

Grandparental Investment: A Relic of the Past or a Resource for the Future?

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David A. Coall¹ and Ralph Hertwig²

¹University of Western Australia and Edith Cowan University and ²University of Basel

Abstract

From changing diapers and minding the kids when school is out to providing support when they set fire to the carpet, grandparents can be invaluable to have around. What motivates grandparents to lend a hand? Several disciplines have offered answers. The most important accounts come from life-history theory and evolutionary psychology, sociology, and economics. These accounts exist side-by-side, but there is little theoretical integration among them. But regardless of whether grandparental investment is traced back to ancestral selection pressure or attributed to an individual grandparent's values or norms, one important question is, What impact does it have in industrialized, low-fertility, low-mortality societies? We briefly review the initial evidence concerning the impact of grandparental investment in industrialized societies and conclude that in difficult circumstances, grandparents can provide the support that safeguards their grandchildren's development. Additional cross-disciplinary research to examine the effects of intergenerational transfers in our evolutionarily unique environment of grandparenthood is needed.

Keywords

child development, demographic transition, grandmother hypothesis, grandparental investment, intergenerational transfers

Grandparents in industrialized societies invest substantial amounts of time and money in their grandchildren. For example, in the United States in 2007, 2.5 million grandparents were responsible for most of the basic needs of one or more of the grandchildren who lived in their household (U.S. Census Bureau, 2009). In a sample of more than 35,000 Europeans, 58% of grandmothers and 49% of grandfathers reported providing some care for their grandchild during a 12-month period (Hank & Buber, 2009).

Grandparental investment can be defined by adapting Trivers's (1972) concept of *parental investment*. It refers to resources that grandparents transfer to their grandchildren or that benefit the grandchild and exact opportunity costs. For example, by investing in her grandchild, the grandmother is not investing those resources in herself, the offspring of another son or daughter, or any other relative. Grandparental resources are multidimensional in nature. Practical help, food production, finances, time in the form of childcare, or simply the emotional support provided by a listening ear: They all reflect grandparental investment.

There are myriad dimensions of grandparental care, which are studied by different disciplines that unfortunately make little reference to each other. The most salient division has been between sociological and evolutionary accounts. Table 1 illustrates this mutual neglect by showing how rarely two highly

related lines of research on *intergenerational solidarity* (sociological) and *intergenerational transfers* (evolutionary) reference key articles published in the other discipline. Both aim to reveal the factors that influence intergenerational relationships in families; yet, the sociologists' answer is met with little interest among evolutionary researchers, and vice versa.

At best, this mutual neglect reflects disinterest, at worst stereotyping, of those in other fields—sociologists being perceived as denying the evolutionary history of modern humans, believing humans are blank slates; evolutionary researchers being seen as denying the importance of culture and believing that human behavior is solely innate. It is time to move on and join forces. Grandparental investment needs to be understood on multiple levels. Evolutionary accounts, with their focus on fitness consequences, are key in understanding the evolution of grandparental investment and in identifying variables that explain variance in grandparental investments (e.g., paternal uncertainty). Evolutionary accounts, however, have passed

Corresponding Author:

David A. Coall, University of Western Australia, School of Psychiatry and Clinical Neurosciences, Fremantle Hospital, 1 Alma Street, W Block, Level 6, Fremantle, Western Australia 6160, Australia
E-mail: david.coall@uwa.edu.au

Table 1. Cross-Disciplinary Citation of Key Evolutionary and Sociological Articles

Article	Subject	Total times cited	Times cited by other discipline
Evolutionary articles			
Hawkes et al. (1998)	Grandparent–grandchild transfers of food (a resource)	216	4
Daly & Wilson (1980)	Factors that influence variation in parent–child care, relationships and transfers of resources	59	7
Euler & Weitzel (1996)	Factors that influence variation in grandparent–grandchild care, relationships and transfer of resources	58	4
Sociology articles			
Bengtson & Roberts (1991)	A model of variation in parent–child relationships, care and exchange of resources	132	3
Bengtson (2001)	Grandparent–parent–grandchild relationships, care, and exchange of resources	120	3
Szinovacz (1998b)	Factors that influence variation in grandparent–grandchild care and relationships	59	1

Note. Search conducted using ISI Web of Knowledge's citation reports on 27 November, 2009.

over the proximal causes and disregarded the motivational engine—in terms of norms, values, emotional connectedness, and a sense of identity and legacy—behind grandparental care. Both the sociological study of life course and the life-span developmental approach in psychology have much to say about how these proximate motivations operate (see Coall & Hertwig, 2010). Moreover, individual behavior cannot be divorced from institutionalized transfers in terms of child support, day-care facilities, and free education. Does such public support crowd out private transfers from grandparents to grandchildren (and their parents), and do institutional transfers to grandparents (e.g., public pension systems, Medicare) allow them to step up their investments? We believe that an integration of evolutionary, sociological, and economic accounts will be necessary to fully explain grandparental helping behavior.

One step toward such integration is to recognize that the different theoretical approaches need not be in conflict. Take, for example, the prediction that the maternal grandmother will invest more than any other grandparent in her grandchildren. From an evolutionary standpoint, this is likely because the maternal grandmother can be more certain of her biological relationship with her grandchildren, relative to any other type of grandparent. Sociologists, in turn, may emphasize the maternal grandmother's role as kin keeper, maintaining intergenerational relationships between family members and particularly with female relatives (e.g., daughters). It is this kin-keeper role that explains the high investment by maternal grandmothers. These need not be competing explanations; they simply operate on different levels. Social norms can mirror evolutionary regularities and may be maintained because of the evolutionary benefits they provide.

Why Grandparental Investment Occurs

Next, we briefly describe the three main theoretical perspectives on grandparental investment—evolutionary, economical, and sociological (for details, see Coall & Hertwig, 2010).

The evolutionary perspective

Like many bird species but few primate species, humans are cooperative breeders. According to the cooperative breeding hypothesis, a mother does not raise her children by herself but is helped by other members of her social group (Hrды, 2009). Although in human societies these helpers are not necessarily kin, one class of related helper who is often available and inclined to help is that of postreproductive females, namely grandmothers. Williams (1957) conjectured that menopause might have evolved because, at a certain age, the benefit of continued care to existing children (and grandchildren) outweighs the cost of further reproduction (e.g., risk to mother's and infant's health). This thesis triggered numerous investigations into the influences of kin in general, and grandmothers in particular, on child survival in contemporary traditional and historical human populations.

One line of research has culminated in the grandmother hypothesis, which suggests that grandmothers might have been the most productive, experienced, and motivated helpers for reproducing mothers throughout human history (Hawkes, O'Connell, Blurton Jones, Alvarez, & Charnov, 1998). They are mothers' ace in the hole (Hrды, 2009), helping them to leave more descendants than mothers whose own mothers are no longer around to help. The grandmother hypothesis is currently the most influential theory to explain why human female longevity extends beyond menopause. Sear and Mace's (2008) review of 45 studies investigating effects of the presence versus absence of various kin generally supports the beneficial influence of postreproductive relatives, especially the maternal grandmother, in natural-fertility societies (these are generally high-fertility, high-mortality societies in which contraceptives are not used). For example, in a historical Finnish sample, Lahdenperä, Lummaa, Helle, Tremblay, and Russell (2004) found that having a young postreproductive grandmother at a grandchild's birth increased the latter's probability of surviving to 15 years of age by 57%. More generally, of the 13 studies examining the influence of maternal grandmothers reviewed by Sear and Mace, 9 (69%) found that the

presence of a maternal grandmother was associated with an increase in her grandchildren's probability of surviving the high-risk times of infancy and childhood. Studies have been more inconsistent in their findings about the benefits of paternal grandmothers: Depending on the study, having a paternal grandmother present had positive (53%), negative (12%) and no (35%) influences on child survival. Thus, although there is evidence in support of the grandmother hypothesis, it is not uniformly positive.

A reanalysis of data across seven natural-fertility populations suggests that the observed variance in the results stems from the fact that boys and girls differ in the proportion of genes they share with maternal versus paternal grandmothers, because of differences in X-chromosome inheritance. Fox et al. (2010) found that in all seven populations, boys survived better in the presence of their maternal grandmother, relative to their paternal grandmother; in all but one population, the paternal grandmother had a more beneficial effect on girls than on boys. The X-relatedness model has not been tested in an industrialized nation, but current evidence suggests that the patterning of grandparental investment is subtly different in industrialized societies (see Sear & Coall, 2011).

Obviously, to treat grandparents or even grandmothers as a homogeneous group neglects the enormous variability among grandparents and the variable circumstances under which they provide their assistance. Taking systematic heterogeneity as a starting point, the discriminative grandparental solicitude hypothesis (Euler & Weitzel, 1996) predicts that grandparent–grandchild relationships should vary according to individual-level factors such as genetic relatedness, paternity certainty (i.e., sex and lineage of the grandparent), and the age and sex of the grandchild (see Table 1 in Coall & Hertwig, 2010). One of the most robust and systematic findings across the grandparental investment literature from industrialized nations is that maternal grandmothers invest the most in, have most contact with, and have the closest relationships with their grandchildren, followed by maternal grandfathers, paternal grandmothers, and, finally, paternal grandfathers.

Evolutionary studies of grandparental investment across a range of environments have begun to paint a picture of its benefits—suggesting, for example, a link between the presence of the maternal grandmother and child survival. Let us emphasize, however, that most of these studies are correlational and do not establish causation. A baby born into particularly fortunate conditions or having a fortuitous set of genes may be more likely to survive its early years and lead a long life, just like its grandparents who were also born into those conditions and share a proportion of the same genes. However, several aspects of the studies conducted to date and the patterns found suggest that these associations are unlikely to be epiphenomenal. Were the associations due to shared genes or environments, one would not expect to see them vary by sex and lineage of the grandparent or by the sex of the grandchild, but current evidence suggests that they do (see Coall & Hertwig, 2010; Fox et al., 2010). Moreover, the patterns are found even in longitudinal data sets of both natural-fertility and industrialized

societies, enabling researchers to partially adjust for shared gene and environment effects.

The economic perspective

Intergenerational transfers can take many forms. They can be postmortem (inheritance) or inter-vivos (transfers among living members of the family); they can consist of financial or time transfers; and transfers can be upward or downward. Possibly because of this variety, there is no overarching economic model of parental, let alone grandparental, investment. Nevertheless, most models rest on the utility maximization and rational choice framework, and many models of inter-vivos intergenerational transfers have proposed the existence of two competing motives: altruism and self-interested exchange.

Why do parents shift so many of their resources to their children? According to Becker (1974) and Barro (1974), a parent's welfare is partly a function of the welfare of future generations. Specifically, the parent's utility function incorporates the child's likely lifetime utility, thus explaining why parents shift resources to their children as a function of those children's *quality* (e.g., skills and abilities) and later use wealth transfers to equalize outcomes across children (redistributive neutrality). Successive generations are thus linked by recursive altruistic preferences; that is, parents care altruistically for their children, who then transfer resources to *their* children, and so on.

In the self-interested exchange view, parents' transfers are part of a strategic bargaining between parents and children (see Laferrère & Wolff, 2006). Intergenerational transfers can be understood as an investment through which parents try to secure their children's commitment in the future. Anticipating that when they become frail they will need help, parents invest now (e.g., education expenses, gifts, loans) and in the future (promise of inheritance) to increase the likelihood that children will reciprocate later.

There are a number of empirical challenges to both the altruistic and the self-interested exchange views (see Arrondel & Masson, 2006). One problem for the altruistic view, for example, is that parents transfer most of their wealth through bequests, rather than earlier in the form of gifts, when children need them most. The self-interested exchange view faces the problem that although grandparents undoubtedly do invest substantial amounts of resources in their grandchildren, there is little evidence that grandchildren consistently reciprocate. The few grandparents who do receive support from their grandchildren may derive a relatively larger benefit, but such cases represent a small minority.

The sociological perspective

After having received scant attention within the sociological modernization paradigm and its emphasis on the nuclear family, demographic dynamics and the increasing fragility of state-funded pension schemes pushed the issues of intergenerational exchanges and intergenerational solidarity center stage.

In studying these issues, sociologists have been predominately focused on structural factors (e.g., female participation in the labor force), social institutions (e.g., how wealth is taxed at death), and cultural values (e.g., family obligations and roles). Their investigations have produced a wealth of information on factors that clearly have consequences for patterns of grandparental investment but are consistently neglected by other fields (e.g., individual values and cultural norms). At present, however, these diverse studies are not situated within an overarching theoretical framework, the lack of which is recognized by sociologists to limit progress (Szinovacz, 1998a).

One recent attempt toward creating an encompassing framework is the rational-grandparent model (Friedman, Hechter, & Kreager, 2008). Echoing the self-interested-exchange view in economics, this model assumes that the driving force behind investments is grandparents' concern about how they will be provided for in old age. To reduce this uncertainty, grandparents preferentially invest in those grandchildren whose parents are most likely to reciprocate in the future. Although some explicit predictions of the model (e.g., that grandparents are indifferent to biological relatedness) conflict with evolutionary perspectives, the benefit of this model is that it provides a framework of testable predictions about how grandparental investment varies.

Grandparents in a Paradoxical New World

Changes from high fertility and high mortality to low fertility and low mortality have created unique conditions in human history. Because of substantial increases in human life expectancy in industrial societies, grandparents and grandchildren have more shared lifespan than ever before (Murphy & Grundy, 2003). Consequently, grandparents have unprecedented opportunity to invest in their grandchildren. Simultaneously, however, low fertility rates and later ages at first childbirth mean that fewer people are becoming grandparents, and those who do become grandparents have fewer grandchildren. Paradoxically, although extended life span offers more opportunity for grandparents to invest, low childhood mortality rates and low fertility rates mean grandparents' altruistic acts may have less impact than ever before, when measured on these classic fitness indicators. However, this does not mean that grandparental investments in industrialized societies are wasted. With reduced mortality and fertility, the resources invested in children (e.g., education) have increased exponentially to ensure that they can fare well in employment and mating markets (Borgerhoff Mulder, 1998). Thus, the need for grandparents to invest their time, money, and affection in their grandchildren may actually be stronger than ever. Ironically, there may be a good fit between the high levels of investment required by grandchildren in industrialized societies and grandparents having fewer grandchildren in whom to invest their resources; benefits may materialize more than before on less tangible dimensions such as psychological adjustment and cognitive ability.

Grandparental Help: Does It Still Matter?

With classic fitness indicators such as mortality and fertility at unprecedented lows, two lines of research aim to reveal the possible contemporary effects of grandparental investment in industrial societies. One focuses on the possibly fostering effects of grandparents in the context of low-risk, intact nuclear families. Based on the review of a small set of available studies, Coall and Hertwig (2010) concluded that there are indications, although far from conclusive, that even in a relatively stable, low-risk family environment, grandparents can positively affect a grandchild's successful development. For example, in a study of 7-month-old infants, Tinsley and Parke (1987) observed that grandchildren of grandparents who engaged in more stimulating and engaging behavior and infants who had more contact with their grandparents had higher Bayley Mental Development Index scores.

More research has been devoted to the significance of grandparents in high-risk family environments, such as those in which parents have divorced, in which a teenager may be pregnant, in which grandparents have custody, and in which one or more parents are depressed (see Coall & Hertwig, 2010). These studies generally support the notion that grandparents play a buffering role, compensating for the absence of one or more parents or providing support that lessens the impact of stressors. Botcheva and Feldman (2004), for example, found that more perceived economic pressure during a prolonged period of economic downturn in Bulgaria was associated with harsher parenting, which was in turn associated with more symptoms of depression in adolescent grandchildren. This link, however, arose only in adolescents who did not have a supportive grandparent in the household.

In light of the potential buffering effects of grandparental investment, it is not surprising that grandmothers in non-Western and indigenous societies have been targets of public health promotion, to great effect, and could be more systematically targeted in industrialized countries (see Coall & Hertwig, 2010). However, to avoid painting too rosy a picture, it is important to emphasize that fostering and buffering effects of grandparental investment do not occur invariably. Across studies, one emerging key moderating variable is the quality of the grandparent-grandchild emotional relationship in general and the quality of their face-to-face interactions in particular.

Grandparental Investment: A One-Way Benefit?

Grandparental investment can also have benefits for the donor, in terms of reciprocal support or emotional and health benefits gained from the very act of investing. For example, Hughes, Waite, LaPierre, and Luo (2007) found that grandmothers who babysat their grandchildren reported better health and 2 years later were more likely to exercise than those grandparents who did not babysit. The effect remained after adjusting for the grandparents' preexisting health status.

Giving more, however, does not simply translate into more well-being. Long-term negative consequences for the physical

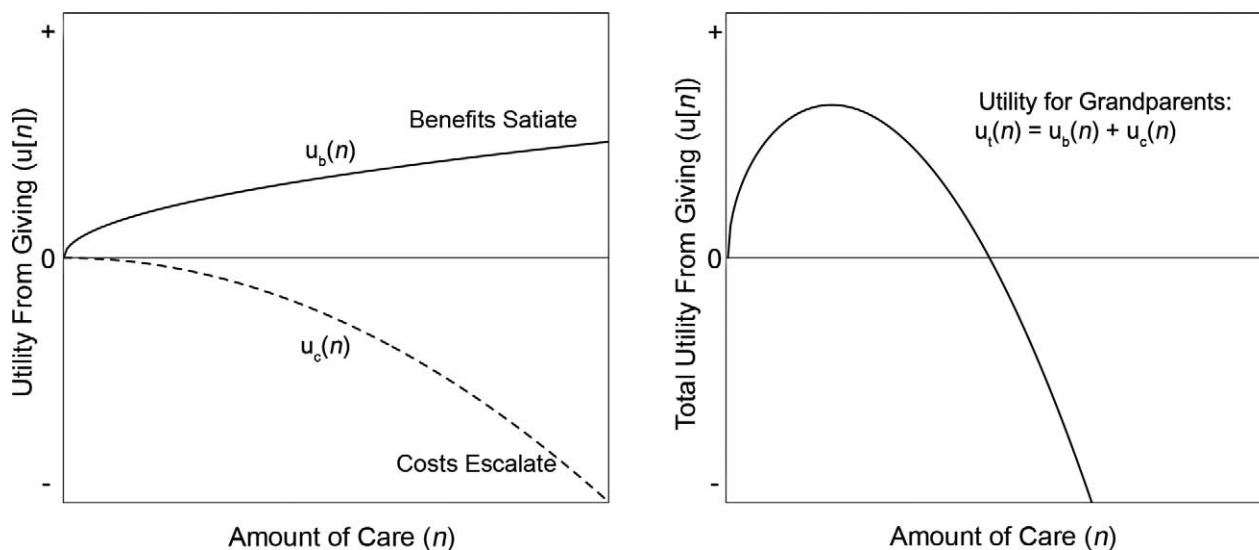


Fig. 1. Single-peakedness (right graph) resulting from satiating benefits and escalating costs of grandparental care (left graph) as a function of number of hours a grandparent cares for grandchildren per week (n). The total utility for the grandparents of giving care may follow a single-peak preference function; in that case, minimum investment (e.g., no contact) and maximum investment (e.g., custodial care) would be detrimental to grandparents' health and well-being.

and mental health of grandparents who assume custodial care of their grandchildren have been identified. Similarly, losing all contact with grandchildren also appears to be detrimental. One way to think about an “optimal” amount of grandparental care—optimal for the health and well-being of the donor—is in terms of Coombs and Avrunin's (1977) framework of single-peaked functions and the psychological principle that “good things satiate and bad things escalate.” For simplicity, let us assume “number of caring hours per week” (n) to be the single dimension in grandparental resources. Good things associated with care could be mental stimulation and feeling connected with one's children and grandchildren. When such good things satiate, the utility of these benefits follows a concave function, as shown in Figure 1. Of course, caring also exacts costs—for example time, opportunity costs, and fatigue. When bad things escalate, such costs, minor at first, grow more and more rapidly as a function of hours of care. Following Coombs and Avrunin, the sum of the utility functions for such costs and benefits can be thought of as a single-peaked function over n . In that case, there exists an optimum amount of care—the location of which is specific to a grandparent's cost and benefit functions—at which she or he reaps the maximum utility from caring.

Future Research

The impact that grandparents have on grandchildren has piqued the interest of evolutionary, economic, and sociological researchers. In traditional societies, the impact of grandparents' investments on classic fitness indicators such as higher infant survival rates has been observed. In industrial societies, the limited available evidence indicates fostering and buffering effects of grandparental investments on grandchildren across

dimensions such as psychological adjustment and academic achievement. These benefits may ultimately foster grandchildren's future professional and social competitiveness. To better understand the degree to which grandparental investment will matter in the future, findings of suggested benefits need to be better integrated with demographic dynamics, the economic status of future older generations, and properties of the grandchild–grandparent relationship (e.g., quality of contact, values of grandparents). The work—hopefully cross-disciplinary in the future—has only just begun.

Recommended Reading

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