

A COMPARISON OF RHESUS MONKEY AND GIBBON RESPONSES TO UNFAMILIAR SITUATIONS¹

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11 gibbons and 11 rhesus monkeys were individually tested in 7 types of novel situations. Test situations used multiple unfamiliar cages, novel objects, unfamiliar animals of the same species, humans in standard situations, and a white rat. The 2 groups differed in both quality and quantity of exploration, with the gibbons more active. The rhesus displayed dominance-subordination behavior in most situations, whereas the gibbons tended to manipulate novel objects and showed little fear of humans or strange gibbons. When disturbed, rhesus monkeys displayed submissive gestures or became immobile, whereas gibbons continued active movements and displayed self-directed stereotyped responses.

The forms and frequencies of primate responses differ from one taxa to another and many expressions are species specific (Carpenter, 1942). Some taxa are considerably more reactive than others to changes in customary environments, and responses are often elicited which are qualitatively and quantitatively characteristic of the taxa. Large individual differences exist within most species, but there are pronounced central tendencies. The present paper describes the quality and frequency of the response tendencies of rhesus monkeys and gibbons in seven types of unfamiliar situations.

METHOD

Subjects

Eleven rhesus monkeys (*Macaca mullata*) and 11 gibbons (tentatively identified as eight *Hylobates lar* and three *H. pileatus*) served in these investigations. Both groups included Ss ranging from young juvenile to fully adult.

Apparatus

Three different-sized restraining cages and a 48 ft. × 24 ft. × 8 ft. compound were used in testing. Restraining cages included the home stall cages, roughly 7 × 3 × 2 ft., the WGTA cage, and two 2-ft. cubes. All cages were constructed so as to

permit Ss to extend their arms through at least one side.

Stimulus objects presented during testing included an unfamiliar person, an adult male white rat, an unfamiliar animal of the same species, and seven dolls and toys, all about 6 in. high, presented singly on a platform with a shallow depression immediately in front.

Procedure

Each S participated in each of seven tests: Test 1 consisted of 1 min. in which an unfamiliar human stared at S in the home stall. In Test 2 the same person averted his head and offered raisins to S for 1 min. In Test 3, S was placed in a WGTA restraining cage and given 11, 1-min. trials consisting of the presentation of a raisin in a shallow depression on a small platform. Trials 4-10 each had a different doll or toy directly behind the food platform and facing S. Test 4 consisted of 3 min. in the WGTA restraining cage with a live white rat. Test 5 used two small open wire cages. The S was placed in one cage and an unfamiliar animal of the same species was placed in the other. The cages were so arranged that S could retreat out of reach of the stimulus animal but the stimulus animal could not avoid the reach of S. This test lasted 30 min. Latencies of food acceptance, latencies of first contacts and frequencies of contacts were the primary measure in Tests 1-5. A description of behavior including threats, lipsmacking, and other gestures was recorded during all tests. Test 6 consisted of 20 min. in the compound alone. Distance traveled, locations, and number of minutes stationary were recorded. The final test, Test 7, consisted of 5 min. of free feeding in the home stall to compare feeding modes for the two groups.

RESULTS

When an unfamiliar person stood outside the home cage and stared at the occupant, eight of the rhesus responded by hiding in

¹This research was supported in part by National Institute of Mental Health Fellowship MF-11006 to I. S. Bernstein and in part by Grant H-5691 to A. J. Riopelle.

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the shelter hutch. The three venturing outside the hutch all threatened, averaging three threats each. The gibbons, in contrast, all remained outside the hutch and none threatened. Instead, seven of the gibbons reached through to gently touch and hold the unfamiliar person.

When offered food by an unfamiliar person, only two of the rhesus accepted the food, whereas all the gibbons accepted the food promptly.

Test 3 revealed several major differences in the responses of the gibbons and monkeys to unfamiliar inanimate objects. Ten of the gibbons gently touched the objects on an average of 8.5 occasions, whereas none of the monkeys did so. Seven gibbons pulled at objects with some vigor; one monkey also pulled at the objects, but four others threatened objects, and two bit them. Both groups tended to avoid some objects at least some of the time, but whereas monkeys displayed fear grimaces, crouched, lip-smacked, or remained immobile, the gibbons were vocal, repeatedly shook themselves, were active, and some showed self-clasping or self-biting stereotypies although all were wild born animals (cf. Mason & Green, 1962). Further, monkeys significantly more often ($p < .02$, sign test) failed to accept the food in front of objects. Of those *Ss* taking the food, however, the monkeys did so with less delay ($p < .01$, matched *t* test).

When placed in the same cage with a live white rat, most of the gibbons and monkeys showed evidence of active avoidance. Some *Ss* in both groups made vigorous aggressive responses to the rat, but one adult female gibbon held the rat between its legs constantly and may be best described as displaying maternal behavior towards it. Four gibbons again displayed self-clasping stereotypies while none of the monkeys did. Seven gibbons and four monkeys made some contact with the rat during the test period.

When presented with an unfamiliar animal of the same species, 10 gibbons touched the stranger but only 5 rhesus did so ($p < .05$, χ^2 test). The gibbons were observed to shake themselves, display the greeting response (Carpenter, 1940), and show some stereotypies; whereas monkeys fear grimaced, screeched, barked, actively avoided,

lip-smacked, or ignored the stranger. One rhesus showed a cage stereotypy. Both groups were vocal and some members of both groups presented sexually to the stranger.

When released into the large unfamiliar compound, rhesus monkeys spent much of the time in a single location. The total number of minutes spent stationary was 112 for the monkeys as compared to 34 for the gibbons ($p < .01$, *t* test). Scores with regard to entries into the 48 equal size grid sections in the compound (24 at ground level and 24 in the upper section) revealed that gibbons explored an average of 26.7 sections, whereas rhesus monkeys entered only an average of 8.6 sections ($p < .01$, *t* test). The rhesus never entered those areas nearest the observation post, whereas nine of the gibbons did so, some spending most of their time in these areas. The monkeys when stationary were most often in the high sections ($p < .01$, matched *t*) and tended to travel in the low sections, whereas the gibbons preferred to travel in the high sections ($p < .01$, matched *t*) and spent very little time stationary anywhere.

Finally, when allowed to feed freely in the home cage, gibbons were seen to eat leisurely, dropping pieces and traveling about the cage as they fed. The monkeys, on the other hand, all ate rapidly, stuffed their food pouches, and either remained with the food pile or carried off as much as possible into the shelter hutch.

DISCUSSION AND QUALITATIVE NOTES

Different attributes characterized gibbon and monkey behavior in unfamiliar test situations, and it is therefore possible to describe systematic differences between gibbon and monkey exploration of strange situations.

The gibbons contacted the objects, the rat, the strange gibbons, and the unfamiliar person within the first moments after exposure. Active locomotion and exploration was the rule, and even avoidance tended to be active rather than the quiet immobile avoidance displayed by many of the monkeys. The gibbons when disturbed displayed their emotional reaction by shaking themselves at frequent intervals or showing stereotyped self-clasping. One of the dra-

matic responses characteristic of the gibbons was the greeting response. Nothing of an equivalent nature exists in the response repertoire of rhesus monkeys (Hinde & Rowell, 1962).

The monkeys, on the other hand, characteristically displayed specific aggressive or submissive responses in unfamiliar situations. Fear grimaces, cringing, and immobile avoidance were frequent submissive responses with screeching and more extreme evidences of emotionality sometimes present. When aggressive, the typical rhesus threat was displayed. The same responses shown to an unfamiliar monkey were also shown towards unfamiliar animals and objects. Apparently, in a strange situation the rhesus monkey strives to intimidate or placate the central figure. The dominance-subordination relation therefore appears to be the key to rhesus monkey social relations (Chance, 1961). The gibbon does not appear to be nearly so much influenced by hierarchical relationships, and responses appropriate to dominance-subordination are comparatively rare among gibbons.

Examining responses to specific situations and stimuli reveals the characteristic differences of the two groups. The gibbons were curious and even friendly towards strange humans, contacting and holding the person through the wire. They all accepted food promptly and remained with the person even after the food was consumed. The rhesus, on the other hand, actively avoided the human and hid quietly in the hutch, or vigorously threatened. Since the intent stare is part of the rhesus threat pattern, it might be claimed that these reactions were due to the immobile staring of the unfamiliar person in Test 1, but in Test 2 when the human offered food and avoided direct staring, the rhesus reaction did not change. Even the two rhesus taking the food were abrupt in their movements and avoided the person after taking the standard offer of five raisins one at a time. Responses to an unfamiliar animal of the same species were similar in both groups to the responses shown towards unfamiliar persons.

The novel inanimate objects produced the same differences between groups except that

the gibbons appeared disturbed by at least some of the objects and the white rat. Even when disturbed, however, the emotional reactions of the two groups differed. The gibbons moved about actively attempting escape from the situation, and showed other gross body movements indicative of disturbance, whereas the rhesus remained quiet and immobile displaying facial expressions and body postures indicative of fear and submission.

Responses in the free feeding situation also indicated differences in the basic reactive tendencies of the two groups. Despite the prompt acceptance of food from humans in Test 2, the gibbons ate leisurely with disregard for wasted food and returned for additional pieces at will. In contrast, the rhesus monkeys consumed and stored food in the cheek pouches as rapidly as possible with little waste.

Overall differences thus appear to center about the latency, intensity, and quality of emotionality in the two groups. The gibbons explore actively, express emotional behavior more individualistically, and active escape and self-directed behaviors are typical when the gibbons are frightened. The rhesus, on the other hand, show stereotyped emotional responses in unfamiliar situations which are related to communicating aggression or submission to the central feature of the environment.

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(Received September 18, 1962)