The Development of Infant-Caregiver Relationships in Captive Common Marmosets (Callithrix jacchus)

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Received August 25, 1981; revised October 23, 1981

The growing independence of infant common marmosets from their caregivers is promoted primarily by their caregivers, who increasingly often prevent the infants from climbing onto them and decreasingly often pick the infants up. Infants achieve independence from their mothers, fathers, and older siblings at different rates and develop characteristically different relationships with them. Infants that are most rejected by caregivers spend the least time on them. When rejected by their parents, infants tend to spend their time with their twins, rather than seeking to climb onto other caregivers. Caregivers do not compensate for unduly large or small amounts of care given by other members of the group. It is argued that if we are to understand the development of caregiver-infant relationships in species with multiple caregivers, we must discover the rules by which infants assess the amount of care they perceive themselves to have received and caregivers assess the amount of care they perceive themselves to have offered. The implications of a simple model based on expected levels of caregiving and careseeking are explored, particularly with respect to competition and compensation.

KEY WORDS: marmoset; infant development; caregiver-infant relationships; competition and compensation.

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INTRODUCTION

The infant primate's relationship with its mother has been studied extensively in numerous species, especially those, such as the rhesus monkey, *Macaca mulatta*, the savannah baboon, *Papio cynocephalus* and *P. anubis*, and species of the genus *Cercopithecus*, in which the mother provides almost all of the infant's care (Altmann, 1980; Berman, 1978; Chalmers, 1972; Hinde, 1977; Rowell et al., 1978). Species in which there is "allomaternal care," such as *Presbytis entellus* and *Cercopithecus aethiops* (Dolhinow, 1980; Jay, 1965; Lancaster, 1972; Mohnot, 1980; Struhsaker, 1971; Sugiyama, 1965), have also been well studied, but in these, too, the mother is still clearly identifiable as the principal caregiver.

Species in which several members of the natal group provide extensive care for the infant have been relatively neglected. Among the most striking of such species are the marmosets and tamarins. Both in captivity and in the wild, an infant callitrichid's mother, father, and older siblings may all play an important part in caring for it during early infancy (Box, 1975; Epple, 1975; Ingram, 1977; Izawa, 1978; Rylands, 1981; Vogt, 1978). Only Ingram's study, however, gives an analysis of infant–caregiver relationships in comparable quantitative detail to many of the Old World studies cited above.

Species in which the infant is cared for by several individuals provide an opportunity to examine important theoretical questions concerning the relationships among members of a social group. We can investigate in marmosets and tamarins the simultaneous development of an infant's relationship with each of its caregivers, and discover not only how these relationships change with time but also how changes in one relationship can affect other relationships.

In this paper we present data on the development of caregiver–infant relationships in captive common marmosets (*Callithrix jacchus*) during the first 22 weeks of infant life. Much of the analysis is similar to that carried out by Ingram (1977), and this makes it possible to assess consistency and variability in social development across two different captive groups. We also assess how far it is possible to interpret the development of marmoset infant–caregiver relationships in terms of a limited number of underlying behavioral parameters, such as the tendency of an infant to seek care and the tendency of other individuals in the group to offer care. This leads us to investigate the rules by which infants and caregivers might assess the amount of care they have received or offered.