VERVET MONKEY GRANDMOTHERS:
EFFECTS ON MOTHER-INFANT RELATIONSHIPS

by

LYNN A. FAIRBANKS

(Department of Psychiatry and Biobehavioral Sciences, University of California, 
Los Angeles, CA 90024, U.S.A.)

(With 3 Figures)
(Acc. 3-VIII-1987)

Introduction

It has long been known that most primate species live in matrifocal social 
groups with overlapping generations of females. With the exception of 
the inheritance of dominance rank (e.g., KAWAMURA, 1958; SADE, 1967; 
HAUSFATER, ALTMANN & ALTMANN, 1982), however, very little attention 
has been paid to the social consequences of this type of organization and 
to the influence of one generation on another.

Evidence from several sources suggests that older adult females may 
play an active part in the defense of their grandoffspring against outside 
threat. HRDY (1977) recounts numerous examples of old female langurs 
as the primary participants in group defense against dogs, humans and 
infanticidal males. The kin relationships of these old females were not 
known, but there is reason to suspect that the older females might have 
been defending their adult daughters and grandoffspring. COLLIN et al. 
(1984) observed a baboon grandmother harass an adult male who had 
attacked her 7 month old granddaughter. In captivity, patas monkey 
grandmothers typically threaten researchers who are trying to capture 
their daughters and granddaughters, but do not respond to the capture 
of nonkin females (ROWELL, personal communication).

FAIRBANKS & MCGUIRE (1986) found that the presence of older females 
influenced both the social relationships and the reproductive success of

1) The author would like to thank Karin Blau, Diane Crumley, and Michaela Heeb 
for assistance in data collection, and Dr M. T. McGuire for invaluable support in pro-
viding and maintaining a facility and a research program which has allowed longitudinal 
research in social behavior to be carried out. This research was funded in part by 
National Science Foundation Grant BNS 84-02292 to L. A. F. Additional funding for 
the vervet colony has been provided by a grant from the Veterans Administration to M. 
T. McGuire.
their adult daughters in captive social groups of vervet monkeys. Adult daughters whose mothers were still living in the group received less aggression from nonkin adult females, were defended more often when aggressed against, and were more likely to achieve their birth rank, compared to young adult females whose mothers had died. There was also a significant difference in infant mortality between young adult females with and without mothers. Young mothers were much more likely to successfully rear their infants if their own mothers were still living in the group.

This paper describes the effect that the presence of a grandmother has on the mother-infant relationship in captive vervet monkeys. The results demonstrate that grandmothers play an important and continuing role in their daughters' reproduction. When grandmothers were present, young adult mothers were more relaxed and less restrictive, and their infants developed independence at an earlier age.

Methods

Subjects.
Subjects for the current analysis were vervet monkeys (Cercopithecus aethiops sabaenus) living in two social groups at the Sepulveda Veterans Administration Medical Center Nonhuman Primate Research Facility. These groups were formed in 1975 with animals originally captured on St. Kitts, West Indies. They have been observed using a consistent, reliability-tested data collection system since 1978 (Fairbanks & McGuire, 1983, 1986).

The two study groups are housed in outdoor enclosures which are octagonal-shaped and approximately 15 meters across, with adjacent rooms for shelter at night and from the weather. Commercial laboratory chow is continuously available, and is supplemented by fresh produce and foraging in the grass.

In order to prevent inbreeding and to approximate natural group composition, males are removed from the groups at 4-5 years of age, and 1-2 new breeding adult males have been introduced at approximately three year intervals. All animals are TB tested twice a year, at which time they are weighed and measured. Otherwise the groups are undisturbed. At the end of 1985, the two groups contained 30 and 29 animals, respectively, in matrilines of three and four generations deep.

Data collection.
Infants born in 1980 and 1981 were observed for 6 5-min focal animal samples per week, and 18 instantaneous scan samples per week, for the first six months of life. Infants born in 1982-1985, were observed for 8 focal animal samples and 24 scan samples per week.

During a focal animal sample the following behaviors were recorded between mothers and infants: approach (move from beyond 1 meter to within 1 meter), leave (move from within 1 meter to beyond 1 meter), make ventral contact, break ventral contact, restrain, groom, muzzle, inspect genitals, and reject (includes all aggressive behavior from mother to infant, primarily to prevent ventral clinging or nipple contact).

During scan samples, the degree of contact between infant and mother were recorded as follows: ventral-closed (mother holds infant with at least one arm), ventral-open,