Exploration and Play in Howler Monkeys
(*Alouatta palliata*)

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ABSTRACT. Exploration and play were observed in eight troops of howler monkeys (*Alouatta palliata*) containing 56 young and 95 adults. The behavior patterns of seven age classes are described. There was a clear trend for animals to spend less time in nonsocial exploration with increasing age, and for the frequency of social play to follow an inverted “U” pattern, peaking in the early juvenile stage at 15–30 min per day. The howlers’ specialization for eating large quantities of difficult to digest plant matter affected their play: as the young became increasingly dependent on plant food around the infant stage, there was a shift in their play-times to allow for the energy demanding activity of digestion. This and other aspects of howler behavior are related to a reinforcement theory of exploration and play.

INTRODUCTION

Numerous studies on mammals have shown that exploration and play are important in the development and socialization of the young. During exploration and play, the young animal benefits from the exercise, sensory stimulation, and learning experiences that result from its behavior (Brownlee, 1954; Fiske & Maddi, 1961; Riesen, 1961, 1965; Welker, 1961, 1971). Social play provides many socializing experiences that facilitate the infant’s integration into its social group and that are conducive to the learning of social skills, sex roles, copulatory behavior, maternal behavior, controlled aggression, and numerous other behaviors (Loizos, 1967; Mason, 1968; Dolhinow & Bishop, 1970; Baldwin & Baldwin, 1977).

One of the most fruitful approaches to the analysis of exploration and play has involved comparative observations on different species with varied ecologies and adaptations. Both ethology and comparative psychology have analyzed many of the consistent patterns and species differences in play across taxa; and these data are useful in determining the causal mechanisms that shape play and the adaptive consequences that result from play. Most of the recent analyses of exploration and play have been based heavily on the comparative method (Welker, 1961; Moorris, 1964; Loizos, 1967; Millar, 1968; Dolhinow & Bishop, 1970; Aldis, 1975; Baldwin & Baldwin, 1977).

Howler monkeys (*Alouatta*) provide an interesting comparative contrast with most primates because they are folivores whose energy budget differs considerably from that of most other primates (Glander, 1975; Smith, 1977). Because they spend considerable time and energy digesting a large quantity of plant material, howlers are more sedentary and less socially active than many species. In a study on Barro Colorado Island (BCI), Richard (1970) found that social interaction occupied only 0.35% of the howlers’ waking day, compared with 9.97% for feeding, 9.17% for
locomotion, and 79.45% for resting. Also on BCI, Smith (1977) observed that the howlers spent about 0.5-0.8% of their day in intratroop social activities, 15-22% locating and eating food, and at least 74% resting. The howlers' specialization for eating difficult to digest plant matter raises the question of how this adaptation affects exploration and play.

Carpenter (1934) gave a general description of the play of Central American howlers (A. palliata) in his report on howler ecology and behavior on BCI. Altman (1959) made detailed recordings of early infant development, including exploration and play on BCI. Neville (1972) described exploration and play in A. seniculus based on work in Trinidad and Venezuela. Glander (1975) presented both descriptive and quantitative data on play at Hacienda La Pacifica in Costa Rica. The present report provides more complete information on exploration and play in all age-sex classes from a study in southwest Panama.

METHODS

Observations were made during a 10-week field study in a 400 ha natural forest called Barqueta in southwestern Panama. A study area of 20 ha containing eight troops of howlers was selected, and an 8 km trail system was cut crisscrossing through the forest such that troops could be followed at all times. The howlers gave few indications of being disturbed by our presence as long as we stayed more than 7–10 m from them. Behavioral observations were made with the unaided eye and with 7×35, 11° wide angle and 8×30 binoculars. Observations were recorded immediately, either by dictation on light weight tape recorders, or by writing down key data on file cards and later explaining the observations on the tape recorders. The field methods, characteristics of the young age classes, and vocalizations mentioned in this paper are described elsewhere (Baldwin & Baldwin, 1973, 1976).

RESULTS

At Barqueta, exploration and play were observed in all age-sex classes, though these behaviors varied considerably among the different classes. Even within age-sex classes, there existed considerable variance in the frequency and form of exploration and play activities. There was, however, a clear trend for animals to spend less time in nonsocial exploration with increasing age, and for the frequency of social play to follow an inverted “U” pattern, peaking in the early juvenile stage. Each of the types of exploration and play that were observed will be described in the following sections.

1. Nonsocial Exploration: The most conspicuous form of nonsocial exploration was locomotor play, i.e., active crawling on the mother's body or in the trees. Tactile exploration occurred, consisting of the infant's feeling its mother's fur, ears, or limbs and objects in the environment, but was less conspicuous. Visual exploration was most conspicuous when an animal would stare at or visually track some moving object, but visual input was doubtlessly an important aspect of locomotor play, too. Oral exploration was rarely observed, but infant₁'s and infant₂'s did put leaves and twigs in