

# The Grandmother Hypothesis in Lowland South America

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## Resumen / Abstract:

The “grandmother hypothesis” was formulated by Kristen Hawkes and colleagues to explain the evolution of human longevity. While most female animals die before the end of their fertility, human females typically live well beyond their child-bearing years. This elongated, robust, post-fertile life span distinguishes us from our closest living relatives, the chimpanzees, and calls for an explanation.

Hawkes et al. proposed that human longevity evolved in the context of mother-infant provisioning--which became necessary when changes in the food ecology of human ancestors left youngsters unable to feed themselves just after weaning. The requirement for post-weaning provisioning presented a novel opportunity for older females whose fertility was declining to enhance their own fitness by subsidizing their daughters’ reproductive success..

A woman with no infants of her own can contribute to the care and feeding of her daughters’ children. If this contribution (food, childcare, etc.) allows a daughter to have more children than she would otherwise have, and/or increases the survivorship of her already born children, then the mother may enhance her own fitness more by supporting her daughter(s) than by having another child herself. Thus selection operated to conserve the ancestral age at menopause, which remains similar to that of chimpanzees and the other living great apes, while lengthening life after fertility.

Hawkes formulated this grandmother hypothesis in the context of hunting and gathering societies, but the argument appears to apply to subsistence level, egalitarian societies in general, if not to all human societies. This symposium examines evidence for and against the grandmother hypothesis among a variety of lowland South American indigenous peoples.

Clearly there are difficulties in evaluating this hypothesis. One clear prediction is that child-bearing age women with living, co-resident post-menopausal mothers ought to have greater reproductive success than other women. “Greater reproductive success” in this context implies (at least) more ever-born children and/or greater child survivorship to reproductive age than achieved by women without a living co-resident, post-menopausal mother. However, there are obvious problems. A positive correlation among grandmother presence, daughter fertility, and grandchild survivorship might be due to nothing more than a familial tendency to good general health. Another problem might arise if grandmothers direct their efforts particularly to those of their daughters whose reproduction is most insecure. Raising the reproductive success of a procreatively compromised daughter from poor to average may be a successful strategy evolutionarily, but it is unlikely to be statistically visible.

Some of the presentations in this symposium attempt to confront problems such as these, while others deal with additional issues that arise in the context of the grandmother hypothesis.