

'Agonistic Buffering' in the Wild Barbary Macaque, *Macaca sylvana* L.

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ABSTRACT. Barbary apes are known to exhibit male care of babies at various locations, but only in the Middle Atlas mountains of Morocco has it been reported that a baby may be used in male-male interactions, apparently reducing the likelihood of aggression. The present study was made in order to discover if the behavior was characteristic of other groups reproductively isolated from the Atlas population. Male-male interactions involving a baby were observed in two groups and are described in detail; their "friendly" nature supports the hypothesis that the presence of a baby reduces the likelihood of aggression. We did not, however, see the active use of babies in this context which has been described for the Atlas population.

INTRODUCTION

DEAG and CROOK (1971), reporting on their study of the Barbary Ape (*Macaca sylvana*) in the Middle Atlas mountains of Morocco, described how males frequently carried babies, sometimes using them in "friendly" interactions with other males. This latter behavior, "agonistic buffering," was defined as "male-male encounters in which one male appears to use a baby to regulate his behavior with another." A hypothesis was advanced that such behavior might be responsible for the apparent low level of aggressive behavior in the groups studied.

Other species of primate which show male care and the apparent use of babies to regulate aggressive interactions are the Japanese Macaque, *Macaca fuscata* (ITANI, 1959) and the Hamadryas Baboon, *Papio hamadryas* (KUMMER, 1967). In *Macaca fuscata* the behavior appeared to be limited to certain populations, and since "agonistic buffering" has not been described for *Macaca sylvana* in zoos (LAHIRI & SOUTHWICK, 1966) or on Gibraltar (MACROBERTS, 1970) we thought it possible that this behavior might also be a cultural phenomenon. We therefore visited a population of *Macaca sylvana* which lives in the northern Rif range of Morocco, and which is reproductively isolated from the Atlas population. It was hoped that if "agonistic buffering" were absent a comparison of social interactions with those found in the Atlas populations might provide evidence for or against DEAG and CROOK's hypothesis.

METHODS

The study site was on Jbel Lakraa (long; 5° 10' W, Lat; 35° 05' N, altitude; 1600–2160 m) 12 km from the village of Bab Taza. The terrain consisted of steep mountain slopes, cliffs, and rocky gorges. The area was forested with oak (*Quercus ilex*, *Quercus*

tauzin), fir trees, and juniper (*Juniperus thurifera*) dissected by regions of sparse grassy vegetation.

The study covered a period of 38 days from October 17 to November 27, 1971. The first 18 days were fine and provided 60 hours of observation. Then followed a rapid change to cold weather in which snow fell and the mountains were shrouded in mist, and during the next 20 days only 31 hours of observations were made.

Since the animals were shy they could be followed only for short periods and had to be located anew each day; there were no permanent sleeping sites. When a baby was visible one observer watched its social interactions through 12×50 binoculars, dictating to a second observer who recorded data with appropriate times from a stop watch. If no baby was visible, an adult male was observed in the same way. The second observer was also alert for other significant events relating to the general nature of interactions of the whole group.

The age-sex-classes were distinguished by the criteria used by DEAG and CROOK (1971).

GROUP COMPOSITION

DEAG and CROOK (1971) have described the combination of groups to form a temporary herd. It was not possible to assess whether such behavior was typical of our groups because in this short study period we could not recognize individuals.

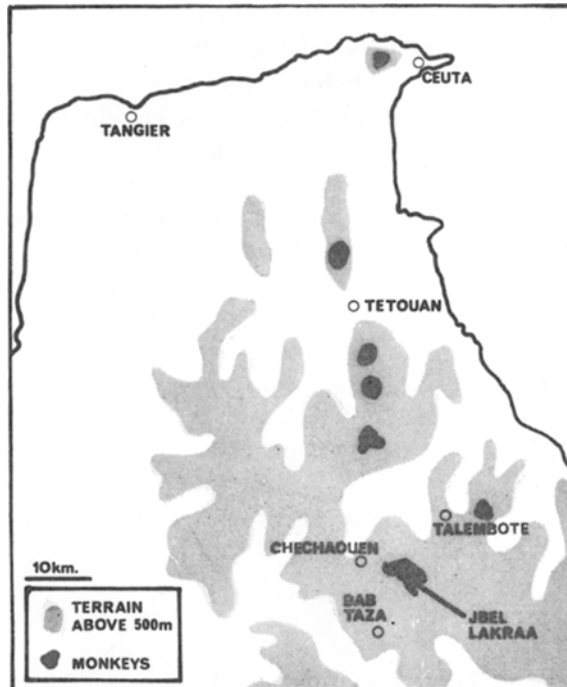


Fig. 1. The location of the study site, and forestry officials' reports of other isolated populations of *M. sylvana*, in the Rif region of Morocco.

Table 1. Composition of groups by age-sex class.

	North group	South group	DEAG & CROOK (1971)
Adult males	9	9	3
Adult females	4	5	6
Subadult males		3	2
Subadult females	2	2	3
Juveniles	7	8	6
Infants	1	1	3
Babies	2	2	2
Total	25	30	25

On only a few occasions did the groups come completely into the open, and then we were able to count and classify the individuals. We were also able to check the number of animals by counting the number of tracks where the animals crossed a path several times in the snow. On all occasions the estimated size and composition of the two groups was similar (Table 1).

CARE OF BABIES

We were able to watch babies for a total time of 11 hours 8 minutes, and recorded interactions with the other members of the groups (Table 2).

The care of babies varied; they were always carried over rugged terrain such as cliffs, but while the adults rested and groomed less attention was paid to them. On two occasions we saw adult females reject a baby by actively pushing it away, and on six occasions a baby was lightly slapped and rejected by one member of a grooming pair.

Table 2. Interactions of babies with other members of the group.

	Adult female	Adult male	Subadult	Juvenile
Approached baby	1	7	11	3
Approached by baby	76	14	5	3
Baby carried by	37	25	3	0
Baby groomed by	21	2	1	1
Leaves baby	42	9	9	1
Left by baby	27	9	1	4

Seven interactions between males were seen in which a baby was involved, and which fell into the category of agonistic buffering. Only one 'friendly' incident, involving an adult male and a juvenile male, was seen without the inclusion of a baby; all other interactions involving adult males consisted of active aggression or passive avoidance.

DETAILED ACCOUNT OF AGONISTIC BUFFERING INTERACTIONS

No.	Time in minutes	Behavior
1	0	Adult male approaches an adult female who is holding a baby, and starts to groom her back. Subadult male 3 m away auto-grooming.

- 2½ Subadult male approaches female from front, sits, and picks up baby's hind legs, pulling its rump to his nostrils, and puts it down again. Subadult repeats this. Adult male stops grooming and moves round to side of female, and looks at baby. Subadult starts to groom adult male.
- 3 Adult female leaves baby next to adult male and walks off; baby follows, squeaking, when she is 4 m away. When she has moved 30 m away from males female stops, baby climbs to ventro-ventral contact and is groomed.
- 6 Juvenile approaches adult female and grooms her.
- 7 Subadult male stops grooming adult male. Adult male starts to groom subadult's head and neck.
- 11 Adult male stops grooming. Subadult grooms adult male's back.
- 12 Adult male 2 approaches adult female, displacing juvenile, and sits with her.
- 12½ Adult male 2 leaves adult female.
- 17½ Subadult male leaves adult male and approaches adult female.
- 18½ Adult female with baby ventral walks off and disappears.
- 2 0 Baby whimpering in tree; approaches adult female and climbs on.
- 24 Female walks past adult male, carrying baby ventrally.
- 26 Male approaches female from rear and starts to groom her back. Male moves to side, look at baby, grooms female's arm, then her back.
- 29 Subadult male approaches female from front, looks at baby and touches it, then starts to groom adult male's arm. Adult male continues to groom female.
- 31 Female leaves males and baby follows.
- 39 Subadult male stops grooming adult male. Adult male starts to groom subadult.
- 42 Adult male leaves subadult.
- 43 Adult male leaves tree.
- 3 0 Adult male and subadult male seen sitting with baby between them. Subadult holds baby's rump to his face, sniffs, and then backs away and leaves.
- 1 Adult male puts baby down and leaves; baby follows 4 m behind until out of sight.
- 4 0 Adult male and subadult male sitting with baby between them, clinging to adult; subadult touches baby then starts to groom adult. Subadult touches adult's groin, then leaves.
- 1½ Baby sits by side of adult. Adult leaves baby, which then approaches another baby and plays.
- 5 0 Adult male with baby on back sits and eats. Baby climbs down to his side.
- 1 Adult male 2 approaches adult male and sits at his side, knee touching knees.
- 2 Adult male 2 looks at baby, then leaves and sits 6 m away.
- 6, 7 0 Adult male holding baby ventrally. Subadult male grooming adult's shoulder.
- 4 Subadult leaves. Adult occasionally grooms baby.
- 15 Adult male 2 approaches and sits 3 m away; looks at baby.
- 16 Adult male looks towards male 2 who approaches and sits 1 m away, then next to, adult male.
- 18 Adult male 2 leaves.

- 33 Baby sits by male's side. Adult female walks 6 m behind male; baby follows her out of sight.
- 35 Adult male moves off.

On only one occasion did we see any aggressive male-male interaction involving a baby:

Adult male holds baby ventrally. Subadult approaches; adult makes threat face and subadult retreats.

Adult leaves carrying baby ventrally.

DISCUSSION

From this study it does appear that the likelihood of aggressive behavior is reduced in those male-male interactions in which a baby is involved. Although the active removal of babies from their mothers and the active presentation of babies was not seen in the Rif *Macaca sylvana* the examples quoted still fall into DEAG and CROOK's (1971) definition of agonistic buffering. That the buffering power of babies is not actively exploited in the Rif groups is an interesting possibility, but this cannot be definitely concluded from so few observations at only one time of the year. The presence of agonistic buffering in this isolated population of Barbary Macaques suggests that this behavior is characteristic of the species.

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