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Preference for Clear versus Distorted Viewing in the Chimpanzee

Abstract. Young chimpanzees preferred to look through a clear window rather than through a window that produced a distorted image of viewed objects. Performance did not appear to be affected by familiarity with the viewing stimulus.

The tendencies to look, to manipulate, and to remain alert and on the move appear very early in life, and much of the daily activity of a primate consists of responses which keep the animal in touch with what is going on in the environment. Thus, for example, rhesus monkeys will work persistently to look out of an enclosed cage and see objects (1). The purpose of the experiment reported here was to determine whether chimpanzees, in addition to being motivated to look at objects, also prefer a clear to a distorted view of an object. Such a preference would be expected by Woodworth, who states, "the seeking of clear vision is built into the individual organism. It is an immediate drive of great potency without regard to any ulterior motivation. . . . All the visual mechanism [of clear vision] requires for its activation is the presence of visible objects. . . . What we said . . . in defense of an exploratory drive is pertinent here, for perception is evidently the core of exploration. The direct goal of exploration is to find or perceive 'what is there' "(2).

Four chimpanzees approximately 2½ years old (No. 188, Jenda; No. 173, Falweb; No. 175, Peck; No. 194, Saki) were given 28 5-minute trials, which were spaced over 7 days of testing. On each trial the subject was given access to two plastic windows (1½ by 2½ inches) mounted with their centers 12 inches apart in a wall of the home cage.

One window afforded a normally clear view, but in the other the plastic was bent so as to produce (for humans) sharp but distorted images of viewed objects. By sighting through the latter window from different orientations, variations in the degree and type of distortion could be produced, but in general the distortions were gross. Double images and elongation of the visual image in multiple dimensions were the most frequently occurring types of distortion.

The positions of the clear and distorted windows were varied in balanced order from trial to trial. A seated human being, positioned 3 feet away from, and between, the two windows, served simultaneously as the viewing stimulus and as observer. By pressing a key he made a recording on a 2-channel operations recorder whenever the animal's face appeared in front of a window. To control for possible biases in response attributable to the presence of a particular person, two observers were used, a male and a female.

The amount of looking was scored from the recorder tapes by estimating the total number of marks representing 2 seconds spent by the subject in front of a window. By this criterion, the chimpanzees looked through one or the other of the windows about 30 percent of the total time; 65 percent of their looking was through the clear window. The clear window received higher scores than the distorted one on, respectively, 26 of 28, 22 of 26, 15 of 27, and 26 of 28 trials with the four animals (tied scores are excluded). For each animal except Peck (who had a position bias), $p < .01$ by sign test, and $p < .05$ by t test, with 3 degrees of freedom. "Testing" behavior—that is, moving rapidly back and forth before settling down for a time at the clear window—accounted for many of the responses to the distorted window.

It is unlikely that the viewing stimulus employed—a passive human being—produced the preference for clear viewing solely because it was familiar to or had special significance for these chimpanzees. Two of the animals (Jenda and Falweb) were raised for the first 21 months of life under special conditions that severely restricted their environmental and social experience. At the time of this testing they had had a total of less than 100 hours of social experience, and their social behavior was in many respects deficient. However, they performed in essentially the same fashion

as did Peck and Saki, who were wild-born animals that had been in constant contact with other chimpanzees and with people since their arrival at the Yerkes Laboratories 1½ years prior to this experiment (3).

In view of human interest in relatively simple forms of "incongruous" stimuli (4), it is conceivable that the chimpanzee's preference for clear viewing could be reversed under some conditions. Under the conditions of this experiment, however, Woodworth's position is supported. Butler's recent and closely related finding that rhesus monkeys look more at a projected image that is in focus than at an image that is out of focus (5) is further evidence for the primacy of clear vision.

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References and Notes

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Influence of Cage Type and Dietary Zinc Oxide upon Molybdenum Toxicity

Abstract. Molybdenum-fed rats housed in galvanized cages gained less weight and had lower hemoglobin levels than similarly fed rats housed in stainless steel cages. Since similar effects were produced in rats housed in stainless steel cages by increasing the zinc in their diets, it was concluded that zinc consumed by chewing on zinc-coated cages was responsible for the abnormalities noted.

Ever since the early work of Ferguson (1) the toxicity of molybdenum has been widely studied (2-4). Many of these studies have utilized rats as the experimental animals (3, 4), and it is likely that, in many of the studies with rats, the type of cage in which the animals were housed was not considered important. The experiments reported here were initiated as a result of the observation that rats housed in galvanized (zinc dipped) cages suffered more