

Effect of urban environment on visual curiosity behavior in rhesus monkeys¹

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Two groups of rhesus monkeys, one captured in bazaar areas of Indian cities and the other in jungle areas, were compared for visual curiosity responses to several stimulus displays of varying complexity. In comparison to the jungle monkeys, urban monkeys showed greater responsiveness to the stimulus displays of higher complexity value. The results were interpreted as suggesting that monkeys from urban areas, as a result of their more varied visual and motor experiences, become psychologically more complex than those from jungle areas.

In India, rhesus monkeys are found living not only in jungle areas, but in villages, towns, and cities as well (Southwick, Beg, & Siddigi, 1961a, b). These habitats provide widely different living environments for these animals. The most obvious difference is that the areas inhabited by humans afford the monkeys with more opportunities for varied perceptual and motor experiences; in other words, in comparison with the jungle, conditions in the urban areas are highly stimulating. Our earlier studies have shown that such environmental differences do not influence the learning ability of the animals (Singh, 1966a), but do have marked effects on their social behavior (Singh, 1966c, 1968), and also on their responsiveness to novel situations and objects (Singh, 1966b). As reported earlier, in contrast to jungle monkeys, urban ones are highly responsive to novel objects, and will manipulate even highly complex and ordinarily fear-evoking stimuli such as a human skeleton.

The present experiment was designed to study the effects of urban conditions upon the visual curiosity behavior of rhesus monkeys.

Subjects. Eight adult female rhesus monkeys, three jungle and five urban, served as Ss in this study. The jungle monkeys were caught from interior jungle areas, and the urban monkeys, from bazaar areas of some Indian cities. Prior to their use in the present experiment, they had lived about a month individually in cages measuring 3 x 3 x 3 ft.

Apparatus. Tests for visual exploration were conducted in a wooden chamber placed in a partially sound-attenuated room. The chamber measured 3 x 3 x 3 ft and was completely enclosed. The chamber floor was constructed of wooden bars raised 3 in. above ground level so that a metal pan could be placed underneath to collect the urine and feces of the animal while inside the chamber. In the center of each of its three side walls was a 1 x 1 in. window which could be closed by a wooden plate from outside. The remaining wall of the chamber contained a 3 x 1½ in. one-way screen to permit observation of the animal by the E. The chamber was equipped with food and water delivery systems which could be operated from outside the chamber. A 25 W bulb fixed in the ceiling of the chamber provided inside illumination. Two 100 W bulbs provided illumination in the testing room during the testing hours.

Three stimulus displays of different levels of visual complexity were presented. These were: (a) eight simple gray wooden cubes placed on a black wooden board (SWO), (b) a battery of eight empty rat cages (BC), and (c) a toy train with some colored toys moving on a circular track 3 ft in diameter (MO). These displays were arranged outside the test chamber in a manner such that an animal inside the chamber could get a full view of one of the displays by looking through one of the chamber windows.

Procedure. Each S was housed in the test chamber throughout the experiment. Observations were begun after six days of adaptation. The animal was observed for six successive days, three times a day, at 8 AM, 12 N, and 4 PM, each observation lasting 30 min. An observation session started by opening the three chamber windows. The E recorded the frequency and duration of the animal's responses to each of the three stimulus displays. At the end of each session, the windows were closed. The maintenance procedures, cleaning the metal pan and filling the water and food containers, were completed between 5:30 and 6:30 PM each day.

Results and Discussion. The cumulative frequency and cumulative duration of each S's responses to each stimulus display during each observation session were determined. Separate analyses of variance were performed on the frequency and duration data, and showed only the following effects to be significant: Effects of time of day observed (Frequency: $F = 6.95$, $df = 2/12$, $p < .05$; Duration: $F = 8.66$, $df = 2/12$, $p < .01$), Jungle vs Urban by Stimulus Displays by Day Effects (Duration: $F = 2.05$, $df = 10/60$, $p < .05$). Further analysis of the observation time effects with t tests revealed a significant ($p < .05$) session-to-session decrease in both measures within a day. Such variations may be attributed to changes in the general activity level of the animals, and also to a visual deprivation phenomenon similar to that described by Butler (1957), as the visual deprivation period preceding morning sessions was relatively longer than those preceding other observation sessions.

A detailed analysis of the Jungle vs Urban by Stimulus display by Day interaction is presented in Fig. 1. Compared to the SWO situation, both jungle and urban groups spent more time looking at the BS situation ($p < .05$ and $.01$, respectively). This difference was greater for the urban group, but not significantly so. However, the two habitat groups differed markedly (the differences significant at $p = .05$ on the first five days) in response to the MO situation; while the urban monkeys were highly responsive to this display, the responses of the jungle-raised monkeys were as low as their responses to the SWO situation. The highly marked differences between the two habitat groups in response to the MO situation decreased during the course of testing, this being due to a significant ($p < .05$) decline in the responses of the urban monkeys.

On the whole, these results clearly indicate that in comparison to the jungle monkeys, the urban ones were more responsive to stimulus displays of higher complexity values. These results are meaningful when viewed in terms of the stimulus complexity hypothesis (Dember & Earl, 1957; Sackett, 1965; Vitz, 1966). According to this hypothesis, the manipulatory, exploratory, or

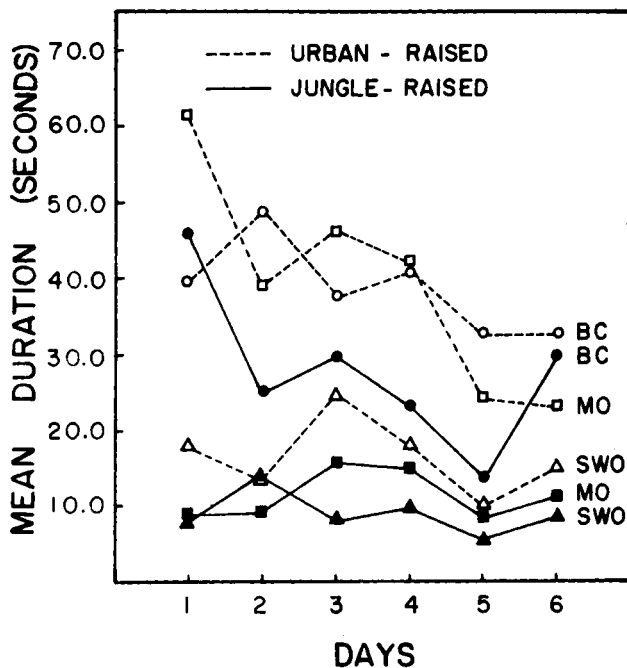


Fig. 1. Mean duration of the visual responses of the jungle- and urban-raised monkeys to the three stimulus displays on six successive days.

curiosity behavior of an individual is to a great extent determined by the complexity level of the individual and of the stimulus situation confronted; an individual with greater perceptual and motor experiences is supposed to interact maximally with stimuli of higher complexity values. Thus, interpreted in terms of this theory, the urban monkeys might be considered as psychologically more complex than the jungle monkeys.

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NOTE

1. The study was conducted at the Panjab University, Chandigarh, India.