Supporting Information

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SI Materials and Methods

Ape Study Groups. For all offspring considered, we used data from genetic parentage analysis to confirm the identity of the mother and to assign paternity. Parentage assignments were done using nine or more autosomal microsatellite markers applied to DNA derived from noninvasive samples as described in detail in the respective publications (see below). Noninvasive samples for genetic analysis are rarely obtained before chimpanzee infants reach 3 y of age (1, 2) and we found results were consistent when either including or excluding chimpanzee infants who did not survive to the age of 5 (see below). With one exception of an offspring who survived only until age 2, only offspring who had reached the age of 3 y were included in the gorilla analysis.

Research on western chimpanzees (*Pan troglodytes verus*) in the Taï National Park, Côte d'Ivoire began in the 1980s. Our ongoing genetic assessments of paternity have resulted in parentage assignments for 60 offspring born into three groups between 1987 and 2007 (1). Also included in our analyses are data from several long-term eastern chimpanzee (*Pan troglodytes schweinfurthii*) research sites. We used the published ages of the genetically identified parents of 31 offspring at Gombe National Park, Tanzania (2). Genetically determined parentage data are also available for 14 offspring born into the M group at Mahale Mountains National Park, Tanzania (3). We determined the parentage of 72 offspring of the Ngogo community and 15 offspring of the Kanyawara community, both in Kibale National Park, Uganda (4). Finally, we determined the parentage of a total of 34 offspring of the Sonso community in Budongo Forest Reserve, Uganda (5).

Beginning in the late 1960s, researchers affiliated with the Karisoke Research Center have monitored births, deaths, and dispersal events in several groups of mountain gorillas (*Gorilla beringei beringei*) living in the Virunga Volcanoes region of Rwanda, Uganda and the Democratic Republic of Congo. Approximately half of mountain gorilla groups contain more than one male of reproductive age, and ongoing genetic studies of paternity begun in the late 1990s have revealed, to date, parentage for 97 offspring born into five multimale groups between 1986 and 2007 (6). Another population of mountain gorillas lives in the Bwindi Impenetrable National Park, Uganda, and we also have genetic parentage information for eight offspring born in one multimale social group from this population (7).

Estimation of Birthdates. It is difficult to determine the exact birthdates of wild chimpanzees and gorillas because (*i*) they are long-lived relative to the duration of most studies, (*ii*) many individuals are not born in the study group but immigrate from outside (most females in chimpanzees and both males and females in gorillas), and (*iii*) fission–fusion sociality in chimpanzees prevents continuous observation of all group members. Thus, we did not observe the births of many individuals and their exact ages are therefore unknown. To account for the influence of the uncertainty surrounding our age estimates on our estimates of generation lengths, we began by assigning a birthdate to every individual included in our study. We used published birthdates for the Gombe Kasekela community, which for some individuals were available as exact dates but in others only to the closest year (2). Assigned birthdates for other study groups were based on long-term demographic records. We then assigned a minimum and maximum possible birthdate for each individual. These ranges of potential birthdates were symmetrical about the assigned birthdate and were generally smaller for offspring than for parents, for natal individuals than for individuals who had immigrated from outside the study group, for younger individuals than for older individuals, and for individuals from study groups that had been studied longer. The range in potential birthdates varied from 0 d (i.e., the individual's exact birthdate was known because its birth was observed or could be reliably inferred from the dates the mother was observed without and with a new infant) to 10 y (i.e., the standard potential birthdate range we gave to individuals who were already judged to be "old" by the time the study began), with an average of 3.8 y for chimpanzees and 0.8 y for gorillas. Each individual could contribute more than one data point to the calculation of this average, as individuals could be parents of multiple offspring and could occur as both parents and as offspring. We then set each individual's range of potential birthdates as a normal distribution with a SD equal to half the size of the potential range. We then randomly drew a birthdate from the offspring's and/or the mother's and father's normal distribution of potential birthdates, calculated the difference between these dates in years, repeating this procedure 10,000 times to calculate averages and confidence intervals of male-specific, female-specific, and overall generation length.

SI Results

Data from some chimpanzee populations suggest that only about half of offspring born survive to age 5 (8). If juvenile mortality is independent of the age classes of the parents, this will not affect the results concerning the average generation intervals. However, it is possible that offspring born to certain age classes of parents, such as young mothers, experience particularly high mortality, and inclusion of these offspring would consequently downwardly bias the estimated generation interval of females. However, any such effect should be reduced by the fact that fecal sample collection from very young chimpanzees is difficult and so our dataset consists mainly of individuals who survived at least until approximately age 3. Nonetheless, to look for an effect of infant mortality on inferred average maternal age, we compared the average generation intervals obtained when including and excluding the 18 of the 60 analyzed offspring in the Taï chimpanzee communities that did not survive to the age of 5. We found that the average age of mothers was similar (20.0 for all offspring and 23.6 for only offspring surviving at least to age 5) and that the average age of the mothers of offspring who survived long enough to be sampled but not past the age of 5 years was 28.3, suggesting that our results are not influenced by inclusion of data on nonsurviving offspring of very young mothers. Similarly, the male generation interval in Taï chimpanzees did not differ when nonsurviving offspring were excluded (23.0 and 22.7 for all and surviving offspring, respectively).

In mountain gorillas, 27% of 181 offspring died before the age of 3, but infant mortality was not significantly correlated with maternal age (9).

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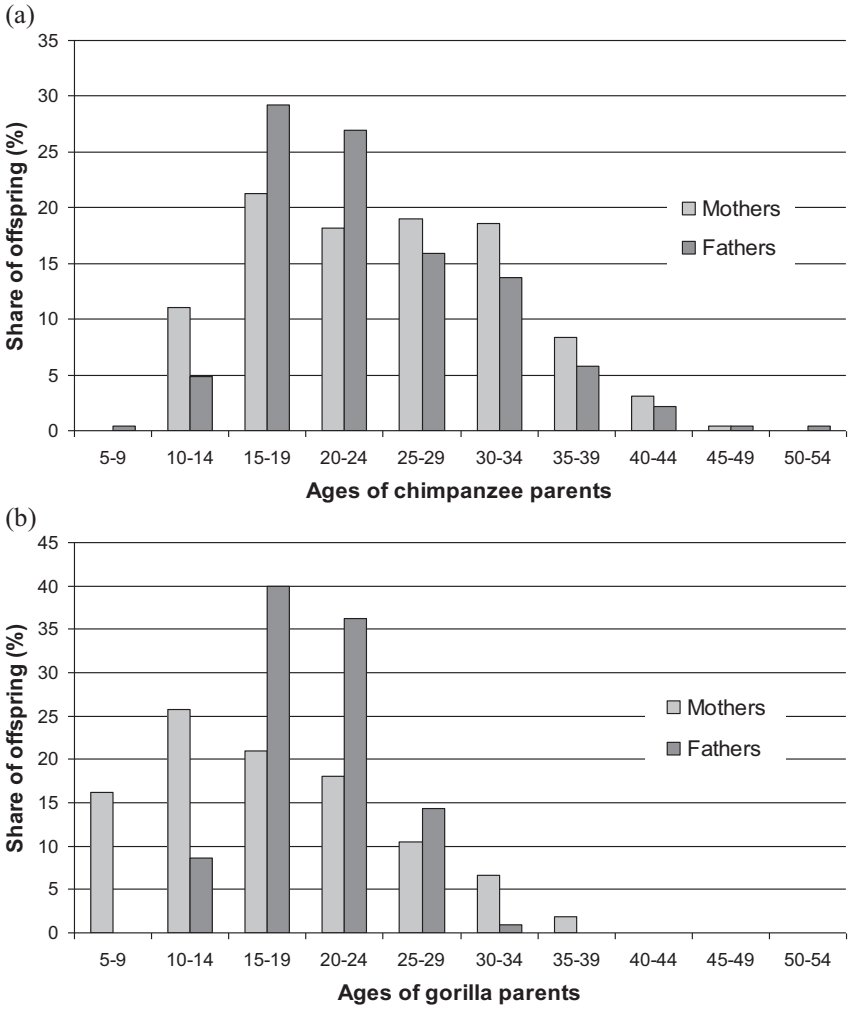

Fig. S1. Proportion of offspring produced by mothers and fathers of different age classes in chimpanzees (*A*) and gorillas (*B*).

Table S1. Comparison of mass and generation time estimates for humans and great apes

	Females		Males	
	Mass	Generation time	Mass	Generation time
Humans	54.4	25.6	62.2	31.5
Chimpanzees	40.4	25.2	49.6	24.1
Gorillas	80	18.2	169.4	20.4
Orangutans	35.7	26.7	NA	NA

Human generation time estimates are from ref. 1, orangutan generation time estimate is from ref. 2, and mass estimates are averages across subspecies and populations and are from ref. 3. NA, not applicable.

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