enclosed mazes presented different sensory environments. Indeed it is not clear what precisely Sheldon means by the phrase "different sensory environment."

(4) The relevance of extramaze and intramaze cues. Sheldon's criticisms assume that the distinction between the source of the stimuli (extramaze vs intramaze) is important to my theorizing. My predictions did not depend on whether the stimuli alternated were intramaze or extramaze. In either case, my prediction stands.

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NOTE

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