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(This article appeared in *AnthroNotes* 20(1), spring 1998.)

ZOO LABS

[All of the activities in "Zoo Labs" were designed for observation of monkeys and apes at the National Zoological Park, Washington, D.C. These activities, originally developed by Alison S. Brooks for classes at George Washington University, were tested and revised by Carolyn Gecan, an anthropology teacher at Thomas Jefferson High School for Science and Technology in Fairfax, VA. These activities can be adapted for use in any zoological environment.]

Lab 1: Locomotion

1. Walk by at least 8 cages with *different* primates and record what the most active animal in the cage is doing as you walk by©for example, sitting, grooming, sleeping, brachiating (hanging from branches and swinging arm to arm), knuckle or fist walking, hanging by the tail and one leg, slow quadrupedal climbing or leaping (indicate whether quadrupedal running like a cat or vertical clinging and leaping where animals push off with hind limbs, twist in mid-air, and land on hind limbs). Record the name of the primate and the locomotion pattern.

2. For 3 primates **who were moving**, describe how the method of locomotion you observed is related to the animals' anatomy. What physical features help the animals move, such as tail form, location of special friction skin (like skin on our palm), form of nails, long legs or ankles, long arms, grasping or flat feet, bare knuckles, long curved fingers, curved spine, deep chest, etc.)

3. Select any active adult primate to observe for 15 minutes. Then observe an infant primate (of the same species) for 15 minutes. Estimate about how much of the time is spent in each of the different locomotor activities -- walking on all fours, walking or standing on two legs, brachiating, jumping from hind-limbs and landing on forelimbs, jumping from hind-limbs and landing on hind-limbs. Discuss the similarities and differences between the adult and infant's movement.

Lab 2: Communication

Types of Communication Acts to Observe (the numbers and letters will be used as explained below):

I. *Olfactory*: taste and smell
   a. smelling of one animal by another
   b. smelling of other object and/or eating object and then same thing done by second animal
   c. "marking"- urinating, licking, or rubbing a part of the body against part of the environment, which is then smelled by another animal

II. *Tactile:*
   a. grooming
   b. hand clasping or arm embrace

c. kissing
d. nipping
e. wrestling, rolling together
f. touching another animal

III. *Visual*:
a. postures - rigid, relaxed
b. gestures - *aggressive*: raised eyebrows or open mouth display threatening: "rushes," shaking stick, slapping ground or cage - *appeasement*: bowing to ground; presenting hand, face, or hindquarters; holding up one hand.
c. facial expressions - *aggressive*: stares, eye brow raises, yawns or canine displays; - *appeasement*: grins
d. chasing
e. use of hands to signal communication

IV. *Vocal-auditory*:
a. speaking
b. listening
c. shouting
d. laughing
e. hooting or calling - series of similar noises mostly vowels
f. chattering - series of similar noises mostly consonants

How to Attack Problems

1. Choose a group of animals which interests you. Don't worry too much about being able to "hear" voices, there is plenty of silent communication to watch.

2. Watch the group for 10 minutes learning to identify animals and "logical" behavior sequences. (you may want to assign names to animals).

3. Begin to take notesBtry to take notes either in terms of behavior sequences or time intervals (make separate notebook entry for each one or two minute period).

Example (note assignment of letters and numbers to communication acts):
a. A swings over to B who looks up (IIIc)
They wrestle (IIe)
b. B bites at A (IId)

4. Watch for 20 minutes. Afterwards add communication numbers and letters to the descriptions.

5. Do a similar observation on a human group.

6. Summarize the communicative acts for both nonhuman primate group and human group.

7. Try to summarize your observations and findings - what are the most common communication acts, which animals communicate the most, how do nonhuman primates differ in communication acts from humans?

Lab 3: Mother-Infant Interaction

The relationship of the infant primate to other animals of its own species has been the subject of considerable experimentation and observation, both in captivity and in the wild. This lab involves a quantitative study of these relationships and an attempt to see patterns of interaction and socialization in a group of caged primates.

1. Observe any two different groups with infants for 20 minutes each. Record in detailed notes the behavior of the infant and those with whom it interacts over this time. Take notes particularly on:

a) Number of times infant contacts other animals (specify mother, adult, male, juvenile, etc.)

b) Number of times infant breaks contact with other animals.

c) Number of times other animal contacts infant.

d) Number of times other animal breaks contact with infant. Describe the general nature of the contact in each instance. Also note if the infant is threatened or approached by other animals. Note which animals the infant has the most interaction with.

2. For each species, estimate the percentage of time spent by the infant in various activities, such as grooming, eating, playing, cuddling, sitting, etc.

3. Write a brief summary comparing the interactions of infants in the two groups.

Lab 4: General Behavior

1. Watch any group of three or more primates for 30 minutes. Try to assign a name to each animal observed, and if possible, note the animal's sex and approximate age. If your group has more than four animals in it, choose one or two animals to focus upon during your observation.

2. Describe how each animal is physically different from the others.

3. After 5 minutes of observation, begin to take careful notes on what is happening in the group. Try to identify "behavior sequences"Ca series of interactions or behaviors that seem to begin and end. What happens during each sequence, who is involved, how long does the behavior last?

4. Note what the animals are doing, what expressions and communication acts are involved, which animals are interacting most intensely.

5. Look for differences in behavior among the adult males, adult females, infants, and juveniles.

6. Try to summarize the group's behavior during the time you observed. Can you make any "educated guesses" about the dynamics of the group you were observingCi.e., which animals are related; which animals prefer to interact with one another; which animals are older, younger; which are dominant or submissive?

Lab 5: Dominance/Submissive Behavior

Describe dominance/submissive behavior in a group of caged primates and discern the rank order (if any) of individuals in the group. The following events or interactions are connected with dominance behavior in various species:

Approach-Retreat Interactions

1) Spatial supplanting of subordinate by dominant
2) Avoidance of dominant by subordinate. Aggressive actions on the part of one animal
3) Threats (e.g., stares, postural fixation, special vocalizations, etc.)
4) Displays (e.g., canine (yawn), tree shaking, chest beating, etc.)
5) Chasing

Approach-Approach Interactions

6) Presenting
7) Grooming
8) Mounting
9) Other submissive gestures (reach out a hand - chimps)
10) Control of desirable food (and females—though this is a more disputed concept which you probably won't be able to observe.)

Observe one group of animals housed together for 40 minutes. Make a chart with those 10 interactions across the top and the list of animals in the cage down one side. Note "dominance" interactions as they occur, under type of interaction and animals involved, e.g. under supplanting you might have a "d" for animal 4 and an "s" for animal 6, indicating that animal 4 spatially supplanted animal 6. Any given interaction may fall into more than one type: mark it under as many types as relevant but indicate that it is one behavior sequence (for instance, you might number interactions sequentially ld-ls, 2d-2s, 3d-3s, etc.).

Rank animals in order of number of d's. Rank in order of number of s's. What do you perceive to be the rank order of the animals in this group? What kind of interaction is most closely correlated (by eye) with your rank order? Is the rank order of some animals (e.g., very young juveniles) improved by their association with a more dominant animal? Hand in notes and chart along with your conclusions. (Note: One problem you may find is that the most dominant animal may be avoided by others, resulting in little interaction.)

References on Primates:

Napier, J.R. and P.H. Napier, 1985. *The Natural History of the Primates.* London: British Museum (Natural History).

Ciochan, R.L and R.A. Nisbett, eds., 1998. *The Primate Anthology: Essays on Primate Behavior, Ecology and Conservation from Natural History.* New Jersey: Prentice Hall (selections from *Natural History* magazine).

Classification of the Living Primates

ORDER: PRIMATES

SUBORDER: PROSIMII

FAMILY: Lemuridae (lemurs)
FAMILY: Indriidae (indris, sifakas)
FAMILY: Daubentoniidae (aye-aye)
FAMILY: Lorisidae (lorises, galagos, bushbaby, potto)
FAMILY: Tarsiidae (tarsiers)

SUBORDER: ANTHROPOIDEA

INFRAORDER: PLATYRRHINI (New World)
SUPERFAMILY: CEBOIDEA
FAMILY: Calitrichidae (marmosets, tamarins)
FAMILY: Cebidae (squirrel, spider, howler, Capuchin monkeys)

INFRAORDER: CATARRHINI (Old World)
SUPERFAMILY: CERCOPITHECOIDEA
FAMILY: Cercopithecidae (monkeys)
SUBFAMILY: Cercopithecinae (baboon, macaque, guenon, mangabey)
SUBFAMILY: Colobinae (Colobus, langurs)

SUPERFAMILY: HOMINOIDEA (apes, humans)
FAMILY: Hylobatidae (gibbons, siamangs)
FAMILY: Pongidae (orangutans)
FAMILY: Panidae (chimp, gorilla, bonobo)
FAMILY: Hominidae (human)

(Laura's Note: The taxonomy for Hominoidea has been revised; see http://en.wikipedia.org/wiki/Hominine)