

Hand-Holding by Belizean Black Howler Monkeys: Intentional Communication in a Neotropical Primate

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Key Words

Hand-holding · Black howler monkeys · Intentional communication · Gestures · Culture

Introduction

Like most non-human primates, howler monkeys (*Alouatta* [Crockett and Eisenberg, 1987]), large, arboreal, herbivorous primates of the Neotropics, inhabit societies characterized by reciprocal communication [Carpenter, 1934; Wilson, 1975; Crockett, 1987; Crockett and Eisenberg, 1987; Brockett et al., 2000]. Communication among howlers is primarily vocal [Carpenter, 1934; Wilson, 1975; Baldwin and Baldwin, 1976], but little is known about the functions of signals employed by these monkeys.

The investigation of intentional communication among New World monkeys is in an early stage compared to these studies in Old World monkeys and apes [Cheney and Seyfarth, 1982; Maestripieri, 1997; Nakamura, 2002]. The purpose of this brief report is to present preliminary data on hand-holding behavior by Belizean black howler monkeys (*Alouatta pigra*). These action patterns seem to be intentional and to meet the basic criteria for gestural communication, sharing certain features in common with the ‘grooming-hand clasp’ response in chimpanzees (*Pan troglodytes* [Nakamura, 2002]); they may represent behaviors exhibiting interpopulation variability (‘culture’).

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Methods, Study Site and Animals

Monthly censuses and ad libitum behavioral observations were conducted of a population of marked black howler monkeys (*A. pigra*) at the Community Baboon Sanctuary, Belize District, Belize (17°33' N, 88°35' W) from January 1995 until March 1997. A total of 1,090 h were logged by one observer (R.C.B.) censusing 17 groups [see Horwich et al., 2001a, table 1, p. 4]. Details of the study site and methods of investigation can be found elsewhere [Horwich and Lyon, 1990]. Horwich et al. [2001a, b] reported the results of black howler population structure and socioecology at the Community Baboon Sanctuary, and, similar to other species of *Alouatta* [Jones, 1979; Neville et al., 1988; Crockett and Eisenberg, 1987], grooming and other tactile responses occur infrequently in *A. pigra* [Brockett et al., 2000].

Results

Hand-holding behaviors entailed one individual extending an arm to another individual and grasping the hand of the target individual. This behavior was observed 27 times in 12 groups during the study period. For 12 (44%) hand-holding events, a male was the initiator and a female was the recipient. On 3 (11%) occasions, a female initiated hand-holding with a male. A female initiated hand-holding with another female 9 times (33%), and males were observed hand-holding once (4%). The sex of the initiator was not determined for 2 (7%) hand-holding events. Adults were the interactants in 18 of the 27 (67%) observed cases of hand-holding. Grooming was associated with hand-holding behavior 9 times (33%) – hand-holding generally occurring prior to grooming. Hand-holding was associated with resting 9 times (33%) and with sexual behavior (e.g. copulation, lingual gestures) 5 times (19%). A hand-holding event was always exhibited only once by an initiator during observed interactions between two individuals, and the duration of hand-holding events ranged from <1 to 5 min.

Discussion

We consider hand-holding to be a gesture, because our observations indicate that the action pattern has a communicative function. This inference rests upon the observed relationship between hand-holding and grooming or sex, fulfilling Maestripieri's [1997] criterion that an intentional gesture is aimed at 'obtaining a specific behavioral response from another individual' (p. 214). Hand-holding, then, may be categorized as an intentional solicitation to interact, similar to certain gestures of macaques (*Macaca* [Maestripieri, 1997]). Unlike macaques, however, hand-holding by black howlers seems to be limited to the exchange of information involving the sender or receiver rather than, in addition, communication about a third party.

An interesting feature of hand-holding by *A. pigra* is that it bears certain resemblances to the 'grooming-hand clasp' of chimpanzees [Nishida, 1994; Nakamura, 2002]. The 'grooming-hand clasp' of *P. troglodytes* is thought to be derived

from mutual grooming [Nishida, 1994], a response pattern that has not been reported for black howlers [Brockett et al., 2000]. Nonetheless, both hand-holding and the ‘grooming-hand clasp’ are similar in the sense that they represent hand-grasping (tactile) signals derived from ‘contact-promoting behavior’ [Eisenberg, 1981].

Just as Nakamura [2002] documents population variability in the occurrence and form of the ‘grooming-hand clasp’ of chimpanzees, hand-holding by black howlers may represent a social behavior transmitted traditionally, since this motor pattern has not been observed in black howlers at Lamanai, Belize [K. Eckert, pers. commun.]. Future studies are required to investigate the potential for interpopulation variability in social behaviors of Neotropical primates, phenomena that have not been systematically documented for these monkeys [but see Fragaszy and Perry, 2003], although cultural variation in ‘the techniques for subsistence’ are well established for capuchins (*Cebus* spp. [Miller, 1998; McGrew, 1998]. Research on black howlers and other primates of the New World may foster an appreciation for the social cognition of these monkeys that has previously been explored by only a few investigators [McGrew, 1998].

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