

THE ROLE OF BODY SIZE IN NUT CRACKING IN BEARDED CAPUCHIN MONKEYS

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Chimpanzees are the traditional referential model to investigate tool use by hominins. Stone tool technology remains recognisable in the archaeological record and technology is at least 2.6 million years old. Chimpanzees have been the traditional referential model to investigate tool use by hominins. We enlarge the comparative scenario with systematic field observations on the habitual use of hammer stones and anvils by two wild groups of bearded capuchins. Sexual dimorphism in body mass is more marked in our capuchins (adult male capuchins 64.3% that of adult females) than in wild chimpanzees and modern humans, but it is similar to of *Australopithecus afarensis* and *A. africanus* in which males were almost double the size of females. In contrast to chimpanzees, male capuchins use hammer tools more frequently than females. We demonstrated that stronger and heavier individuals are more efficient at cracking nuts than smaller individuals, and success at cracking varied according to the resistance of the encased food. Females more often crack lower resistance nuts than higher resistance nuts. We argue that the pattern of sex differences in nut cracking found in capuchins may have arisen from sexual dimorphism in body size, producing different utility (the energetic gain derived from the action) of nut-cracking in the two sexes. Since sexual dimorphism was stronger in our ancestors than in chimpanzees, realistic scenarios for the evolution of tool using skills in the human lineage might benefit from taking into consideration capuchin monkeys. Funds: ANALOGY (EC-NEST #29088), IM-CleVeR (No. FP7-ICT-IP-231722), National Geographic Society.

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