

Grandmothers, daughters-in-law, and womanizers: The evolutionary psychology of family relations

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Resumé:

Evoluční psychologie je evoluční teorií „používající“ chování, zvláště lidské. Všichni jsme potomci těch předků, kteří se úspěšně rozmnožovali, jinak by nebyli našimi předky. Nejenom somatické znaky přispívají k úspěšné reprodukci, ale také znaky v chování. Protože skoro všechno chování je v nějakém rozsahu determinováno geneticky, zdědili jsme také tyto psychologické mechanismy od našich předků, kteří tak přispívají k úspěšné reprodukci. Tento článek je zaměřen na evoluční psychologii rodinných vztahů – na příkladech vztahů mezi babičkami a snachami v rodinách.

Evolutionary psychology is evolutionary theory applied to behavior, especially human behavior. We all are descendents of ancestors that reproduced successfully, otherwise they would not be our ancestors. Not only somatic features contribute to successful reproduction, but also behavioral features. Because almost all behavior is to some extent also determined genetically, we have inherited those psychological mechanisms from our ancestors that contributed to successful reproduction. So we search for evolutionary explanations of behavior, for ultimate causes, different from standard psychological approaches, which look at proximate explanations of behavior. Proximate explanations tell how a phenomenon functions at present. Ultimate explanations ask why a phenomenon came about and is there in the first place. The proximate explanation can be psychological, or social psychological, or physiological. The ultimate explanation considers the contribution for reproduction which the phenomenon plays or has played.

Here is an example: Why do human females, but – as far as we know – no other female mammals, have a menopause and thereafter even live on average longer than human males? To a mainstream psychologist this appears to be a ques-

tion which is irrelevant for psychology. But it is not. Evolutionary theory tries to explain both somatic and psychological phenomena with one theory. Standard psychological theories explain just psychological phenomena, under the no longer tenable dualistic assumption that body and mind are two altogether different realms (Pinker, 2002).

We have our somatic and psychological features because they have contributed to the reproduction of our ancestors. The basic biological imperative for all animals, also for the human animal, is to procreate. All of our direct ancestors left descendants, and we inherited from our ancestors the inclination to do things which contribute to procreation.

Now one might object and argue that nowadays we have contraception and do not want many children, or even none at all. But the evolution did not program us directly to place our genes into the next generation, but gave us motivations that achieve that goal: To feel attracted to the opposite sex, to enjoy sex, to like our children, and help our relatives, to strive for status, to make friends, and so on. These motivations are still in us despite all achievements of modern civilization. We still engage in reproductive effort.

There are grandparents and grandparents

Reproductive endeavor is not restricted to mating and parenting. Alexander (1987) regards lifetimes as being composed of efforts (caloric expenditure and risk-taking) which can be differentiated into somatic effort and reproductive efforts. Somatic effort (e.g. eating, health care, growing, learning, cultivating relations with nonkin) amasses resources, while reproductive efforts reduce them. Aside from mating and parenting, reproductive effort can be carried on as extraparental nepotistic effort, the investment in descendants with whom one shares a high proportion of alleles. These are mainly the young relatives which in Italy are called nipote, namely grandchildren, nephews, and nieces.

Grandparents, therefore, are in general not finished with reproduction but continue to reproduce their genes. By assisting their adult daughter or son in her or his parental effort, grandparents can continue to contribute to their own genetic inclusive fitness. Thus they increase their grandparental chances of having their genes in the next generations. After all, our direct ancestors were all grandparents. The family is a structure which was designed to get genes into the next generation. The family is, so to speak, a joint enterprise for reproductive profit.

The prevalent social sciences tend to consider grandparents as a uniform category. Sometimes distinctions are made between grandmothers and grandfathers, but

in these times of political correctness even such a distinction might be ignored. The distinction between maternal and paternal grandparents is hardly ever made except in sciences which consider biological factors in human affairs, like anthropology or biology. But as we will see, there are grandmothers and grandfathers, and the distinctions between them are of utmost importance.

If grandparents can still contribute to their own reproduction by helping their adult children in their parental effort, it makes a difference whether the adult child is a daughter or a son. The difference is due to the fact that men and women have different options for reproductive strategies. Men have two options: Maximize paternal effort or maximize women. Women, however, have only the option to maximize maternal effort. To maximize men does not contribute much to a woman's reproductive success, at least not to the same extent as in the case of men. That's why there are "womanizers" or "philanderers". In different languages there exist particular words for womanizers, like "Schürzenjäger" in German ("apron hunter") or "donnaioli" in Italian, without a corresponding word for females. Among our ancestors there were many "apron hunters", but most likely hardly any "trouser hunters". The difference is due to the sex-specific reproductive potential. Women have a much lower reproductive potential than men, and to have sex with many different men does not increase the number of a woman's offspring as much as having sex with many different women increases a man's number of offspring.

Therefore, if grandparents want to help their daughter with her reproductive strategy they can only help her with the daughter's maternal effort. If grandparents, in their own genetic interest, want to help their son in their reproductive strategy, they are less fixed on help with paternal effort because their son is not so restricted to the strategy of caring for his children. The prediction follows that maternal grandparents care more for their grandoffspring than paternal grandparents.

The second prediction derives from the role of paternity uncertainty. "Pater semper incertus", said Roman wisdom, but women are always certain that their baby is their biological baby. Grandparents have a double possibility of uncertainty. The maternal grandmother is completely certain that the child of her daughter is her biological grandchild. The maternal grandfather and the paternal grandmother have each one chance of paternity uncertainty. But the paternal grandfather has a double uncertainty: He can neither be certain that his son is really his son, nor that his son's children are really his biological children. The higher the relational uncertainty, the less likely is investment. To invest paternal investment into the child of another man has always been a serious mistake for our male ancestors to be avoided by all means.

If both factors, assistance in sex-specific reproductive strategy and paternity uncertainty, are combined, we obtain an ordered prediction about discriminative grandparental investment, as shown in Table 1. From the grandchild's perspective, the mother of the mother presumably invests the most and the father of the father the least. Even though both have one link of paternal uncertainty, the maternal grandfather is expected to invest more than the paternal grandmother, because the former helps a daughter and the latter a son.

Table 1: Evolutionary predictions of grandparental solicitude (+ : relatively more care; - : relatively less care) and results

| Grandparent | Predictions by Evolutionary Theory | | Grandchild Rating of Grandparental Solicitude (Means) | Correlations | |
|----------------------|---------------------------------------|------------------------|---|-------------------------|---------------------------|
| | Daughter Support | Paternity Certainty | | Distance/ Solicitude | Similarity/ Solicitude |
| Maternal Grandmother | + | + / + | 5.16 | -.29 | .37 |
| Maternal Grandfather | + | - / + | 4.52 | -.34 | .39 |
| Paternal Grandmother | - | + / - | 4.09 | -.40 | .42 |
| Paternal Grandfather | - | - / - | 3.70 | -.41 | .47 |

Euler and Weitzel (1996) examined grandparental solicitude as perceived retrospectively by adult grandchildren, on the assumption that ratings by recipients of care are a better indicator of grandparental solicitude than ratings given by grandparents themselves, because norms of impartiality prevent grandparents from making self-descriptive statements about favored grandchildren. Participants (720 male, 1,125 female, 12 unspecified; ages 16 to 80 years) were asked on a 7-point rating scale how much each grandparent had cared for them (gekümmert) up to the age of seven years, from 1 (not at all) to 7 (very much). The German verb kümmern has both a behavioral and a cognitive-emotional meaning, namely (1) to care for, to look after, and (2) to be emotionally and/or cognitively concerned about. From the total sample of 1,857 respondents, only those 603 cases were selected for the analysis whose four (putative) genetic grandparents were all still alive when the participant was seven years old.

The results confirmed their prediction about the discriminativeness of grandparental solicitude (Table 1, first data column). The maternal grandmother was rated as having been the most caring, followed by the maternal grandfather, the

paternal grandmother, and the paternal grandfather. Maternal grandparents were significantly more caring than paternal grandparents, and grandmothers significantly more than grandfathers. The effect sizes, given as the partial η^2 (Tabachnik & Fidell, 1996) which denotes the variance attributable to the effect of interest divided by this variance plus error variance, were .11 for the lineage effect (maternal vs. paternal) and .17 for the effect of sex of grandparent. Both effects together account for a sizable proportion of the variance.

Of special interest is the finding that the maternal grandfather cared more than the paternal grandmother. If grandparental care giving were solely determined by a social role and child care traditionally ascribed to women, then grandmothers should provide more care than grandfathers. Accordingly, this argument should apply particularly to the older grandchildren in the sample, whose grandparents presumably were more influenced by traditional gender roles than those of the younger participants. However, the difference was in the opposite direction, significantly so, and even more pronounced for the older (40 years or more) than the younger participants.

Table 1 shows in the last two data columns correlations between grandparental solicitude and two other variables, namely residential distance and phenotypical similarity between grandparent and grandchild. As can be seen, with residential distance between grandparent and grandchild the grandparental care decreases, as all correlations are negative. However, the size of the negative correlation varies between the four grandparents. The care of the maternal grandmother is the least facultative, that is, the least dependent on distance, the one of the paternal grandfather the most. The same pattern can be seen in the last data column: The maternal grandmother makes her effort for the grandchild the least dependent on similarity to the grandchild, the paternal grandfather the most. The reason for this latter difference is obvious: The higher the relational uncertainty of the grandparent, the more important it is to make solicitude dependent on signs of relational certainty. Phenotypical similarity is a sign of relational certainty. The more the grandchild resembles the grandparent, the more the latter can be certain of his or her relational certainty.

This same pattern of discriminative grandparental solicitude as the one shown in Table 1 has been found in comparable studies in various countries, namely, in the U.S. (DeKay, 1995), France (Steinbach & Henke, 1998), Sweden (Å. Nilsson, personal communication, July 2002), England (R. Banse, personal communication, February 2004), and Greece (Pashos, 2000).

Various studies in which aspects of grandparental investment other than

grandchild-rated solicitude were investigated have confirmed the general pattern of discriminative grandparental investment: perception of closeness to (Fischer, 1983) and time spent with grandchildren (Smith, 1988), interaction frequencies (Eisenberg, 1988; Hartshorne & Manaster, 1982; Hoffman, 1978/1979; Salmon, 1999), perceived emotional closeness to grandparents (Eisenberg, 1988; Hoffman, 1978/1979; Kennedy, 1990; Matthews & Sprey, 1985; Rossi & Rossi, 1990; Russell & Wells, 1987), naming favorite grandparents (Kahana & Kahana, 1970; Steinbach & Henke, 1998), gifts received from grandparents (DeKay, 1995), grandparental mourning after a grandchild's death (Littlefield & Rushton, 1986), and adoption of grandchildren (Daly & Wilson, 1980; Berger & Schiefelhoevel, 1994).

One charming aspect of grandparental solicitude which also reflects the discriminativeness is the name with which the grandchild typically addresses the grandparent. We found that diminutive and endearing names of address are most often given to the maternal grandmother (Euler, Hoier, & Pölitz, 1998). For example, she often is called the 'dear grandma', whereas in comparison the paternal grandmother might be called just grandmother, or the other grandmother. Or the maternal grandmother might be called Großmütterle (little grandma), and the paternal grandmother 'the grandmother from Hannover'.

The amount of care for grandoffspring depends on several variables, apart from residential distance and phenotypical similarity. The residence pattern plays an important role. We live in basically neolocal cultures, where a young couple establishes a new home for themselves. Grandparental solicitude is assumedly and understandably differently structured between matrilocal and patrilocal cultures, although clear data are missing so far. In matrilocal cultures the newlywed couple lives with her parents, in patrilocal cultures with his parents. Finally, it makes a difference whether the grandparents live together or separately (Euler & Weitzel, 1996). If grandparents separate, the grandfathers reduce their grandpaternal care drastically, especially the paternal grandfather, whereas the grandmothers do not reduce their care (maternal grandmother) or only a little (paternal grandmother). The reason for this sex difference can be found in mating effort: If an elderly couple splits, the men still tend to engage in mating effort and forget about grandpaternal effort, whereas for women the time for mating effort tends to have passed.

There are various factors that do not have much of an effect on grandparental care. Amazingly, age has only a negligible effect. Younger grandparents do not show less solicitude than older grandparents. The sex of the grandchild has not much of an effect either, and the theory would not predict any. The socio-

economic status of the grandparents does not modulate solicitude either, at least not considerably. The availability of other grandparents does not effect solicitude. A sole grandparent does not care more for a grandchild than a grandparent whose grandchild has also other grandparents still alive. Finally, Salmon (1999) found the parent birth rank to have a big effect on grandparental solicitude: Grandparents cared considerably more for grandoffspring from firstborn or lastborn children than for grandoffspring from middleborn children (cf. Sulloway, 1996). However, in our own surveys we could find only a minute effect of parent rank on grandparental solicitude (Euler, 2004).

Recently, we detected a very particular and surprising effect. We investigated whether the number of siblings in the parent generation influenced the amount of grandparental solicitude (Euler, 2004). For the maternal grandparents we found an expected diffusion effect: The more siblings a daughter has, the less her parents care for the grandchildren (see Fig. 1, open data points). For paternal grandparents, however, the picture is different (Fig. 1, solid data points): Grandparents care less for the children of a son, if the son is an only child than if the son has one or more siblings. The effect is significant and showed up in two different and large samples. It does **not** matter whether the sibling of the son is a brother or a sister. We tested various hypotheses to explain this counterintuitive effect, two of which survived.

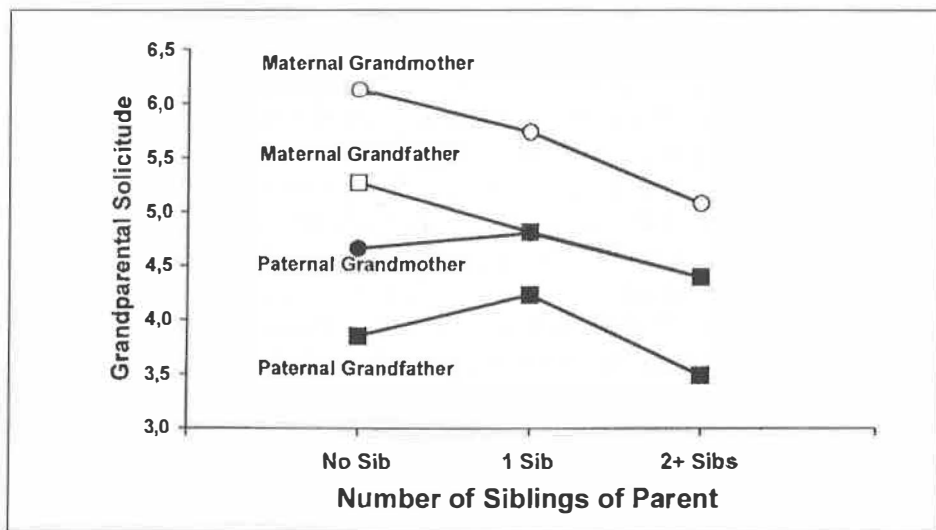


Figure 1. Grandparental solicitude as a function of number of siblings in the parent generation

The first hypothesis is derived from the Mother-in-law/daughter-in-law conflict, which is relatively frequent (see below). If the son is a single child, the only female in the parent generation is an in-law-female. Thus the conflict is salient, cannot be compensated by relationships to other daughters-in-law, and the whole grandparental care suffers. The second hypothesis derives from the frequent wish to have a son as the family tree keeper. The argument goes like this: Couples with one child only are on the average less inclined towards paternal effort than couples with two or more children, and thus also less inclined towards grandpaternal effort. This does, however, not yet explain the difference between maternal and paternal grandparents, and for this lateral asymmetry we need a specific explanation. A couple with little interest in children may still want a male descendant, because the firstborn male descendant continues the family tree and the family name. If the first child is a boy, the couple is satisfied and does not get more children. If, however, the firstborn child is a girl, the couple still might want a second child in hope for a male descendant.

The riddle of the mother-in-law

If grandparental investment is to be transmitted to grandchildren, parents are usually the mediators. Grandparental investment is thus facilitated by good relationships between parents and grandparents and obstructed by poor ones.

With four grandparents and two parents, there are eight different grandparent-parent dyads, four of them in-law dyads. Among the in-laws, the mother-in-law seems to play a salient role. In many cultures, she is the target of scorn and derision in jokes and songs. The relation between the mother-in-law and the daughter-in-law is a source of particularly intense conflict (Duvall, 1954). Why is the image of the mother-in-law so negative? The most popular explanation, nourished by psychoanalytic theory, is rivalry between the two over the son's/husband's love and attention. This is a proximate explanation which asks for an ultimate explanation, namely why such a rivalry appears in the first place and why there no equal rivalry between the father-in-law and son-in-law over the daughter/wife? There may be rivalry between the father-in-law and son-in-law, but if so, it is not invoked to explain long-lasting in-law relations.

Evolutionary psychological theory might give a more satisfying answer. First, a key reproductive variable that differentiates the eight grandparent-parent dyads is consanguinity. The son or daughter is genetically closer than his or her spouse, and therefore the four parent-child dyads are expected to be more positive relationships than the four in-law dyads. Secondly, parental support of the

adult child's reproductive strategy is another factor to consider. It is in the reproductive interest of grandparents to support their adult child in his or her sex-specific reproductive strategy. An adult daughter, more restricted than a son to the reproductive strategy of parental care, is best aided by her parents within the context of a good parent-daughter relationship. A poor parent-son relationship is comparatively less detrimental for a son's opportunistic reproductive strategy of maximizing mates. Therefore, grandparents can be expected to have generally better relationships with daughters than with sons. Thirdly, due to uncertainty of paternity, a better relationship is predicted between mother and children than between father and children. These last two factors, daughter support and paternity uncertainty, yield predictions about the differential quality of the four relationships between grandparents and their adult children. The best relationship is expected to exist between the grandmother and her adult daughter, the worst of these four between the grandfather and his adult son. Depending on the relative strengths of the two factors mentioned, i.e. daughter support and paternity uncertainty, the grandfather-daughter or the grandmother-son relationship are expected to be second best.

Let us now examine in-law relationships. How do evolutionary considerations differentiate these four dyads? The factor of daughter support again plays a role here. A daughter needs a more stable partner support in her child care than a son needs in his strategy of maximizing mates. A daughter is best aided by her parents if they welcome and relate well to the husband she has chosen. A son, insofar as he is inclined towards polygyny, is comparatively less impeded by poor relations between his wife and his parents. Rejection of their son's partner may even be strategically appropriate and unconsciously in the grandparents' own reproductive interest. Therefore, the relations to the son-in-law are expected to be better than relations to the daughter-in-law. Again considering paternity uncertainty as a factor, the mother-in-law is expected to have a better relationship than the father-in-law to the spouse of the adult child. But here it now makes a difference whether the relationship is a supportive one, as in the case of own children and the son-in-law, or a rejective one, as in the case of the daughter-in-law. Relational certainty makes the supportive relationships more supportive and the rejective relationships more rejective.

Taken together, these considerations predict a relatively good relationship between the mother-in-law and the son-in-law and a relatively poor one between the mother-in-law and the daughter-in-law, with the other dyads – again depending on the relative strengths of both factors – somewhere in between.

From 2,319 persons, we obtained a rating on a 7-point scale of how good each one of their eight grandparent-parent relationships was when the participants were children (1 = very bad relationship, 7 = very good relationship). The participants (888 male, 1,426 female, 11 unspecified) were between 12 and 67 years old with a median of 21 years and 11 months (Euler, Hoier, & Rohde, 2004).

Table 2: Predictions About Grandparent-Parent Relationships and Results

| Grandparent-Parent Dyad | Predictions on the Basis of | | | Relationship | |
|-------------------------------|-----------------------------|---------------------|--------------------------|--------------|------|
| | Consan- guinity | Daughter Support | Paternity Uncertainty | Rating M | SD |
| Mother/Daughter | + | + | + | 5.49 | 1.56 |
| Father/Daughter | + | + | - | 5.16 | 1.67 |
| Mother/Son | + | - | + | 5.03 | 1.56 |
| Father/Son | + | - | - | 4.71 | 1.64 |
| Mother-in-law/Son-in-law | - | + | + | 4.45 | 1.61 |
| Father-in-law/Son-in-law | - | + | - | 4.35 | 1.65 |
| Mother-in-law/Daughter-in-law | - | - | - | 3.75 | 1.76 |
| Father-in-law/Daughter-in-law | - | - | + | 4.03 | 1.71 |

Table 2 shows the predictions on the basis of consanguinity, daughter support, and paternity uncertainty, and the means and standard deviations of the relationship ratings. The plus or minus sign denotes whether the column condition leads to a prediction of a better or a worse relationship for that particular grandparent-parent dyad relative to the other dyads. As can be seen in the mean relationship ratings in Table 2, the predictions map well onto the results, with big effect sizes.

Investments of Aunts and Uncles

Evolutionary theory predicts differential investment of consanguineal aunts and uncles. Because of paternity uncertainty and sex-specific reproductive strategy, matrilineal aunts and uncles can be expected to show more concern for their nieces and nephews than patrilineal aunts and uncles, and aunts more concern than uncles. Of all four types of consanguineal aunts and uncles, matrilineal aunts are expected to be the most caring and patrilineal uncles the least caring. These hypotheses were tested in a sample of 302 participants (109 male, 193 female; age 19 to 40 years) whose genetic parents were cohabiting (Hoier et al., 2000). Those participants who either had both matrilineal and patrilineal uncles, or

both types of aunts, were asked whether the matrilineal or the patrilineal uncle or aunt showed more concern for the participant's welfare. A significant matrilineal bias was revealed with respect to both aunts and uncles: Matrilineal aunts and uncles were chosen more often as showing more concern than were their patrilineal equivalents.

Each aunt and uncle's level of concern was rated by the participants on a 7-point scale. Repeated measures ANCOVA, corrected for the relative's age and residential distance to the participant, again showed a significant matrilineal effect (larger investment in descendants of sister than in those of brother) and a significant sex effect (more care by aunts than by uncles). Finally, the interaction between both effects was significant: The matrilineal bias was larger in aunts than in uncles. Studies from the United States (Gaulin, McBurney, & Brake-man-Wartell, 1997; McBurney, Simon, Gaulin, & Geliebter, 2001; Rossi & Rossi, 1990) provided the same results with the exception of no interaction effect. This difference could be due to a floor effect in the German data: German uncles were rated as showing considerably less concern than American uncles (Gaulin et al., 1997).

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