An evolutionary perspective can help unify disparate accounts of grandparental investment

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Abstract: Coall & Hertwig (C&H) bring attention to alternative accounts of grandparental investment from economics, evolutionary anthropology, psychology, and sociology, which have yet to be reconciled. We attempt to help integrate some of the disparate perspectives by expanding the scope of the evolutionary perspective, highlighting some gaps, and discussing problems with the authors' treatment of grandparents in traditional societies.

Coall & Hertwig (C&H) offer a comprehensive survey of literature pertaining to grandparental "altruism" and call for an integration of disparate perspectives. Although the scope and coherence of a unified theoretical approach are not clearly defined, the authors are to be commended for raising important issues. We argue that evolutionary and rational actor perspectives could be expanded to provide a framework that encompasses both ultimate and proximate-level explanations.

Highly encephalized brains, slow growth, and long lives are derived features of human life history, with juvenile dependency, complex skill development, and grandparenting as key components. If the function of post-reproductive lifespan is to improve fitness of descendant kin, a wide range of cognitive and behavioral traits that focus attention on perceiving and responding to needs of particular kin is expected. Emotions, like motivations, could further modulate behaviors that either benefit or burden particular kin. Psychological studies of wisdom among older adults in modern societies (Baltes et al. 1992) and of kin-favoring dispositions despite age-related physical decline (Carstensen & Lockenhoff 2003) are consistent with an evolutionary perspective. Norms and institutions might help facilitate delivery of benefits, even when co-residence is unlikely, as codified in inheritance rules. Norms and institutions are considered features of the sociological domain and emotions as part of psychology, yet evolutionary theory and economics are required to make sense of why norms, institutions, and emotions occur in particular forms and expressions. The evolutionary study of emotions and norms is a rich industry.

Evolution has led to a long human lifespan with a substantial post-reproductive phase, yet, despite the adaptive value that grandparenthood must have provided our ancestors, the authors point out a conundrum: Grandparents in the past overlapped with grandchildren for a brief period but with large fitness impact, whereas longer-living grandparents today have more overlap and thereby greater potential to help, but few grandchildren. As a consequence, grandparents in the past increased fitness by reducing infant mortality, but today mostly have only "soft" impacts on well-being and cognition. We feel that (1) the contrast made between past and present opportunity is overstated, and (2) differences in investment patterns depend on marginal benefits of grandparental help, which varies among societies based on differences in fertility, production patterns, co-residence, and inheritance.

Contrary to the statement that grandparental opportunity is strongest today, evidence suggests that the opportunity to help grandchildren was higher among our hunter-gatherer ancestors. First, while mortality and fertility are lower today, age at first marriage is also much later, and so Westerners become grandparents about 12 years later on average than do hunter-gatherers. Thus, the average number of years lived as a grandparent may not be very different between groups (Table 1). Second, hunter-gatherers are more likely to be co-resident with grandchildren and the total number of grandchildren to potentially impact is higher (fertility of hunter-gatherers is 4–8 births).

Third, support for the idea that grandparents in traditional societies increase fitness has relied on historical demographic datasets to measure the impact of their presence on early life mortality. Anthropological studies of grandparental contributions focus primarily on food production of older adults. To our knowledge, calorific production (or any other grandparental behavior) has yet to be causally linked to child welfare in any of these studies. Despite the popularity and importance of the Grandmother Hypothesis and alternate explanations of post-menopausal lifespan, all studies of grandparental impacts on kin fitness are indirect, based on whether a grandparent was alive or dead, or in rare cases, co-resident, in a given year. To what extent is the early weaning of infants, higher infant and child survivorship, and earlier reproduction, influenced by grandparents? Until these pathways are studied, phenotypic correlations may confound any observed positive relationship between living grandparents and kin survivorship or fertility. Without an understanding of the proximate mechanisms, by which grandparents likely improved kin welfare, detailed predictions about what grandparents should be doing today (and whether their behavior is maladaptive) are difficult to make.

Fitness is impacted by accumulating and transferring material, embodied, and relational wealth, and societies vary in the extent to which each of these is inherited and needed for cultural and biological "success" (Borgerhoff Mulder et al. 2009). Grandparents should facultatively adjust their aid behavior where they can have the highest marginal benefit at lowest personal cost. Whether in small-scale societies or modern post-industrial ones, we suspect that the greatest impact of grandparents may be realized during rare, but fitness-relevant, periods. The authors describe postpartum depression and teenage pregnancy in modern societies as examples. We mention a few others here based on ten years of fieldwork among Tsimane forager-horticulturalists of Bolivia. Tsimane grandparents are often primary caretakers when parents die: 17% of adult Tsimane interviewees had a parent die before age 18, and 19% of these went to live with a

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Grandparental transfers and kin selection

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Abstract: In the analysis of intergenerational transfer, several improvements can be made. First, following kin selection theory, grandparents have kin other than grandchildren in which to invest and therefore any investigation into grandparents should take this perspective. Secondly, how transfers actually enhance the survivorship of younger relatives such as grandchildren must be better measured, especially in the ethnographic literature. Finally, the problem of indirect investments or targeting must be considered.

Coall & Hertwig (C&H) present a wonderfully comprehensive and admirable review on the investing roles that grandparents play in traditional and modern societies. I would direct any of my students to this article if they were beginning research on the topic. Given that the article is so comprehensive, I restrict my comments to the history of this research in anthropology, especially as it relates to kin selection theory and some measurement issues that would better assess the ways in which grandparents matter.

There are several strands of research in evolutionary anthropology that deal with the role that grandmothers may play in enhancing the fertility of their children and survival of their grandchildren, beginning with the work of Turke (1989) and Kaplan (1994) on intergenerational resource transfers, the literature on “helpers at the nest” (for a review, see Hames & Draper 2004), as well as reviews of the grandmother literature (Sear & Mace 2008). To a limited extent, the theme of extended family intergenerational transfers is picked up by the authors in section 8.2 (under the heading of the “one-way street?”) and elsewhere. Turke and Kaplan criticized the work of the influential family to a close examination of the impact of grandparents and children and eventually grandchildren who will support them. The literature C&H review tends to support Turke and Kaplan’s view in the modern context, but we need more research in the developing world, as exemplified by the research reviewed by Sear and Mace (2008). The next research thread moved the focus from the extended family to a close examination of the impact of grandparents and was initiated by Hawkes and colleagues, beginning with their work on Hadza grandmothers (Hawkes et al. 1989). These researchers argued that menopause was designed by natural selection to channel resources to grandchildren. This insight generated a large amount of high-quality research on grandparental effects on the survivorship of grandoffspring and the fertility of their children. C&H point out that much of this research is summarized in Hrdy’s conceptualization of communal breeding (Hrdy 2005a) and in the general literature on helpers at the nest.

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