Grandparent-parent relations, or why do daughters-in-law often lose out?

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Two years ago at our meeting in Cambridge we gave a talk on ultimate causes of 
discriminative grandparental solicitude. Today we want to extend this analysis to the relations 
between grandparents and parents and say something about „the evolution of the mother-in-
law“ (Robert Hinde inspired me to this expression two years ago with his remarks on the 
evolution of the teddy bear). Two years ago we showed that two evolutionary concepts, 
namely reproductive strategy and paternity confidence, predicted why the maternal 
grandmother on average is the most caring grandparent, and the paternal grandfather the least. 
Parents of the mother care more for the grandchild than do parents of the father because 
reproductively it pays more to support a daughter in caring for her children than to support a 
son in caring for his. Also, the maternal grandmother has complete confidence that her 
grandchild is really hers, whereas the paternal grandfather may have double paternity doubt. 
So for most of us our maternal grandmother is or was the favorite grandparent, whereas only a 
few of us favoured our paternal grandfather. The two factors, reproductive strategy and 
paternity confidence, accounted for almost 30% of the variance in discriminative 
grandparental solicitude in our analysis (Euler & Weitzel, 1996).

Not only the relationships between grandparent and grandchild, but also those between 
grandparent and parent seem to be systematically structured. That does not surprise because 
these relationships are part of the enterprise to propagate particular allele combinations. The
image of the mother-in-law, as depicted in jokes or vernacular cactus names of many cultures, is one salient feature of this structure (In Germany, we have a cactus called the ‘seat of mother-in-law’, and the English have a mother-in-law word for the sword-like pot plant Sansevieria). Particularly the relation between the mother-in-law and the daughter-in-law is a source of conflict (Duvall, 1954).

There exist eight different grandparent-parent dyads for each person (Fig. 1; It might help if you visualize your own parents and grandparents when I later refer to each one of the eight different dyads). Let us have a look at what evolutionary theory tells us about each one of them. Firstly, we have the factor of consanguinity: The own child is closer than his or her spouse, and therefore the four possible parent-child relations should be better than the four possible in-law relations. I guess you would not insist on empirical verification for this statement. Secondly, there is the factor of parental support of their child’s reproductive strategy. It is the best grandparental reproductive interest to support their adult child in its reproductive effort. An adult daughter, more restricted than a son to maximize child care as reproductive strategy, 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 reproductive strategy of philandering, of maximizing sexual partners. Therefore, adult parents should have better relationships with a daughter than with a son. Third, uncertainty of paternity results in a generally better relationship between mother and children than between father and children. Thus, grandmothers ought to have better relationships with their adult children than grandfathers. These last two factors, daughter support and paternity uncertainty, yield predictions about the differential quality of the four relationships between grandparents and their own adult children. The best relationship should exist between the grandmother and her daughter, the worst of these four between the grandfather and his son. Depending on the
relative strengths of the two factors of daughter support and paternity uncertainty, the
grandfather-daughter or the grandmother-son relationship should be second best.

Now to the in-law relationships. How do evolutionary considerations differentiate the four
dyads there? The second factor of daughter support is also applicable here. A daughter needs
more stable partner support for her reproductive strategy of maximizing child care than a son
needs it for his strategy of maximizing sexual partners. A daughter is best aided by her
parents if they welcome and relate well to her husband. A son, insofar he is inclined towards
polygyny, is comparatively less impeded by poor relations between his wife and his parents.
Rejection of his partner by his parents may even be strategically supportive and in the
grandparents’ own reproductive interest. Therefore, the relations to the son-in-law should in
general be better than relations to the daughter-in-law.

The third factor of paternity uncertainty is also applicable to in-law relationships. The
mother-in-law should have a better relationship than the father-in-law to the spouse of the
adult child.

These considerations together predict a relatively good relationship between mother-in-
law and son-in-law and a relatively poor one between father-in-law and daughter-in-law, with
the other dyads--again depending on relative strength of both factors--somewhere in between.
However, folklore, and maybe our own experiences, object. Is not the relationship between
the mother-in-law and the daughter-in-law usually the most problematic of them all? Did we
forget something? Indeed, we oversaw something. The dyad father-in-law/daughter-in-law is
a special case, at least reproductively, an that is what counts. This dyad has a reproductive
quality no other grandparent-parent-dyad has, and we may call it direct reproductive potential.
The other seven dyads are wrong matches with respect to direct reproduction because of incest
barrier, same sex, or wrong age relation in the case of mother-in-law/son-in-law. This direct
reproductive potential of the father-in-law/daughter-in-law dyad may be moderated by incest
inhibitions and hardly ever actualize. (It did in the case of the popular German zoologist Bernhard Grzimek, who married his daughter-in-law some time after his son got killed in a plane crash over the Serengeti). Nevertheless, this reproductive potential might still be psychologically relevant. The father-in-law might show off in public with his daughter-in-law and feel flattered if she is mistaken for his wife. Or he might, wholly without rivalrous feelings, imagine himself in his son's place and be thus entertained. A good relationship with his daughter-in-law is quite compatible with these inclinations, but a poor one would be detrimental. Table 1 summarizes our predictions.

We do not know the relative strengths of the four factors employed for our predictions and thus we cannot be specific at this point about the relative positions of the eight dyads with respect to goodness of relationship. If, however, we look at the data we obtained we can estimate the relative strengths of the four factors from a comparison of mean differences.

From 1,917 persons we obtained a rating on a 7-point scale on how good each one of the eight grandparent-parent relationships was when they were children (1=very bad relationship, 7=very good relationship). The participants (733 male, 1,178 female, 6 unspecified) were between 12 and 62 years old with a median of 21.9 years. Of those participants, 797 gave us complete ratings, i.e. a rating for all eight grandparent-parent dyads. We shall look at the data from these complete ratings because the incomplete ratings may be contaminated by unrecognized sample selection effects. Actually, however, the results were the same.

Table 2 shows our results. In the first column you see the eight different grandparent-parent dyads. The next four columns show the predictions derived from the four reproductive factors. A plus sign denotes a better relationships due to that particular factor, a minus sign a worse relationship. The last column gives the mean ratings. Standard deviations are not presented to save space. The standard deviations were all similar and ranged between 1.57
and 1.76. The mean differences between each successive pair of dyads were significant, all but one even at the 1% level, and the predictions about differences shown in Table 1 were all very significant. Reproductive factors structure grandparent-parent relationships very clearly.

How well do siblings agree with respect to their ratings of the intergenerational relations? We obtained comparable ratings from 254 siblings and calculated for all families with two children (N=87) the intraclass correlations within sibling pairs. The average correlation over all eight grandparent-parent dyads was $r=.64$. So there is quite an agreement between siblings about the quality of grandparent-parent relations which we expect if the structure of grandparent-parent relations is a clear one. We have to keep in mind that our siblings were all of different ages and rated the grandparent-parent relationships that existed in their childhood. The age difference of the siblings, of course, influences sibling agreement in their ratings. Sibling pairs with higher age differences (4 years or more) agreed with $r=.51$, those with similar ages (1 to 3 years) with $r=.71$.

Sex of participant had no effect on the rating of the grandparent-parent relationship, with one exception: The tail end of grandparent-parent relationships, namely the relationship between the mother-in-law and the daughter-in-law, is rated very significantly worse by females than by males.

Finally, we tried to estimate the effect sizes of the four reproductive factors. We could not apply overall comparisons for effect size calculations since several comparisons confound factors. For example, if we calculate the overall effect size for consanguinity, we underestimate the difference between own children vs. in-laws because the particular father-in-law/daughter-in-law relationship is included in this estimate. So we have to exclude this particular relationship from our comparison and its equivalent, the father/son relationship. Because the variances are all very similar, we might for reasons of simplicity just look at the
mean differences to get an estimate of the relative effect sizes. If we do so, we get a mean
difference of 1.08 as in index of the relative strength of the factor of consanguinity in this
particular family context.

Next we estimate the factor of grandparental support of their child’s sex specific
reproductive strategy (daughter support) by comparing the three dyads mother/daughter,
father/daughter and mother-in-law/son-in-law with the three dyads mother/son, father/son, and
mother-in-law/daughter-in-law. We get an average mean difference of .59 as an estimate of
the relative strength of the factor of daughter support. The factor of support of sex-specific
reproductive strategy thus is about half as strong as the factor of consanguinity.

Now we estimate the factor of paternity uncertainty by comparing mother/daughter,
mother/son, and mother-in-law/son-in-law with father/daughter, father/son, and father-in-
law/son-in-law. We get a value of .27 as an estimate of the relative strength of paternity
uncertainty in this context. Thus, paternity uncertainty is about one-fourth as effective as is
consanguinity and about half as effective as sex-specific reproductive strategy.

Finally, we have to estimate the particular factor of direct reproductive potential of the
father-in-law/daughter-in-law relationship. I bet that at least some of the men in this room
who have a good looking daughter-in-law wonder about the strength of this factor. We have
three possible estimates for this factor (see footnote). If we average them, we get a value of
.39. So this father-in-law/daughter-in-law factor is stronger than paternity uncertainty, but
less strong than sex-specific reproductive strategy. It is by no means a negligible factor in
family relationships, but weak enough to be easily handled by us men with a daughter-in-law,
and strong enough to surpass and leave the relationship between mother-in-law and daughter-
in-law at the tail end.
If we calculate effect sizes after Cohen (1988, p. 49) for matched pairs and include, as before, only comparable t-tests, we get an effect size of $d = .89$ for consanguinity. This is, according to convention, a large effect. For grandparental support of sex-specific strategy (daughter support), we obtain a $d = .44$, a small effect; for paternity uncertainty, $d = .23$, a small effect; for direct reproductive potential of the father-in-law/daughter-in-law dyad, a $d = .31$, a small effect.

So now we seem to know the ultimate explanation for the poor relationship between mother-in-law and daughter-in-law. The mother-in-law’s gen-egoistic interest is to increase the number of offspring of her son. A son’s stable partnership and his paternal investment in only one woman and her offspring is a reproductive limitation, also of his mother. We can derive a series of further hypotheses from these considerations, but currently we have no evidence at hand to test these hypotheses. If a grandmother has only one son and thus only one daughter-in-law, will she be glad to have at least this one daughter-in-law or will she be especially critical of her compared to a mother with several sons? Our theory predicts the latter. Does the mother-in-law’s acceptance of the daughter-in-law vary with the eligibility of her son on the marriage market? Our theory suggests it does, and our personal observations may confirm it. Mother-in-laws are often critical of their son’s wife. The bad image of the mother-in-law, her nagging at the daughter-in-law, all these stereotypes from jokes and popular sayings, seems to have an ultimate cause.

When a local newspaper at home reported on our research, I received hate mail from mother-in-laws. I responded that each mother-in-law is also a mother, so in the end it comes out even.

Footnote
Three estimates of the strength of the factor of direct reproductive potential of the father-in-law/daughter-in-law dyad:
If direct reproductive potential were absent, the rating mean for father-in-law/daughter-in-law
− ought to be .27 (the mean difference made by paternity uncertainty) lower than the mean of 3.72 for mother-in-law/daughter-in-law, but it is .25 higher (at 3.97); .25 + .27 = .52 (1st estimate).

− ought to be .59 (the mean difference made by daughter support) lower than the mean of 4.30 for father-in-law/son-in-law, but it is only .33 lower (at 3.97); .59 - .33 = .26 (2nd estimate).

− ought to be 1.08 (the mean difference made by consanguinity) lower than the mean of 4.66 for father/son, but it is only .69 lower (at 3.97); 1.08 - .69 = .39 (3rd estimate).

The average of the three estimates is .39.

References


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<tr>
<th>Relationship</th>
<th>due to</th>
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<td>with own adult child &gt; his/her spouse</td>
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<td>sex-specific reprod. strategy</td>
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<td>with son-in-law &gt; daughter-in-law</td>
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<td>father-in-law/daughter-in-law ↑</td>
<td>direct reproductive potential</td>
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Table 1. Predictions about grandparent-parent relationships on the basis of four reproductive factors
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<th>Grandparent-parent dyad</th>
<th>Predictions on the basis of consanguinity</th>
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<th>paternity uncertain</th>
<th>reproduc. potential</th>
<th>Mean rating</th>
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<td>-</td>
<td>-</td>
<td>+</td>
<td>3.97</td>
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Table 2. Predictions about grandparent-parent relationships and results