

### Original Article

## Parent-Offspring Conflict over Mating: Testing the Tradeoffs Hypothesis

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**Abstract:** The difference in genetic relatedness between parents and offspring results into traits such as beauty being more beneficial in a spouse than in an in-law. As a consequence, mate and in-law preferences do not overlap, and each party tends to prefer more the traits that give it more benefits. This paper tests the hypothesis that this divergence in preferences interacts with the tradeoffs nature of mating to give rise to parent-offspring conflict over mating. In particular, using a design where mate choice is constrained by a budget, three hypotheses are tested: First, asymmetries between in-law and mate preferences result in asymmetrical compromises in the choice of an in-law and a spouse. Second, the hypothesis is tested that when choice is constrained, disagreement spreads to traits where there is no divergence between in-law and mate preferences. Finally, it is hypothesized that there is a negative relationship between mate value and parent-offspring conflict over mating. Evidence from two independent studies in two different countries provides support for all three hypotheses.

**Keywords:** parent-offspring conflict over mating, tradeoffs, parental choice, mate choice

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### Introduction

It is a common theme in films (*Cocktail*), literature (*Clarissa*) and theatrical plays (*Romeo and Juliet*) for two young people to be physically attracted to each other, to find it fun to be together, and eventually to fall madly in love. This relationship, however, meets the strong opposition of their parents who, not particularly interested in looks or personality, disapprove of the family background of their prospective in-laws. Such stories reflect the real fact that what mate seekers value in a spouse is not always the same with what parents value in an in-law. In turn, this raises the question of why in-law and mate preferences do not overlap.

The answer lies in the fact that parents and offspring are not genetically identical: All of offspring genes come from their parents, but not all of parents' genes are inside their offspring. Differences in genetic relatedness result in the same traits giving different benefits to each party (Apostolou, 2007, 2008a; Buunk, Park, and Dubbs, 2008; Trivers,

1974). For instance, the coefficient of relatedness of parents to children is 0.5, but the coefficient of relatedness of grandparents to grandchildren is only 0.25. Consequently, the odds of a particular gene of an individual being passed into the next generation would be 50% by spouse or 25% by an in-law. Therefore, individuals reap more genetic benefits from a spouse than from an in-law of superior genetic quality and accordingly they should value genetic quality more in a spouse than in an in-law.

Consistent with this argument, a number of studies have produced evidence that beauty, a proxy of genetic quality, is valued more in a spouse than in an in-law (Apostolou, 2008a; Buunk et al., 2008; Buunk and Solano, 2010; Dubbs and Buunk, 2010; Perilloux, Fleischman, and Buss, 2011). Divergence between in-law and mate preferences, however, is not confined only to beauty. Research has identified that individuals value good family background and similar religious background more in an in-law than in a spouse, whereas they value exciting personality more in a spouse than in an in-law (Apostolou, 2008b, 2011; Buunk et al., 2008; Park, Dubbs, and Buunk, 2008; Dubbs and Buunk, 2010; Perilloux et al., 2011).

It has been argued that preference asymmetries result in asymmetrical compromises and eventual conflict between parents and children (Apostolou, 2008a; Buunk et al., 2008). However, if I prefer vanilla-flavored and you prefer chocolate-flavored ice cream, this does not necessarily mean that we are in conflict over ice cream choice. If our budget allows us to get the ice cream we like, there would be no conflict between us, only differences in preferences. Similarly, the fact that in-law and mate preferences do not overlap does not necessarily mean that parents and offspring are in conflict over mating. If both parties could get what they want, there would be no conflict between the two. The tradeoffs nature of mate choice, however, prevents each party from getting what it wants, and conflict between the two arises.

### **Tradeoffs and Conflicts**

When mate/in-law choice is exercised, each party (parents, offspring) is constrained by its own mate value with respect to the mate value of a spouse/in-law it can get. This is because individuals of high mate value will not engage in long-term mating with individuals of low mate value (Gangestad and Simpson, 2000; Li, Bailey, Kenrick, and Linsenmeier, 2002; Luo and Klohnen, 2005): If you are a “10” it is unlikely that you will agree to marry a “5.” This means that if you are a “5” you will probably want to marry a “10,” but you will need to settle for someone closer to “5.” Consequently, when you exercise mate choice, you have to make compromises because you are constrained by your own mate value. Similarly, if your parents exercise mate choice for you, they also need to make compromises as they are also constrained by your mate value: They want to get a “10,” but they have to settle for someone around “5.” The key point is that since traits give unequal benefits to parents and offspring, the compromises that each party is willing to make differ, which results in conflict between the two (Apostolou, 2008a; Buunk et al., 2008).

For instance, because more benefits are reaped from a spouse than from an in-law of superior genetic quality, when they exercise mate choice, individuals will be willing to

exchange more “units” of other traits (say social status) in order to get more of beauty (a proxy of genetic quality). This imposes a cost on their parents as their loss in social status is not compensated by the gain in beauty, since this trait gives them fewer benefits than it gives to their children. Conversely, if parents were to exercise choice for their children, they would be willing to give up more “units” of beauty to get more of other traits such as social status. This imposes a cost on the offspring as the gain in social status does not justify their loss in genetic quality because the latter is more valuable to them than it is to their parents.

Overall, mate choice involves compromises, but the compromises each party is willing to make are expected to be different because not all traits give the same benefits to parents and offspring. It is hypothesised then that divergence between in-law and mate preferences results in asymmetrical compromises individuals are willing to make on the basis of whether they are choosing a spouse or an in-law.

Moreover, the tradeoffs argument mandates that when the choice is constrained by a given mating value, disagreement spreads to traits that are valued equally in an in-law and in a spouse. For instance, assume that beauty is valued more in a spouse than in an in-law, while social status is valued equally in a spouse and in an in-law. In this scenario, offspring will be willing to exchange more “units” of social status than their parents would like in order to gain more beauty – a trait which is more valuable to them than to their parents. Thus, they would end up being romantically linked to someone of a poorer social status than their parents would consider to be optimal. Therefore, in effect, children will disagree with their parents over the social status of a prospective mate even if this trait is preferred equally in a spouse and in an in-law.

In addition, individuals of high mate value need to make fewer compromises than individuals of low mate value. If you are a “10” you can get a “10” so you do not need to compromise anything. This indicates that as mating quality increases, the divergence in compromises between an in-law and a spouse decreases, with a consequent decrease in the magnitude of conflict between parents and offspring. Accordingly, it is further hypothesized that there is a negative relationship between mate value and parent-offspring conflict over mating.

Finally, previous studies on parent-offspring conflict over mating asked participants to rate a set of characteristics without any reference to their own mate value. The problem with this approach is that if participants have no constraints imposed on their mate value, they are put into a position of someone answering a question about how to spend imaginary lottery winnings (Li et al., 2002; Li and Kenrick, 2006). In addition, rating traits individually does not reveal the tradeoffs that people normally make when they select mates/in-laws whose traits come in bundles. For instance, exciting personality is a desirable trait but it may be irrelevant if a given mate is below the threshold on, say, social status. Thus, considering traits in isolation might simply assume acceptable levels in other traits (Li et al., 2002; Li and Kenrick, 2006). This being the case, the importance of certain characteristics may be distorted and lead to distorted conclusions on parent-offspring conflict over mating for these traits. Accordingly, this paper also aims to examine whether conflict in previously identified traits is also found when individuals exercise choice constrained by a given mate value.

This paper presents the results of two independent studies that attempt to test the aforementioned hypotheses. In Study 1, a within-participants design is employed in which a group of parents are asked to design desirable spouses and in-laws. This design controls for socialization and age effects, thereby enabling the identification of innate predispositions. However, it does not provide information on what happens between parents and their actual children. In order to compensate for this limitation, Study 2 employs a between-participants design in which parents and their children are asked to design desirable in-laws and spouses respectively.

## **Study 1**

### **Materials and Methods**

#### *Participants*

A total of 335 participants, 166 women and 169 men, all British, completed the online survey. The mean age of male participants was 50.42 ( $SD = 11.7$ ) and the mean age of female participants was 46.36 ( $SD = 11.4$ ). A private company was employed specializing in recruiting participants for online research in psychology. The participants were selected from a large database of people willing to take part in online psychological research, and have registered through the company's web site. To take part in the study, participants had to be parents with at least one biological child. Parents had on average 0.92 ( $SD = 0.8$ ) male children and 0.84 ( $SD = 0.7$ ) female children. The mean age of the oldest male child was 15.22 ( $SD = 13.2$ ) and the mean age of the oldest female child was 14.52 ( $SD = 13.35$ ). Most participants were married (70.1%), followed by those in a relationship (11.6%), divorced (10.1%), single (5.4%), and engaged (2.7%). All parents received payment for completing the survey in the form of credit (about \$3) that can be used to purchase goods from online stores.

#### *Materials*

This study combines the within-participants design employed by Apostolou (2008a,b) to study parent-offspring conflict over mating with the budget allocation design used by Li et al. (2002) and Li and Kenrick (2006) to study mate preferences.

More specifically, the survey consisted of four parts. In the first part, demographic data were collected: sex, age, nationality, marital status, number of daughters, and number of sons, age of the oldest male child, and age of the oldest female child. The rest of the survey was divided into three parts. In each part, participants were given a different budget of "mate points" (low budget – 15 mate points, medium budget – 30 mate points, high budget - 45 mate points), and they were asked to allocate them across eight different traits for a daughter-in-law, a son-in-law and a husband or wife. For each trait they could allocate a maximum of ten mate points. The presentation order of budget, role (parent, mate-seeker), and characteristic varied randomly between participants.

Research on parent-offspring conflict over mating identified four traits over which parents and offspring disagree: namely, exciting personality, good family background, good looks, and similar religious background. These items were added to a cluster of four

traits (ambition-industriousness, education-intelligence, favorable social status, good financial prospects) which are associated with resource provision and which research has established are valued equally in an in-law and in a spouse (but see Buunk et al., 2008 for the education trait), to give us a set of eight traits. In this way, we are able to examine whether compromises also involve non-conflicting traits inducing a direct resource cost for the party not making the selection.

*In-law vs. mate preferences comparisons*

This study uses a within-subjects design where sexually mature individuals with children, who can act both as parents and mate seekers, were chosen as participants. This design has been employed because it controls for alternative explanations based on social learning and accumulated life experience (Apostolou, 2008a). In particular, as people grow older and gain life experience, they may re-evaluate the way they see certain traits in a mate. Accordingly, a between-participants design would not be able to distinguish between evolved predisposition and life experience effects.

Furthermore, previous studies indicate that the ratings of desirable traits are contingent upon the sex of the spouse (Buss, 1989) and the sex of the in-law (Apostolou, 2007, 2010b). Consequently, if comparisons are made between in-laws and spouses without taking into consideration the sex of the rater and the sex of the ratee, this would result in information loss with respect to identifying differences in budget allocations. Therefore, the points that the female participants allocated to each characteristic for a son-in-law were compared with the respective points allocated for a husband, and the points the male participants allocated for a daughter-in-law were compared with the respective points for a wife.

In order to obtain information on conflict between mothers and sons and fathers and daughters, the budget allocations that female participants gave to each characteristic for a husband were compared with the budget allocations male participants gave for a son-in-law. For instance, if for a given trait women were allocating significantly more points for a husband than men were allocating for a son-in-law, this would indicate a potential conflict between fathers and daughters over this trait. Similarly, the budget allocations for each characteristic that male participants gave for a wife were compared with the budget allocations female participants gave for a daughter-in-law.

## **Results**

*Self vs. daughter*

Table 1 depicts the percentages of the budget spent on each trait across all three budgets. For each trait, the percentage allocated to an in-law is subtracted from the percentage allocated to a spouse and the difference is reported in a third column (D). The numbers in this column thus represent the gains (losses) of offspring (parent). The P-P plots analysis indicates that the sampling distribution of the differences between scores is not normal; thus, to estimate whether the differences in budget allocations are significant, a series of Wilcoxon Signed Rank tests was applied. Since the analysis involves multiple comparisons alpha was set to the more conservative level of .01.

**Table 1.** Within-participants comparisons: Mean percentages allocated to each characteristic

Characteristics	Low Budget (15)				Medium Budget (30)				High Budget (45)									
	Self	Daughter	D	Son	Self	Daughter	D	Son	Self	Daughter	D	Son						
Ambition, industriousness	13.9	12.3	1.6*	12.3	13.8	-1.5	14.2	13.6	0.6	13.4	12.9	0.5	13.5	14.6	-1.1	14.3	14.5	-0.2
Education, intelligence	18.9	21.1	-2.2*	19.5	21.5	-2*	18.5	18.3	0.2	18.2	19.4	-1.2	18.1	17.8	0.3	17.5	17.6	-0.1
Exciting personality	14.6	11.7	2.9**	15.8	12.3	3.5**	12.8	10.7	2.1**	15.6	13.8	1.8**	13.7	11.2	2.5**	14.4	13.9	0.5
Favorable social status	7.1	8	-0.9	6.3	7.8	-1.5	8.2	8.3	-0.1	7.4	8.6	-1.2**	8.9	9.2	-0.3	8.1	8.1	0
Good family background	9.5	14.4	-4.5**	10.8	13.8	-3**	10.3	12.6	-2.3**	10.7	12	-1.3	10.2	12.4	-2.2**	10.6	11.4	-0.8*
Good financial prospects	16.6	17.3	-0.7	13.2	12.3	0.9	16.6	17.9	-1.3*	12.8	12.9	-0.1	17.2	16.9	0.3	13.9	14.2	-0.3
Good looks	13	7.3	5.7**	16.3	12.9	3.4**	13.9	10.9	3**	16.6	14.3	2.3**	12.6	10.4	2.2**	15.5	14.5	1*
Similar religious background	6.4	7.8	-1.4*	5.8	5.6	0.2	5.2	7.5	-2.3**	5.1	6	-0.9	5.6	7.5	-1.9**	5.7	5.7	0

Note: \*  $p < .01$ , \*\*  $p < .001$

For the low budget, when women designed a mate as opposed to a son-in-law, the biggest compromise they made was on good family background, followed by education-intelligence and similar religious background. They allocated the points they had saved to get more good looks, exciting personality and ambition-industriousness. An alternative way to see this is that when women designed a son-in-law as opposed to a husband, they compromised more on good looks, exciting personality and ambition-industriousness, and allocated the points they have saved in getting more of good family background, education-intelligence, and similar religious background. In the low budget we also find disagreement over ambition-industriousness and education-intelligence, traits that have not been identified as conflicting by previous research.

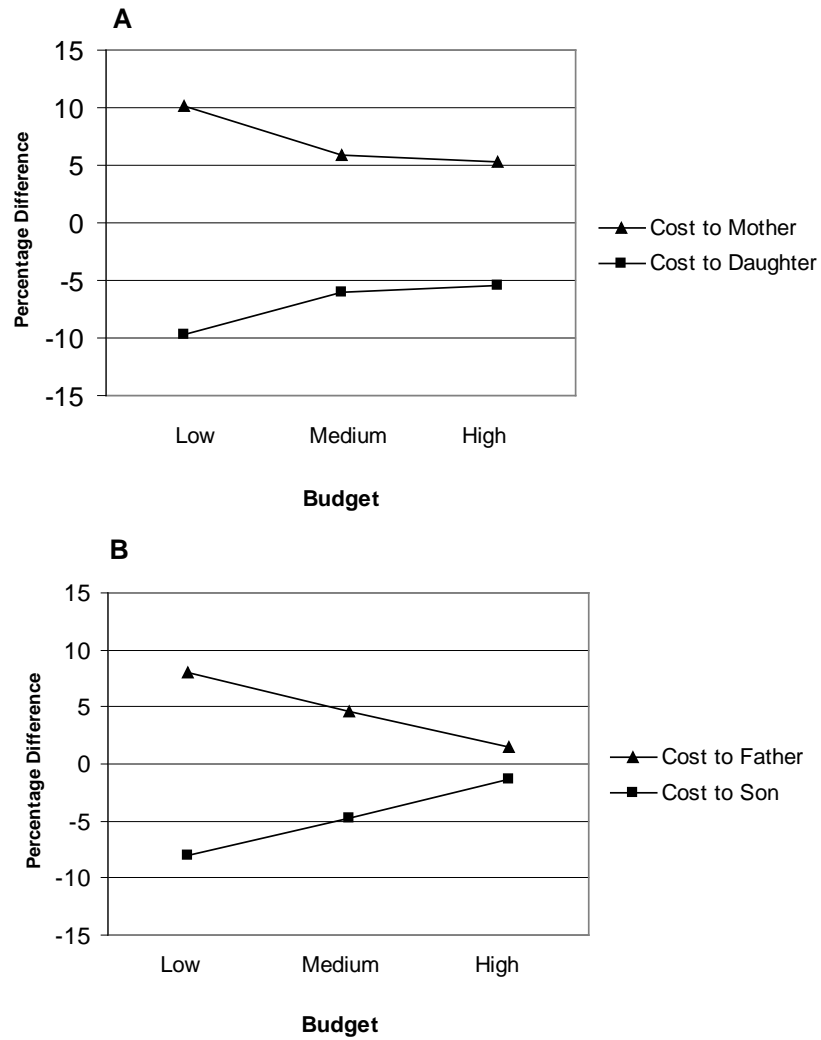
In the medium budget, when women designed a mate they compromised on good family background, similar religious background and good financial prospects, and they allocated the points they had saved in getting good looks and exciting personality. In comparison with the low budget, however, the magnitude of the difference is smaller, indicating that conflict is reduced in the medium budget. For instance, the cost incurred by a parent on good family background in the low budget was 4.5; however, in the medium budget it was only 2.3.

In the high budget, when women designed a mate they compromised on good family background and similar religious background to get exciting personality and good looks. In the high budget, we observe a further decline in the amount of in-law-spouse disagreement, with differences in ambition-industriousness, education-intelligence, and good financial prospects not appearing as significant. Overall, we can see that as budget increased, parental losses (positive number) and offspring losses (negative number) started converging towards zero (Figure 1, panel A). The sharpest decrease took place when we moved from low budget to medium budget. Nonetheless, even in the high budget there is still conflict as the two did not reach zero.

To estimate the overall effects of role and budget, a two-way repeated measures ANOVA was applied in each trait with role (mate seeker, parent) and budget (low, medium, high) entered as the independent variables. The dependent measure was the percentage of the budget spent on a characteristic. Partial eta squared was used to estimate effect size (.01 small effect size, .06 medium effect size, and .14 large effect size), and the alpha level was set to .01. The results are presented in Table 2 where we can see a number of significant main effects for role and budget along with several significant interactions.

A significant main effect of role indicates that participants changed their budget allocations for a given trait on the basis of whether they act as parents or mate-seekers. The direction of the main effects is the same with the results of the analysis based on *t*-tests (e.g., participants allocate more points to the good looks of a spouse than of an in-law). A significant main effect of budget indicates that points' allocation to a given trait changed as budget was relaxed. Finally, a role-budget interaction indicates that self and offspring spending patterns differ at each budget level.

**Figure 1.** Within-participants comparisons of overall costs that result from differential allocations at each budget level



Parent-offspring conflict over mating

**Table 2.** ANOVA results for Study 1

<i>Self vs. Daughter</i>						
<i>Trait</i>	<i>Role</i>		<i>Budget</i>		<i>Interaction</i>	
	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$
Good family background	.000	.21	-	-	.000	.06
Exciting personality	.000	.19	-	-	-	-
Similar religious background	.000	.18	-	-	-	-
Favorable social status	-	-	.003	.19	-	-
Ambition, industriousness	-	-	-	-	.005	.03
Good looks	.000	.26	.001	.08	.000	.06
Good financial prospects	-	-	-	-	-	-
Education-intelligence	-	-	.001	.04	.001	.05

<i>Self vs. Son</i>						
<i>Trait</i>	<i>Role</i>		<i>Budget</i>		<i>Interaction</i>	
	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$
Good family background	.000	.16	-	-	.003	.03
Exciting personality	.000	.16	-	-	.000	.05
Similar religious background	-	-	-	-	-	-
Favorable social status	.002	.06	-	-	-	-
Ambition, industriousness	-	-	.005	.03	-	-
Good looks	.000	.16	-	-	.005	.03
good financial prospects	-	-	-	-	-	-
Education-intelligence	.000	.07	.000	.08	-	-

Parent-offspring conflict over mating

<i>Husband vs. Son-in-law</i>						
<i>Trait</i>	<i>Role</i>		<i>Budget</i>		<i>Interaction</i>	
	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$
Good family background	.002	.03	-	-	.000	.08
Exciting personality	.005	.02	-	-	.000	.03
Similar religious background	-	-	.006	.02	-	-
Favorable social status	-	-	-	-	-	-
Ambition, industriousness	-	-	-	-	-	-
Good looks	.001	.04	.000	.04	.000	.08
Good financial prospects	-	-	-	-	-	-
Education-intelligence	-	-	.000	.05	.000	.02

<i>Wife vs. Daughter-in-law</i>						
<i>Trait</i>	<i>Role</i>		<i>Budget</i>		<i>Interaction</i>	
	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$
Good family background	.000	.04	-	-	-	-
Exciting personality	.001	.04	-	-	-	-
Similar religious background	.001	.04	-	-	-	-
Favorable social status	.001	.04	.000	.03	-	-
Ambition, industriousness	-	-	.000	.03	-	-
Good looks	.000	.07	-	-	-	-
Good financial prospects	-	-	.000	.03	.002	.02
Education-intelligence	-	-	.000	.05	-	-

*Self vs. son*

Table 1 indicates that when men designed a wife they compromised on good family background and education-intelligence and they allocated the points they had saved to exciting personality and good looks. To put it differently, when men designed a daughter-in-law they compromised on exciting personality and good looks and allocated the points they had saved to good family background and education-intelligence. In the medium budget, when men designed a wife they compromised on favorable social status and allocated the points they had saved to good looks and exciting personality. Finally, on the high budget, men compromised only on good family background to get good looks.

We observe that as budget increased the magnitude of conflict was substantially reduced. For instance, in the low budget, men would trade 3.4 percentage points of beauty to get other desirable traits, but in the high budget they would only trade 1 percentage point, which translates into 2.4 percentage points less loss for a mate seeker in a higher budget. We can see that as budget increased, parental losses (positive number) and offspring losses (negative number) started converging towards zero (Figure 1, panel B). There was substantial decrease in conflict when we moved from low to medium budget, and a substantial decrease in conflict when we moved from medium to high budget. Even at the high budget, however, there is still conflict as the two did not reach zero.

As before, a two-way repeated measures ANOVA was applied in each trait with role and budget entered as independent variables. As before, the alpha level was set to .01, and the results are presented in Table 2.

*Husband vs. son-in-law*

Table 3 depicts the percentages of the budget spent on each trait across all three budgets. In each case, the percentage allocated to an in-law is subtracted from the percentage allocated to a spouse and the difference is reported in a third column (D). The data in this column thus represent the gains (losses) of offspring (parent). The P-P plots analysis indicates a moderate violation of the normality assumption. Therefore, to estimate whether the differences are significant, a series of Mann-Whitney U tests was applied. As before the alpha level was set to .01.

For the low budget, we can see that the biggest difference in the budget allocations is found in good looks where women allocated significantly more units to their husbands than men to their sons-in-law. This is followed by good family background, where more points were allocated to a son-in-law than to a husband, and exciting personality, where more points were allocated to a husband than to a son-in-law. Finally, more points were allocated to education-intelligence for a son-in-law than for a husband.

As budget increased and participants had more mate points at their disposal conflict substantially decreased. In particular, at a medium budget, conflict was confined only to good looks where more points were allocated to a husband than to a son-in-law. For the high budget there were no significant differences in budget allocations. The decrease in conflict is depicted in Figure 2, panel A.

To estimate the overall effects of role and budget, a two-way mixed-design ANOVA was applied in each trait with role entered as the between-participants factor (mate seeker, parent) and budget (low, medium, high) entered as the within-participants

Parent-offspring conflict over mating

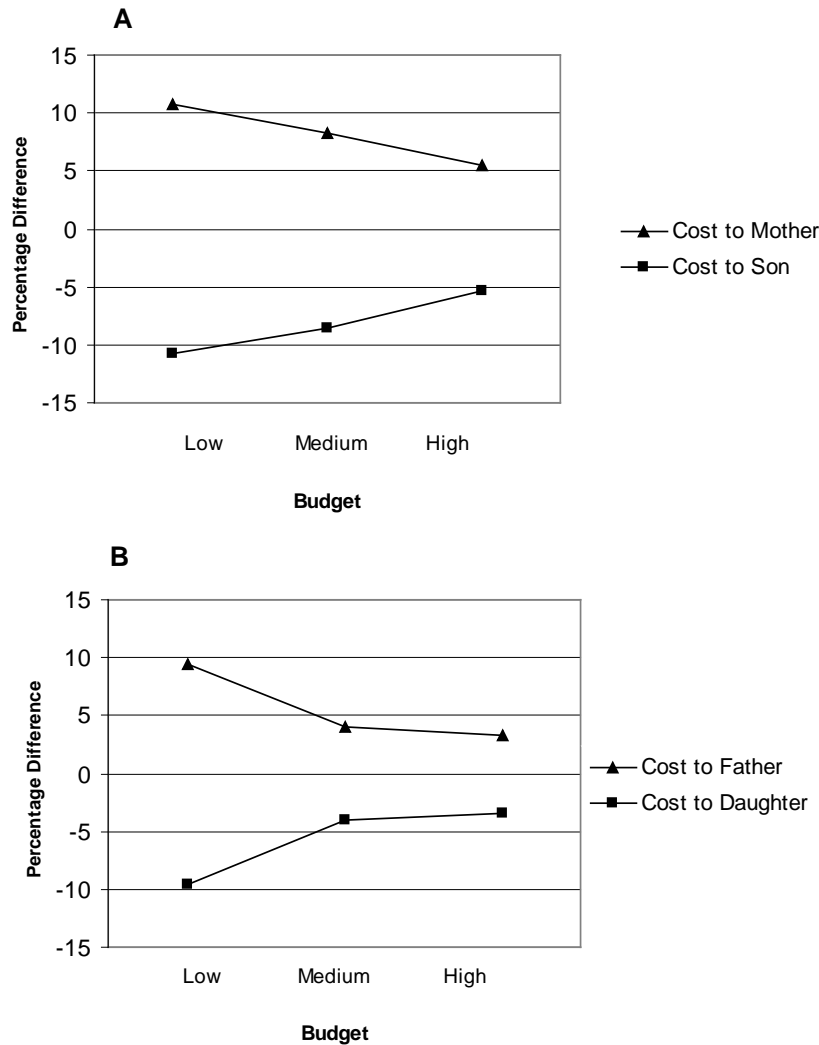
factor. The dependent measure was the percentage of the budget spent on a characteristic. The alpha level was set to .01, and the results are presented in Table 2.

**Table 3.** Between-participants comparisons: Mean percentages allocated to each characteristic

Characteristics	Low Budget (15)				Medium Budget (30)				High Budget (45)									
	Husband	Son-in-law	Daughter-in-law	D	Husband	Son-in-law	Daughter-in-law	D	Husband	Son-in-law	Daughter-in-law	D						
Ambition, industriousness	13.9	14.1	12.3	11.2	1.1	14.2	15.3	-1.1	13.4	12.8	0.6	13.5	15.2	-1.7	14.3	13.6	0.7	
Education, intelligence	18.9	22.6	-3.7*	19.5	20.5	-1	18.5	19.6	-1.1	18.2	18.4	-0.2	18.1	18	0.1	17.5	16.8	0.7
Exciting personality	14.6	10.2	4.4**	15.8	12.7	3.1**	12.8	12.1	0.7	15.6	12.4	3.2**	13.7	12.3	1.4	14.4	12.8	1.6
Favorable social status	7.1	7.8	-0.7	6.3	9	-2.7**	8.2	7.7	0.5	7.4	8.8	-1.4	8.9	8.2	0.7	8.1	9.7	-1.6
Good family background	9.5	14.2	-4.7**	10.8	14.7	-3.9**	10.4	11.4	-1	10.7	13.9	-3.2*	10.2	11.4	-1.2	10.6	12.7	-2.1
Good financial prospects	16.6	16.6	0	13.2	11.1	2.1	16.6	16.4	0.2	12.8	13.5	-0.7	17.2	16.6	0.6	13.9	13.9	0
Good looks	13	8	5**	16.3	11.9	4.4**	13.9	11.3	2.6**	16.6	12.1	4.5**	12.6	12.1	0.5	15.5	13	2.5**
Similar religious background	6.4	6.7	-0.3	5.8	9	-3.2**	5.2	6	-0.8	5.1	8.1	-3**	5.6	6.1	-0.5	5.7	7.4	-1.7

Note: \*  $p < .01$ , \*\*  $p < .001$

**Figure 2.** Between-participants comparisons of overall costs that result from differential allocations at each budget level



*Wife vs. daughter-in-law*

From Table 3 we can see that in the low budget, women allocated significantly fewer points to the good looks of their daughters-in-law than men to the good looks of their wives. Also, more points were allocated by women to the good family background of a daughter-in-law than by men to the good family background of a wife. Similarly, more points were allocated to the similar religious background of a daughter-in-law than that of a wife. Finally, more points were allocated to the exciting personality of a daughter-in-law than that of a wife.

At the medium budget, women allocated significantly fewer points to the good looks and exciting personality of their daughters-in-law than men to the good looks and exciting personality of their wives. Furthermore, mothers allocated more points to the good family and similar religious background of their daughters-in-law than men to their wives.

For the high budget, conflict is confined only to good looks where more points were allocated to a wife than to a daughter-in-law. The decrease in conflict is depicted in Figure 2, panel B.

As before, a two-way mixed-design ANOVA was applied, with role entered as the between-participants factor and budget entered as the within-participants factor. The alpha level was set to .01, and the results are presented in Table 2.

## **Study 2**

### **Method**

#### *Participants*

Three research assistants were employed to carry out data collection. The research assistants recruited families who were willing to participate in the survey. Participation was on a volunteer basis and no payment was given. To qualify for participation a family should have at least one child who is over 13 years of age. The assistants visited the family home and administered the survey. Caution was taken that each family member filled in the questionnaire without been influenced by other family members. Completed questionnaire were put in an unmarked envelope and were sealed.

Overall, 198 families, all Greek-Cypriot, consisting of 299 parents (182 women, 117 men) and 223 offspring (137 daughters, 86 sons), took part. The mean age of mothers was 50.4 ( $SD = 9.1$ , Range = 41), and the mean age of fathers was 53.4 ( $SD = 9.7$ , Range = 40). The mean age for daughters was 23.8 ( $SD = 7.9$ , Range = 37), and the mean age for sons was 23.2 ( $SD = 9$ , Range = 32). With respect to parents, 90.1% of mothers were married, 9.4% were divorced and 0.6% were in a relationship. Furthermore, 97.4% of fathers were married, 1.7% were single and 0.9% were in a relationship. With respect to daughters, 51.8% were single, 26.3% were in a relationship, 20.4% were married, and 1.5% were divorced. With respect to sons, 60.5% were single, 20.9% were in a relationship, 14% were married, and 4.7% were divorced.

#### *Materials*

A modified version of the instrument developed in Study 1 was employed here. In particular, two separate surveys were prepared, one for parents and one for their children. The parents' survey consisted of three parts. In the first part, demographic data were collected: sex, age, nationality, marital status, number of daughters, and number of sons, age of the oldest male child, and age of the oldest female child. The rest of the survey was divided into two parts. In each part, participants were given a different budget of "mate points" (low budget – 15 mate points, medium budget – 30 mate points, high budget - 45 mate points), and they were asked to allocate them across eight different traits for a daughter-in-law and a son-in-law. For each trait they could allocate a maximum of ten mate points. The presentation order of budget and in-law was counter-balanced. The survey administered to children had a similar format, with the difference being that participants had to allocate their mate points in obtaining a husband or a wife. The presentation order of budget was counter-balanced.

## **Results**

### *Mother-daughter and mother-son comparisons*

Table 4 depicts the percentages of the budget spent on each trait across all three budgets. In each case, the percentage allocated to an in-law is subtracted from the percentage allocated to a spouse and the difference is reported in a third column (D). The data in this column thus represent the gains (losses) of offspring (parent). As the assumptions of parametric tests hold reasonably well for this dataset, a paired sample *t*-test was employed to make comparisons between the budget allocations for each characteristic for mothers and their children at each budget level. Since, the analysis involves multiple comparisons, alpha was set to the more conservative level of .01.

To begin with, we can see that daughters allocated a greater percentage of their budget than their mothers in getting good looks and exciting personality across all budget levels. To “finance” this spending, they compromised on traits such as good family background, similar religious background, and ambition and industriousness. On the other hand, mothers allocated more of their budget in good family background and similar religious background. Divergence in budget allocations is weaker for similar religious background as a difference is found only in the low budget; in medium and high budgets the difference is in the predicted direction but it is not significant. To “finance” their spending, mothers compromised on good looks and exciting personality. Finally, there is a divergence in budget allocations in ambition-industriousness trait, with mothers allocating more of their budget to obtain it than their daughters.

Sons on the other hand allocated more of their budget to getting good looks in a wife than mothers in a daughter-in-law. This difference remained significant across all budget levels. To get more beauty, sons compromised on good family background, favorable social status and similar religious background. However, as opposed to mother-daughter comparisons there was no divergence in budget allocations over exciting personality. Additionally, in the high budget, sons allocated a greater percentage of their budgets than their mothers to ambition, industriousness trait. On the other hand, mothers allocated more of their budget to getting good family background across all budget levels. Divergence in budget allocations for similar religious background is significant only in the high budget where mothers allocated a greater percentage of their budget to getting this trait than their sons. Also, in the low budget mothers allocated a greater percentage of their budget to obtaining favorable social status than their sons. To “finance” their spending, mothers predominantly compromised on good looks.

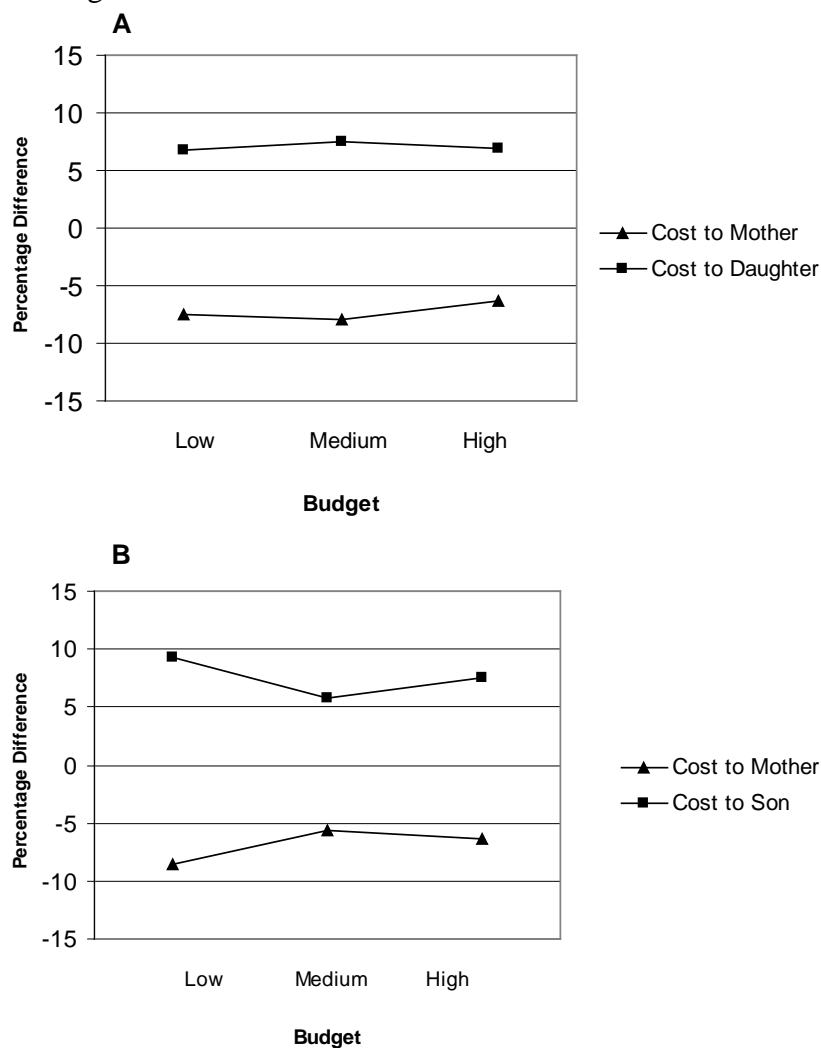
**Table 4.** Mother vs. children comparisons: Mean percentages allocated to each characteristic

Characteristics	Low Budget (15)				Medium Budget (30)				High Budget (45)									
	Mother	Daughter	D	Son	Mother	Daughter	D	Son	Mother	Daughter	D	Son						
	(n)	(n)		(n)	(n)	(n)		(n)	(n)	(n)		(n)						
Ambition, industriousness	17.4 (11.3)	15.1 (7.5)	2.3	10.1 (7.4)	12.1 (7.2)	-2	15.5 (8.7)	14.8 (7)	0.7	12.7 (7.7)	11.7 (5.5)	1	16.3 (5.8)	14.2 (5.5)	2.1**	12.6 (6.4)	15.2 (6)	-2.6*
Education, intelligence	14.8 (10.2)	15.2 (9.3)	-0.4	17.9 (10.8)	15.4 (8.3)	2.5	16.8 (7.8)	15.1 (7.2)	1.7	15.5 (7.2)	15.5 (5.8)	0	14.6 (6)	15.6 (5.6)	-1	14.8 (5.3)	15.8 (4.4)	-1
Exciting personality	11 (9.6)	15 (10.3)	-4**	14.3 (9.7)	15 (9.4)	-0.7	11.4 (9.1)	14.8 (8.9)	-3.4**	13.6 (7.5)	14.7 (8.1)	-1.1	11.7 (5.9)	14.2 (6.4)	-2.5**	14.2 (6)	12.7 (7.1)	1.5
Favorable social status	8.9 (7.5)	9 (6.7)	-0.1	11.2 (8.5)	8.7 (8)	2.5**	9.4 (7)	9.6 (6.9)	-0.2	9.1 (5.9)	9.2 (8.5)	-0.1	9.8 (5.9)	8.8 (5.2)	1	11.1 (6)	9.3 (6.7)	1.8
Good family background	11.9 (8.5)	10.5 (7.7)	1.4	12 (9.4)	8.2 (7)	3.8*	13.2 (7.4)	10.1 (6.9)	3.1**	13.8 (7.8)	10.3 (6.4)	3.5**	14.1 (6.7)	11.2 (6.3)	2.9**	14 (5.9)	11.7 (6.2)	2.3*
Good financial prospects	10 (8.5)	10 (6.9)	0	10.6 (7.4)	10.1 (7.6)	0.5	11.5 (8)	10.4 (6.4)	1.1	10.8 (6.6)	10.6 (8.1)	0.2	12 (6.4)	12 (6.3)	0	11.3 (4.9)	11.3 (7.1)	0
Good looks	10.2 (7.5)	13.2 (9.2)	-3*	14 (8)	18.8 (9.6)	-4.8**	9 (6.1)	13.3 (7.5)	-4.3**	13.2 (5.9)	17.7 (7.2)	-4.5**	9.2 (5)	12 (6.2)	-2.8**	12.8 (5.1)	15.5 (5.4)	-2.7**
Similar religious background	15 (13.5)	11.9 (12.7)	3.1*	10.2 (10.8)	11.3 (12.2)	-1.1	12.4 (10.4)	11.5 (9.6)	0.9	10.9 (9.8)	9.8 (8.3)	1.1	11.2 (7.8)	10.3 (7.6)	0.9	9.4 (6.8)	7.4 (7)	2*

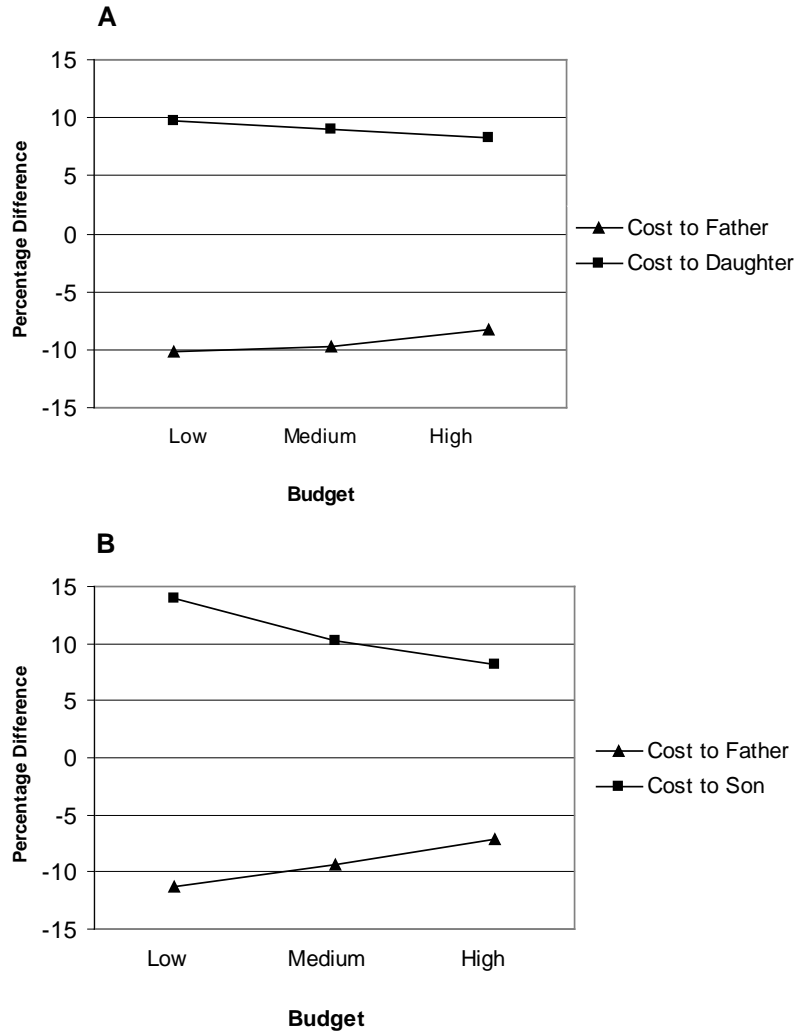
Note: \*  $p < .01$ , \*\*  $p < .001$

The mean cost to parent and the mean cost to offspring for each budget level are depicted in Figures 3 and 4, where it can be seen that conflict decreases as budget increases. However, the magnitude of conflict decrease is generally small. In particular, in Figure 3, panel A we can see that the size of conflict between mothers and daughters remains roughly the same at all budget levels. In panel B we can see that when budget changes from low to medium there is a substantial reduction in conflict between mothers and sons, but when the budget changes from medium to high conflict remains relatively stable.

**Figure 3.** Overall costs that result from differential allocations between mothers and their offspring at each budget level



**Figure 4.** Overall costs that result from differential allocations between fathers and their offspring at each budget level



To estimate the overall effects of role and budget for mothers versus daughters, a two-way repeated measures ANOVA was applied in each trait with family member (parent, child) and budget (low, medium, high) entered as the independent variables. The dependent measure was the percentage of the budget spent on each characteristic. A similar procedure was followed in order to estimate the overall effects of family member and budget for mothers versus sons.

The alpha level was set to .01, and the results are presented in Table 5. A significant main effect of family member indicates a difference in budget allocations between parents and their children. The direction of the main effects is the same with the results of the analysis based on *t*-tests (e.g., parents allocated more points to the good family background of an in-law than their children to a spouse). A significant main effect of budget indicates that points' allocation to a given trait changed as budget was relaxed. Finally, a role-budget interaction indicates that parents and offspring spending patterns differ at each budget level.

**Table 5.** ANOVA results for Study 2

<i>Mother vs. Daughter</i>						
<i>Trait</i>	<i>Family Member</i>		<i>Budget</i>		<i>Interaction</i>	
	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$
Good family background	.000	.10	.001	.05	-	-
Exciting personality	.000	.14	-	-	-	-
Similar religious background	-	-	.000	.07	-	-
Favorable social status	-	-	-	-	-	-
Ambition, industriousness	.007	.06	-	-	-	-
Good looks	.000	.18	-	-	-	-
Good financial prospects	-	-	.000	.07	-	-
Education-intelligence	-	-	-	-	-	-

<i>Mother vs. Son</i>						
<i>Trait</i>	<i>Family Member</i>		<i>Budget</i>		<i>Interaction</i>	
	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$
Good family background	.000	.16	.000	.12	-	-
Exciting personality	-	-	-	-	-	-
Similar religious background	-	-	.001	.11	-	-
Favorable social status	-	-	-	-	-	-
Ambition, industriousness	-	-	.000	.17	.008	.07
Good looks	.000	.28	.002	.09	-	-
Good financial prospects	-	-	-	-	-	-
Education-intelligence	-	-	-	-	-	-

*Parent-offspring conflict over mating*

<i>Father vs. Daughter</i>						
<i>Trait</i>	<i>Family Member</i>		<i>Budget</i>		<i>Interaction</i>	
	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$
Good family background	.002	.12	.006	.07	-	-
Exciting personality	-	-	-	-	-	-
Similar religious background	-	-	.000	.12	-	-
Favorable social status	-	-	-	-	-	-
Ambition, industriousness	.001	.15	-	-	-	-
Good looks	.000	.27	.000	.15	-	-
Good financial prospects	-	-	-	-	-	-
Education-intelligence	-	-	-	-	-	-

<i>Father vs. Son</i>						
<i>Trait</i>	<i>Family Member</i>		<i>Budget</i>		<i>Interaction</i>	
	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$	<i>p-value</i>	$\eta_p^2$
Good family background	.000	.21	.003	.10	-	-
Exciting personality	.003	.14	.000	.13	-	-
Similar religious background	-	-	.01	.08	-	-
Favorable social status	-	-	.005	.13	-	-
Ambition, industriousness	.000	.14	-	-	-	-
Good looks	.000	.28	.000	.19	-	-
Good financial prospects	-	-	-	-	-	-
Education-intelligence	-	-	-	-	-	-

*Father-daughter and father-son comparisons*

As before, a series of paired-samples *t*-tests was employed to make comparisons between the budget allocations for each characteristic for fathers and their children at each budget level. Table 6 indicates that across all budget levels daughters allocated significantly more of their budgets to getting good looks and exciting personality for their husbands than their fathers for their sons-in-law. To “finance” their spending, daughters compromised on traits such as good family background, ambition industriousness, and favorable social status. On the other hand, in medium and high budgets fathers allocated more of their budgets to good family background, while in low and high budgets they allocated more to favorable social status, and in medium budget they allocated more units to ambition-industriousness. This spending was “financed” by compromises in good looks and exciting personality. Finally, with respect to similar religious background no differences were found at any budget level.

Sons spent significantly more of their budget than their fathers on obtaining good looks across all budget levels. With the exception of the high budget, sons allocated a greater percentage of their budgets than their fathers to exciting personality, and they “financed” their spending by making compromises in good family background, similar religious background and favorable social status. On the other hand, across all budget levels fathers allocated a higher percentage of their budget to obtaining good family background, while in low and high budgets they allocated more of their budget to obtaining similar religious background. Also, in low budget they allocated more of their budget to obtaining favorable social status for their daughters-in-law. This spending was “financed” by compromises on good looks and exciting personality.

In Figure 4, panel A we see a small decrease in conflict between fathers and daughters when budget increases from low to medium and from medium to high. In panel B we can see that there is a considerable reduction in conflict between fathers and sons when budget constrain is relaxed from low to medium and from medium to high.

To estimate the overall effects of role and budget for fathers versus daughters, a two-way repeated measures ANOVA was applied in each trait with family member (parent, child) and budget (low, medium, high) entered as independent variables. The dependent measure was the percentage of the budget spent on each characteristic. A similar procedure was followed in order to estimate the overall effects of family member and budget for fathers versus sons. In both cases, the alpha level was set to .01. The results are presented in Table 5.

**Table 6.** Father vs. children comparisons: Mean percentages allocated to each characteristic

Characteristics	Low Budget (15)				Medium Budget (30)				High Budget (45)						
	Father	Daughter	D	Son	Father	Daughter	D	Son	Father	Daughter	D	Son			
	(9.2)	(7.4)	2.8	(9.3)	14	14.4	1.8	(8.2)	18.3	14.4	3.9**	11.4			
Ambition, industriousness	17.2	14.4	2.8	(9.3)	14	14.4	1.8	(8.2)	18.3	14.4	3.9**	11.4	15.4	14.5	0.9
	(9.2)	(7.4)			(9.3)	(7.4)			(8.2)	(7.9)		(5.1)	(5.5)	(6.7)	
Education, intelligence	12	14.2	-2.2	(8.8)	13.1	14.7	-1.6	(6.4)	13	14.6	-1.6	15.2	15.4	16.2	-0.8
	(6.5)	(9.7)			(8.1)	(8.1)			(6.4)	(7.6)		(6.6)	(5.3)	(4.6)	
Exciting personality	10	13.8	-3.8*	(8.1)	11.1	14.4	-3.3*	(6.3)	9.6	13.2	-3.6**	14.6	9.8	11.9	-2.1
	(8.8)	(11)			(8.1)	(9.1)			(6.3)	(9.3)		(7.6)	(6.1)	(7.4)	
Favorable social status	11.7	9.3	2.4*	(7)	8.6	11.7	3.1**	(5.7)	10.9	10.24	0.7	9.6	11.5	10.4	1.1
	(6.7)	(6.9)			(6.9)	(7.1)			(5.7)	(7.1)		(8.5)	(6.2)	(6.2)	
Good family background	13.5	12.1	1.4	(7.4)	8.6	13.2	4.6**	(5.1)	14.5	11.6	2.9*	10.1	15.2	11.7	3.5**
	(7.6)	(9.3)			(6.6)	(7.6)			(5.1)	(7.6)		(6.1)	(5.3)	(6.1)	
Good financial prospects	11	10.1	0.9	(8.9)	12.4	11.2	1.2	(6.2)	11.9	10.4	1.5	10.7	11.6	12.2	-0.6
	(7)	(6.6)			(8.4)	(8.4)			(6.2)	(6.4)		(8.5)	(7.2)	(7.3)	
Good looks	10.6	14.7	-4.1*	(8.8)	13.9	20.3	-6.4**	(8.4)	10.1	14.7	-4.6**	18.9	11.9	15.6	-3.7**
	(7.6)	(10.3)			(8.8)	(8.4)			(5.4)	(8)		(7.3)	(5.9)	(5.7)	
Similar religious background	13.5	11.2	2.3	(11.1)	8.3	11.3	3.2*	(9.2)	11.3	11.3	0	8.7	9.6	6.9	2.7*
	(13.3)	(11.7)			(9.2)	(10.1)			(9.2)	(10.1)		(8.2)	(7.3)	(6.9)	

Note: \*  $p < .01$ , \*\*  $p < .001$

## **Discussion**

The results from two independent studies indicate that asymmetries between in-law and mate preferences have consequent asymmetries in the compromises people make when they exercise mate and in-law choice. In particular, when individuals were asked to spend their budget on a spouse, they compromised on traits such as good family background to get more of beauty and exciting personality. On the other hand, when they were asked to spend their budget on an in-law they compromised on traits such as beauty to get more of good family background and similar religious background.

Furthermore, asymmetrical compromises were also found for traits such as education and intelligence, which have not been identified as conflicting by previous research. Finally, in-law-spouse differences in budget allocations decreased substantially as budget increased; however, this budget effect was smaller in parents versus children than in parents versus self comparisons.

Although the two studies produced similar results that are consistent with the original hypotheses, there were also differences. In particular, the degree of conflict was not equal across traits, while there was a trend towards a higher level of conflict in Study 2 than in Study 1. In addition, the budget effect was much more pronounced in Study 1 than in Study 2. These differences may reflect cultural differences, as all of the participants in Study 1 were British, while all of the participants in Study 2 were Greek Cypriots. More importantly, the results of Study 1 reflect innate predispositions while the results of Study 2 reflect innate predispositions plus socialization and age effects. For instance, if people emphasize beauty more when they are younger than when they are older, this would amplify the differences in budget allocations in Study 2 by making conflict less sensitive to budget effects. Moreover, in Cyprus, people are much more religious than they are in the UK, which means that in the former context, parents and children may agree to a greater extent that a similar religious background is important in a prospective mate. This may potentially account for the lower level of conflict that was found regarding this trait in Study 2.

Based on these findings it can be predicted that when compromises need to be made (which is usually the case given that it is very rare for individuals to enjoy such a high mate value that they do not need to make any compromises) in societies where parents have the upper hand in mate choice (e.g., India), their children are going to find themselves married to individuals who are not as good looking and who do not have so many desirable personality traits, because their parents have compromised on these qualities. In contrast, in societies where individuals are generally free to exercise choice (e.g., the UK), parents are going to find themselves with in-laws of a poorer family background than they desire and perhaps even of a different religion from their own. This is because their offspring have compromised on these qualities in favor of beauty and personality traits.

In addition, it is expected that parents will frequently complain that their children have married individuals who are poorer and have a lower status than they could get. However, this disagreement is not because parents and offspring disagree over how much they value wealth and social status in an in-law and in a mate respectively; it is because children have compromised on these qualities more than their parents would like in order to

get traits, such as beauty, that they prefer more than their parents.

Moreover, the inverse relationship between mate value and conflict indicates that in a scenario where mate seekers have a high mate budget (e.g., they are good looking, they have good personalities, etc.), the conflict with their parents should be less than when their budget is small (e.g., they are not good looking, they have a health problem, etc.). In the rare case where an individual enjoys a very high mate value, there is the possibility that parent-offspring conflict over mating completely disappears as individuals do not need to make any compromises. Nonetheless, if you are a “10” it is not easy to find another “10” to marry, simply because “10s” are very rare. This means that you may also need to make compromises that are different from the ones that your parents are willing to make. Accordingly, even in this scenario, conflict over mating does not disappear completely.

Furthermore, wealthy and high-status families have more at stake in the mating choices of their children and thus they are more eager to control their mating behavior, which may amplify any parent-child conflict (Goode, 1982). In addition, highly attractive offspring may have more suitors and more opportunities to initiate sexual intercourse early in life, something that will meet with strong opposition from their parents (Apostolou, 2010a). Thus, although an increased budget creates the potential for less conflict, certain moderating factors diminish this potential.

The strength of Study 2 is that it employs parents and their actual children. Also, along with Study 1, it replicates parent-offspring conflict over beauty, similar religious background, good family background and exciting personality using a different method, while it is only the second study that explores parent-offspring conflict over mating using parents and their actual children. This study is not without limitations however, one being that the sample was not equally balanced between female and male participants. This is because men were less willing to participate in the study than women. As consequence, men with specific characteristics (e.g., prone to cooperativeness) may be overrepresented in the sample. Although it is unlikely that this has affected the results, a future study that will involve a monetary reward, so as to get a better response rate from male participants, can address this issue.

A further limitation is that the design employed does not control for alternative explanations based on social learning. For instance, most people would ascribe the finding that children value beauty more and family background less in a spouse than their parents do in an in-law to differences in socialization: Life experience has taught parents that beauty wears off with time, so it is not a characteristic that mate choice should be based on. Similarly, older people who have experienced the importance of a good family background in a spouse (e.g., support) would value this trait more than younger and less experienced ones.

This limitation is addressed by Study 1. In particular, the social learning argument predicts a difference in budget allocations between parents and their offspring for beauty and family background. What it does not predict is that the same individuals with the same life experiences differentiate their budget allocations on the basis of whether they are choosing spouses or in-laws. This provides strong evidence for the evolutionary argument presented here because it limits the space for alternative explanations based on social learning. It may still be the case that when making decisions as a parent, participants were

inspired by different social norms than when making decisions about their own partner. To support this argument, however, one needs to identify these norms and demonstrate that they actually affect mate choice.

Last but not least, regarding the way in which the studies are constructed, at higher budgets participants are “forced” to buy up the remaining traits as they cannot spend more than 10 units on any trait (a ceiling effect). This is potentially a limitation; however, it reflects a real-world situation. In particular, the value of a trait cannot increase ad infinitum, as there is a ceiling effect in regards to how beautiful, strong, healthy, hardworking, etc. one can be. Thus, individuals with a high mating value will inevitably “spend” their surplus budget on traits that may not interest them as much.

To summarize, if divergence between in-law and mate preferences do not lead to costly compromises for the party not exercising choice, then parent-offspring disagreement over mating would have been evolutionary neutral. Actually, if this was the case, divergence in preferences would not have evolved in the first place. However, the results presented here demonstrate that this is not so: Asymmetries between in-law and mate preferences interact with the tradeoffs nature of mating resulting into asymmetrical compromises that are costly to the party not exercising choice.

Accordingly, if parents leave their children free to exercise mate choice, they will suffer fitness costs from losses in desirable qualities. This has substantial implications for the evolution of human behavior: Evolution should have optimized parents’ behavior to control offspring’s mating decisions in a way that promotes their own in-law choices. In turn, this would give rise to social structures such as arranged marriage that uphold this control, and effectively will determine the direction of sexual selection by leading to differential reproduction of individuals with traits that appeal to parents (Apostolou, 2010c). The substantial implications of parent-offspring disagreement over mating should be the focus of future research efforts.

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