I will survive!
Gender discrimination in a household saving decisions experiment[*]

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Abstract

We investigate the gender specific intertemporal allocation behavior of spouses with different deterministic life expectations in an experiment where the gender of one's partner is known. In each period of their life both partners propose a consumption level one of which is then randomly implemented. To allow for learning one experiences many "lives". Participants achieve a rather high degree of optimality that does not change over time. Independent of the own gender a participant is nicer to women and acts more selfishly if the partner is a man. Participants are not aware of their discriminating behavior.

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JEL-Classification: C73, C91, D91

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We investigate the gender specific intertemporal allocation behavior of spouses with different deterministic life expectations in an experiment where the gender of one's partner is known. In each period of their life both partners propose a consumption level one of which is then randomly implemented. To allow for learning one experiences many "lives". Participants achieve a rather high degree of optimality that does not change over time. Independent of the own gender a participant is nicer to women and acts more selfishly if the partner is a man. Participants are not aware of their discriminating behavior.

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The fact that women and men often behave differently is already common knowledge at least among psychologists. Many studies in various fields of social and behavioral sciences have shown differences in noneconomic settings. But only a few studies tried to find out if there are also differences concerning economic decisions.

But do woman and man behave differently in any case or does their behavior depend on their partner? Many studies report that both sexes act "nicer" towards females than towards males. Furthermore, both sexes show higher cooperation levels when they interact with women than with men.

Kerr and MacCoun (1985) let subjects perform a simple motor production task and told them that they were performing the task in cooperative dyads. If the partner was a man, both were less cooperative. Men were less willing to free ride if their partner was a woman than if their partner was a man whereas women seemed more willing to do so on a male partner than on a female partner. In ultimatum games there are similar results. Eckel and Grossman (2001) report that in an ultimatum game they conducted, men showed some kind of chivalry towards women. Furthermore, they observed that given offers by women are more likely to be accepted. In addition, women reject given offers less often. This combination, less rejection and more acceptance, leads to the conclusion that women cooperate significantly more often with each other than with men. They call this effect solidarity. Accidentally, this leads to higher average earnings of women. Studies investigating dictator games confirm these findings. Dufwenberg and Muren (2002) observed that average donations from women are higher than those from men. Additionally men give significantly more often nothing. Nevertheless, both men and women donate more to women. Saad and Gill (2001) analyzed a dictator game as well and observed that individuals tend to allocate rewards more generously to females than to males. Especially men showed more generous behavior towards females. Moreover, males seemed to be more influenced by opposite-sex recipients than females. Ortmann and Tichy (1999) also observed that female subjects are significantly more likely to cooperate than male subjects. But this is true only for the first round of their prisoner's dilemma-type game, the effect disappears by the last round.

Still, other studies found completely different results. In an experimental ultimatum game conducted by Solnick (2001) both men and women make lower offers to women than to men. Women are expected to accept less and to give more. Both genders paired with a woman had a higher threshold for acceptance than those paired with a man. Consequently, men on average earned more than women in both roles. Those players who were paired with women earned most. Males attracted more generous offers, particularly from female partners. The average offer in the female-female pairs was lower. By contrast, there were no differences in the offers made by both genders if they didn't know their partner's gender. Experiments in the public goods sphere have shown that women contribute slightly less when they knew that all or most of the other group members are women whereas men contribute more when interacting only or mostly with other men (Sell *et al.*, 1993). But there are also different explanations. (Andreoni and Vesterlund, 2001) ascertain that it is depending on the price of giving which gender is more generous. Women tend to give more when it is expensive whereas men are more altruistic when it is relatively cheap. Furthermore, men are either perfectly selfish or perfectly selfless. Women in contrast show a preference for equal sharing.

Deducting from these studies, we conclude that there exists an impact of the partner's gender on the decisions people make. This will be tested in our experiment.

An area where the gender of the partner is known and important are two-person households. Here couples have to decide how much of the available money they want to consume and how much they want to save for future times. But how long this future will last is usually quite uncertain. Generally, women and men have unequal life expectations. Women should have more interest in saving decisions because they typically live longer than men (see, e. g. Browning, 2000). Additionally, wives are in most cases younger than their husbands. Therefore, conflicting interests of spouses are the rule rather than an exception. These conflicts may be resolved according to some power due to relative income (e. g. Phipps and Burton, 1998; Vogler and Pahl, 1994) or expertise (Meier *et al.*, 1999). Nevertheless, traditional economic models treat households as a single individual, and do not allow for separate preferences and possible conflicts of interest between the individuals in a partnership. Except for a few articles on consumer research (e. g. Corfman and Lehmann,

1987; Qualls and Jaffe, 1992; Reiss and Webster, 1997) two-person households have only very recently been investigated (see, e. g. Wirl and Feichtinger, 2002).

For our experiment we do not want to deal with the fine nuances of intra-household bargaining (for such bargaining models see, e. g. Chen and Wooley, 2001; Lundberg and Pollak, 1996; Manser and Brown, 1980).[1] We are just interested whether individual saving decisions of couples are influenced by the known gender of the partner. Thus, by assuming periodic random dictatorship we allow both partners to be decisive. They confront the different incentives of both partners and must also anticipate the future allocation choices of the other. Consequently, we embed the already examined dictator game in a still artificial but more natural decision environment. Accordingly, this paper is a contribution in a novel context to the literature on gender differences and discrimination in economic decision making.

For our savings experiment we adopt the scenario of Anderhub *et al.* (2002), i. e. we consider couples that consist of either a female and a male or of two females or two males. The experiment allows for "reincarnation". More specifically participants experienced successively two "single" lives and eight "couple" lives without changing their role and their partner. This cannot be justified by the fact that successive multiple marriages have become more frequent since in such a case marriages last equally long for both partners. In dynamic allocation tasks it seems, however, utterly necessary to allow for learning (see Anderhub and Güth, 1999). In actual life there is no "reincarnation" but one may learn from others' experiences like those of parents and other relatives. In our experiment, these are substituted by own experiences.

In section I we introduce the dynamic decision model with the two players F and M which is solved for the conditions used in the experiment. The experimental design is introduced in section II. After analyzing the results in section III our main conclusions are finally summarized (section IV).

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1 For a more general survey on decision making within partnerships see Kirchler *et al.* (2001).

I. The Dynamic Allocation Game

For the two players F and M let f, respectively m denote their life expectations where we assume

(1) $f > m > 1$,

i. e. F-players live longer. Irrespective on that, M-players also face an intertemporal allocation problem. Apart from the difference in life expectations we do not impose any differences. More specifically, both partners evaluate a pattern $\zeta = (C_1, \ldots, C_T)$ of consumption values C_T in periods $t = 1, \ldots, T(\leq f)$ according to

(2) $U_F = \prod_{t=1}^{f} C_t$ and $U_M = \prod_{t=1}^{m} C_t.$

Thus, partners would choose the same consumption pattern if they had identical life expectations.

To determine ζ we assume that in every period t both partners F and M submit a proposal y_t and x_t stating how much to spend in that period t. After that it is then independently and randomly decided (with equal probabilities) in each period $t = 1$ to m which of the two proposals is implemented, i. e. whether $C_t = y_t$ or $C_t = x_t$ applies. Of course, consumption patterns ζ are restricted by the available funds. Let $W_1(> 0)$ denote the initial wealth which can be used for consumption purposes. Since

(3) $W_t = W_{t-1} - C_{t-1}$ for $t \geq 2$,

early consumption restricts later consumption so that

(4) $0 \leq x_t \leq W_t$, $0 \leq y_t \leq W_t$ and thus $0 \leq C_t \leq W_t$

must hold for all periods $t = 1, 2, \ldots$.

To derive the optimal behavior we assume perfectly opportunistic and risk neutral players. We assume risk neutrality since, due to their many "lives", participants should mainly be motivated by what they earn on average (see also Eichberger *et al.*, forthcoming; Rabin, 2000). The constructive proof (see the

appendix of Anderhub *et al.*, 2002) shows that we mainly rely on dominance arguments in the sense of dominant strategies. As opposed to other game theoretic contexts, risk neutrality does not have to be commonly known.

For $i = F, M$ a strategy $s_i(\cdot)$ must assign a proposal (y_t, respectively x_t) for the consumption level C_t in period t for all residual wealth levels W_t in t and for all possible periods t. Optimal choices $y_t^\star(W_t)$ and $x_t^\star(W_t)$ will, of course, anticipate rational future decision making. By applying backward induction one can prove (see the appendix of Anderhub *et al.*, 2002)

$$(5) \quad y_t^\star(W_t) = \frac{W_t}{f - t + 1} \quad \text{and} \quad x_t^\star(W_t) = \frac{W_t}{m - t + 1},$$

where, of course, $y_t^\star(\cdot)$ applies to periods $t = 1, ..., f$ and $x_t^\star(\cdot)$ only to periods $t = 1, ..., m$.

Therefore, it turns out that optimal behavior does not depend on what the other intends to do: Optimal behavior requires perfect consumption smoothing over the own remaining life time where optimality means to maximize one's own intertemporal payoff expectations.[2]

Although the decision problem is quite complex, e. g. in the sense of a dynamic game, the optimal behavior is quite obvious and prominent. Thus, both players will certainly be very close to the optimal conditional consumption smoothing as Anderhub *et al.* (2002) already observed. We expect the decisions of the M-player to be most relevant for our analysis. If the M-player opportunistically consumes the whole residual endowment in the fourth period the earnings of his F-partner in this life are then equal to zero. If the M-player leaves some endowment for consumption after the fourth period he reduces his own earnings but allows the F-player to earn something as well. Leaving exactly the number of units that the F-player lives longer will ensure equal earnings for both players in the according life. Thus, whether the M-player leaves any endowment for his longer living F-partner after his last period of life may reveal insightful gender differences in our couple setting. Does a female behave differently in the role of the M-player, maybe because she sympathizes more with the needs of an F-player than a male does?

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2 Due to repeated random dictatorship consumption sequences are stochastic.

II. Experimental Design

In the experiment a participant experiences 10 successive "lives", always assuming the same role F or M what should provide better chances for learning. The first two lives are "single lives", whereas lives 3 to 10 are "couple lives". Within the couple lives there is no rematching. The participants are playing 8 lives with the same partner. Thus, "reincarnation" only allows to learn how to "live" with the same partner and not to diversify by playing differently with different partners.

We run four treatments with identical initial endowments $W_1 = 21$ and life expectations of $m = 4$ and $f = 6$. Furthermore, the partner's gender is always known. In treatment (i) a male assumes the position of the M-player and a female that of the F-player, and vice versa in treatment (ii). In treatment (iii) both roles are assumed by females and, finally, in treatment (iv) both roles are assumed by males. This design allows to distinguish between discrimination against a gender and gender specific behavior.

Payoffs are measured in points, summed up over all rounds, and then transformed into Euro (€) by 8 points = € 0.01. In addition to their earnings participants received a show up fee of € 2.50.

III. Experimental Results

For our analysis we will introduce two derived measures. Since we are interested in whether and how close our participants approach (conditional) optimality in the sense of conditional consumption smoothing we define the decision efficiency of M-player's consumption proposals based on Theil's U-statistic as

$$(6) \quad e_i = 1 - \frac{\sqrt{1/m \sum_{t=1}^{m} (x_{i,t} - x_{i,t}^{\star})^2}}{\sqrt{1/m \sum_{t=1}^{m} x_{i,t}^2} + \sqrt{1/m \sum_{t=1}^{m} x_{i,t}^{\star}{}^2}}$$

and correspondingly for F-players. The decision efficiency e is bounded such that $0 \leq e \leq 1$ with $e = 1$ indicating optimal conditional consumption smoothing (see Table 4 for our participants' average efficiency values). Further, we will use relative payoffs measured as fraction of potential maximal

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Table 1: Absolute total payoffs including show up fee in Euro

gender constellation	M-player	F-player	couples
male	7.423	10.618	
	(1.474)	(3.654)	
female	7.350	11.083	
	(1.482)	(2.488)	
Kolmogorov Smirnov test p-value	0.775	0.413	
male – male	8.015	9.580	17.595
	(1.509)	(2.441)	(2.857)
male – female	6.782	11.743	18.525
	(1.180)	(4.469)	(4.191)
female – male	7.607	11.009	18.616
	(1.522)	(1.810)	(3.108)
female – female	6.815	11.452	18.268
	(1.323)	(3.342)	(3.423)
Kruskal Wallis test p-value	0.041	0.392	0.803

Numbers in parentheses denote standard deviations.

achievable payoff ($(W_1/t)^t$ with $t \in \{m, f\}$ in a single life) in addition to absolute payoffs.

OBSERVATION 1 F-players obtain a higher absolute payoff but a lower relative payoff. The payoff depends only on the gender of the F-player and on their own decision efficiency.

M-players obtain an average payoff of € 7.388 (SD 1.463) including the show up fee. This is significantly less (Wilcoxon paired rank sum test, $p < 0.001$) than the average payoff of € 10.845 (SD 3.114) that F-players obtain. Although there seem to be no significant differences between males and females assuming either role (see Table 1), the partner's gender matters at least for the M-players. To disentangle this relation between payoff and gender composition of the couples we ran a regression on the relative average payoff with own and partner's gender and average decision efficiency, the number of consumption proposals of zero, attitude towards the experiment and subjective contentment with own decisions[3] as explanatory variables (see Table 2).

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3 The latter two are derived from a post-experimental questionnaire.

Table 2: Ordinary least squares regression on the relative average payoff

Variable	M-player		F-player	
	Coeff.	P[|T| > t]	Coeff.	P[|T| > t]
Constant	-0.6656	0.0011	-0.3148	0.1433
Player's gender	0.0015	0.9656	0.0659	0.0312
Partner's gender	-0.0830	0.0086	-0.0587	0.0876
Player's decision efficiency	1.1896	0.0000	1.0152	0.0000
Partner's decision efficiency	0.1348	0.4102	-0.2216	0.2030
Zero consumptions	0.1390	0.2120	-0.0161	0.7675
Post-experimental attitude	0.0120	0.0151	0.0032	0.4262
Subjective decision contentment	-0.0120	0.0158	-0.0031	0.4394
Adjusted R^2		0.5587		0.4602
F-test(7,41)		9.68		6.84
Prob(F-test)		0.0000		0.0000
Loglikelihood		46.5219		47.8768
Restricted loglikelihood		22.6188		28.9116

Gender is coded 0 for male and 1 for female.

The payoff of an M-player is significantly influenced by his partner's gender and his own decision efficiency. A higher efficiency leads to a higher payoff. If the F-partner is female the payoff of the M-player is reduced. Additionally, if the M-player has a rather positive post-experimental attitude towards the experiment measured via a multi-item questionnaire the payoff of the M-player is significantly higher. If he is very content with his own decisions, however, the payoff of the M-player is significantly lower. Whereas the payoff of an F-player depends only on her own gender and decision efficiency. Again, a higher efficiency leads to a higher payoff, and consequently, if F is female her payoff is increased. Finally, there is no significant effect of the gender composition on the joint payoff of the couples.

M-players obtain an average relative payoff of 0.518 (SD 0.154). This is significantly more (Wilcoxon paired rank sum test, $p < 0.001$) than the average relative payoff of 0.363 (SD 0.135) that F-players obtain. These numbers are in agreement with the observations of Anderhub *et al.* (2002).

OBSERVATION 2 Rather few M-players are 'nice' to their F-partner. Regardless of M-player's own gender a female F-player is treated much nicer than a male
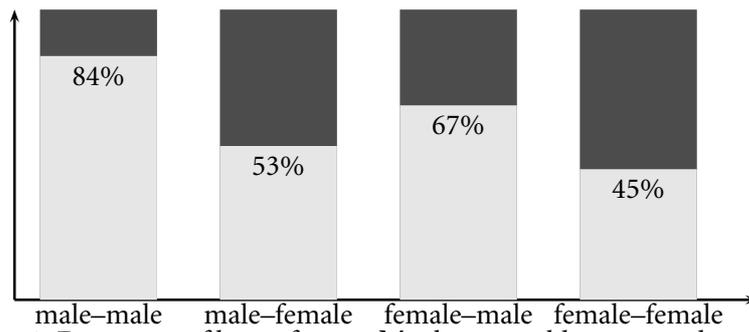
Figure 1: Frequency of how often an M-player would consume the whole endowment in the four different gender constellations

F-player. This seems not to be a result of deliberate intentions because our participants are not aware of this gender discrimination.

An indicator for whether participants care for each other would be the amount left by M-players after the fourth period. In 247 out of 392 cases (63 %) an M-player would not have left anything for his partner. There are substantial differences considering the gender constellations as can be seen in Figure 1. Looking only at the number of times the M-player does not leave any endowment for consumption after the fourth period we find that males are much more egoistic than females. They leave their partner significantly more often with no endowment to consume (test of proportions, $p = 0.009$). But this observation has to be examined more carefully. Males treat male partners significantly worse than female partners ($p < 0.001$). This attitude is, indeed, shared by our female participants who also treat their male partners significantly worse than female partners ($p = 0.004$). Nevertheless, males are more ruthless to their companions than females to their male F-partner ($p = 0.009$). There is no significant difference in how a female F-partner is treated ($p = 0.312$). This leads to the fact that a male F-player is left more often with nothing than a female F-player ($p < 0.001$).

Anderhub *et al.* (2002) observed a consumption proposal of zero by the F-player in about 15 % of all cases. They interpret such a consumption proposal as a means of punishment of selfish behavior and thus of reputation formation. In contrast to their study the participants in our experiment chose only in 5 of 392 "lives" to inflict a zero payoff for both partners. It seems that there is no need for such an instrument in our setting.
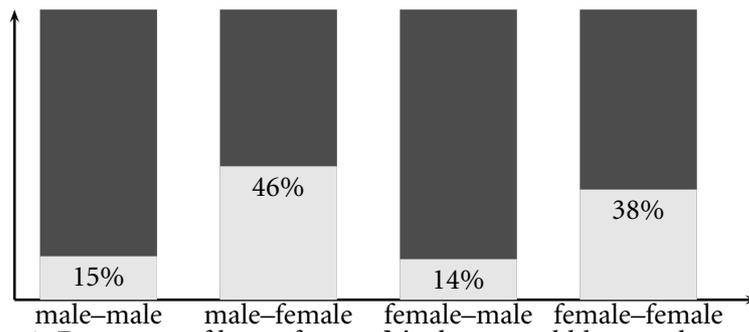
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Figure 2: Frequency of how often an M-player would leave at least two units in the four different gender constellations

To complete the picture we have to look at the number of times an F-player would get two or more units for her last two periods of a "life", implying equal or even higher payoff in this life (see Figure 2). Male and female participants do not act differently from each other. Again, a female F-player is treated much nicer than a male F-player.

This demeanor may be viewed as a kind of general female solidarity and male rivalry, respectively. Further, while men are chivalrous towards women, women treat men rather bitchily.

But, is this reflected in our participants' self-assessment? With the help of a post-experimental questionnaire we derived a measure for attitude towards the experiment and subjective contentment with own decisions (already used for the regression in Table 2) as well as subjective fairness attitude. Additionally, we asked whether females are fairer than males, whether females are fairer towards other females than towards males (subjective female solidarity) and whether males are fairer towards other males than towards females (subjective male solidarity). The questionnaire consisted of several statements that were to be evaluated on a scale from one to six standing for completely wrong and absolutely right. Most statements were repeatedly presented but each time rephrased and put in a different way such that we get a more robust measure in the aggregate.

Our measure for subjective fairness attitude reveals that females assess themselves fairer than males do (Wilcoxon, $p = 0.047$, KS-test $p = 0.044$). Nevertheless, both genders' median measure for subjective fairness attitude is not significantly different from the neutral point between fair and unfair at the 5 % significance level. This leads directly to the question whether fe-

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males are indeed considered fairer than males. This is negated considering the whole population (Wilcoxon, $p < 0.001$). Whereby on average females themselves seem to be slightly more diffident than males (Wilcoxon, $p = 0.099$). Though not significant at the 10 % level, we want to present the quite revealing rank correlation between subjective fairness attitude and whether females are fairer than males: $cor_{female} = -0.113$ and $cor_{male} = 0.190$. As can be seen, females with a higher subjective fairness attitude tend to negate the question whether females are fairer than males. Whereas, males with a higher subjective fairness attitude tend to affirm this question. Consequently, both genders seem to be rather chary. Eventually, the median assessment of females whether females are fairer towards their own gender than towards males is not significantly different from the neutral evaluation (Wilcoxon, $p = 0.718$). Males, on the other hand, affirm this statement (Wilcoxon, single sided, $p = 0.031$) leading to a weak significant affirmation considering the whole population (Wilcoxon, single sided, $p = 0.054$). The median assessment of females whether males are more fair towards their own gender than to females is not significantly different from the neutral evaluation either (Wilcoxon, single sided, $p = 0.119$). Once again, males affirm this statement (Wilcoxon, single sided, $p = 0.042$) leading to a significant affirmation considering the whole population (Wilcoxon, single sided, $p = 0.021$). Finally, we asked our participants with whom they would like to repeat the experiment, a female or a male. About two third of the participants is indifferent. The remaining third stating some preferences for a female or male partner shows no significant inclination either.

These observations are supported by the following rather anecdotical evidence. After the experiment some participants firmly rejected the possibility that there might be any difference between the two genders. The most common reaction was the expressed disbelieve in anyone conditioning his or her behavior in the experiment on the gender of his or her partner. A similar observation is reported by Fershtman and Gneezy (2001) whose participants where totally amazed after being debriefed by the fact that they discriminated against one group without being aware of it.

To sum up, the post-experimental self assessment does not reflect the behavior during the experiment. Female solidarity is not anticipated by the females and male rivalry is not anticipated by the males either. Thus, the ob-

served behavior seems not to be a result of mature and well reasoned intentions. The participants are not fully aware of their own actions.

OBSERVATION 3 The efficiency of M-players' decisions is higher than F-players' decision efficiency. There is no significant change in the degree of optimality of consumption decisions in either direction over time, although, the efficiency of decisions is higher in 'single' lives than in 'couple' lives.

With average decision efficiency values of $e_M = 0.896$ and $e_F = 0.852$ during couple lives our participants are rather close to optimal conditional consumption smoothing and to the efficiency values achieved by the participants of Anderhub *et al.* (2002). The average decision efficiency of M-players is significantly higher than those of F-players (Wilcoxon paired rank sum test, $p = 0.022$).

There are, however, significant differences between both genders. Males are much better as M-players than as F-players (Kolmogorov Smirnov test, $p < 0.001$). Whereas females do not show such a feature ($p = 0.450$). Yet, the performance of an F- or M-player is not significantly influenced by his or her gender (M: $p = 0.390$ F: $p = 0.204$). Further, there are no significant differences due to the gender composition of a couple (see Table 3).

The decision efficiency is significantly higher in single lives than in couple lives (see Table 4). This holds true for M- and F-players as well as for males and females. Comparing 'early' (round 3-6) with 'late' (round 7-10) lives we find no significant change over time for M- and F-players as well as for females. The average decision efficiency of males, however, slightly decreases over time with weak significance.

IV. DISCUSSION

We experimentally investigated gender specific intertemporal allocation behavior of couples with deterministic life expectations. The F-partner lived longer than her M-partner. The consumption level in each period of a life was determined by random dictatorship. To allow for learning each couple lived eight lives together (no rematching) after two initial single lives. Despite the complex interaction dynamics optimal behavior is rather simple and straightforward in the sense of conditional consumption smoothing over own

Table 3: Average decision efficiency of consumption decisions during couple lives

gender		decision efficiency		
M-player	F-player	M-player	F-player	p-value
male		0.912	0.825	0.000
		(0.071)	(0.097)	
female		0.878	0.881	0.450
		(0.108)	(0.096)	
KS test p-value		0.390	0.204	
male	male	0.923	0.817	
		(0.067)	(0.105)	
male	female	0.901	0.832	
		(0.076)	(0.092)	
female	male	0.881	0.909	
		(0.142)	(0.110)	
female	female	0.865	0.863	
		(0.066)	(0.074)	
Kruskal Wallis test p-value		0.127	0.115	

Numbers in parentheses denote standard deviations. P-value and KS test p-value denote the p-value of the corresponding Kolmogorov Smirnov test.

Table 4: Average decision efficiency of consumption decisions

	single lives	couple lives	p-value 1	early lives	late lives	p-value 2
M	0.914	0.896	0.003	0.897	0.895	0.490
	(0.139)	(0.091)		(0.126)	(0.081)	
F	0.973	0.852	0.000	0.856	0.849	0.360
	(0.034)	(0.099)		(0.107)	(0.110)	
male	0.950	0.864	0.000	0.868	0.860	0.057
	(0.096)	(0.095)		(0.135)	(0.110)	
female	0.936	0.884	0.000	0.882	0.886	0.415
	(0.114)	(0.101)		(0.099)	(0.086)	

Numbers in parentheses denote standard deviations. P-value 1 denotes the p-value of the Wilcoxon rank sum test for the paired single and couple lives data. P-value 2 denotes the p-value of the Wilcoxon rank sum test for the paired early and late lives data.

life time. We ran four treatments, in one treatment a male assumes the position of the M-player and a female that of the F-player, vice versa in a second treatment. In the third treatment both roles are assumed by females and, finally, in treatment four both roles are assumed by males.

In accordance with the theoretical predictions following from the experimental design F-players obtained a higher absolute payoff than M-players. As in Anderhub *et al.* (2002), however, this is reversed if we look at the relative payoff. Here there is a significant effect of the gender composition on the payoff. Both M's and F-player's average payoff depend on the gender of only the F-player and not on the M-player. Conversely, the payoff also depends only on the own decision efficiency and not on that of the partner.

In conformity with Anderhub *et al.* (2002) the efficiency of M-players' decisions is higher than F-players' decision efficiency. Nevertheless, both decision efficiencies are rather high indicating behavior close to optimal conditional consumption smoothing. There is no general significant change in the efficiency of consumption decisions in either direction over time, although, the efficiency of decisions is higher in 'single' lives than in 'couple' lives.

In general rather few M-players are 'nice' to their F-partner in the sense of leaving some endowment for consumption after the fourth and last period of M's life. On the other hand, being 'nice' depends on the gender of the F-partner. Regardless of her partner's gender a female F-player is treated in a kinder way than a male F-player. This is in line with the results of e. g. Kerr and MacCoun (1985) and Saad and Gill (2001) but stands in contrast to Solnick (2001). The results of a post-experimental questionnaire indicate that this feature is not anticipated by our participants. In opposition to Anderhub *et al.* (2002) participants very seldom choose consumption levels of zero to educate their respective partner. It seems that such a punishment that may be interpreted as reputation formation is not needed in our experiment. Thus, the observed behavior may be deduced from a rather instinctive female solidarity and male rivalry and men's chivalry and women's wickedness towards the opposite gender.

From our experiment we conclude that indeed the behavior of participants in experiments depend on their partner. Surprisingly men and women do not act very differently since they discriminate both men and favor women. Though, they are not aware of this. When running experiments one should

therefore take care that the composition of a single session is not biased towards either gender. Otherwise the participants may form believes that they will interact most probable with only one of the two genders and thus may act differently. Further, since gender effects are only reported if significant the evidence is somewhat ambiguous. To shed more light on wether or not there really exists a robust gender difference in economic decision making one should always test for these differences and report the test results even if they indicate that there is no difference.

Appendix

A. Instructions (translation)

The following experiment consists of 10 rounds. A round consists of several periods. In each round, money can be earned in a fictitious currency (points). On completion of the experiment the aggregate of all per-round earnings is paid out in cash, based on the relationship of 8 points = € 0.01. You will also receive an additional basic amount of € 2.50 for participating.

In principle, the task of a round is to distribute an initially available money amount S of 21.00 points onto several periods.

For greater clarity, the amount of money that is spent by a participant in period 1 will be referred to as x_1, that of period 2 as x_2, etc. Accordingly, you are required to spend a certain amount x_t in any experienced life period t. In the next period you will only have the residual balance $S - x_1 - \ldots - x_t$ available for spending. A round's earnings are calculated as the product of all single amounts that were spent in each experienced life period during this round. You should further note: When spending a zero-amount in a period, you will earn nothing in that round (since one of the factors is 0 in this case). There are two different types of participants:

- A-participants for whom a round consists of six periods. (their per-round earnings G are calculated as: $G = x_1 x_2 x_3 x_4 x_5 x_6$)

- B-participants for whom a round consists of the first four periods. (their per-round earnings G are calculated as: $G = x_1 x_2 x_3 x_4$)

Before round 1 begins, you will be told which type (A or B) you are and, hence, how many periods you live per round.

In rounds 1 and 2 you make your decisions absolutely independently of other participants' decisions.

In round 3 and all subsequent rounds (up to round 10) you will be allotted to some other participant. This other participant (allotted to you) will be of the other type, i. e. if you are a type A participant with six periods to live, your allotted other participant will only live four periods in that same round and vice versa. You remain allotted to the same participant during all eight rounds. This participant can either be female or male. Which gender the participant (allotted to you) has, you will be told at the beginning of the third round.

Each pair of participants then decides for each period t simultaneously with, and independently of, the other participant how much he/she wants to spend in a given period. After both participants have made their decision, one of the two decisions is drawn by lot. This drawn-by-lot decision will be valid for both participants, i. e. it becomes the amount of spending x_t for that particular period t and for both participants (A and B). The amount is deducted from the residual budget of the two participants. For the first four periods of every round, decisions are determined in this manner. In periods 5 and 6, the participant who lives through 6 periods, can make his/her autonomous decisions again. Per-round earnings are calculated for both participants as described above. During the entire experiment, a button in the lower left screen corner is available for access to a pocket computer.

Your entries will remain anonymous because we are only able to assign any of your data to your code number - not to your person. If you have any questions concerning the experiment, please, raise your hand. We will then try to answer your questions privately. Please do not speak with your neighbors since any exchange of information will render your data useless for our purposes. In that case we will have to exclude you from the experiment and refrain from paying you any money.

B. Questionnaire (translation)

All statements of the questionnaire except for the first were answered on a six point scale raging from completely wrong to completely right.

- If you were to repeat this experiment with whom would you prefer to interact? Options: with a man, with a woman, I do not care
- Women are fairer towards women than towards men.
- The experiment was unfair.
- I did not understand what I was supposed to do.
- Men are fairer towards men than towards women.
- Men are more egoistic than women.
- I had barely influence on my earnings.
- I am satisfied with my decisions in this experiment.
- I felt treated fair in this experiment.
- Women are fairer than men.
- In this experiment I was especially fair.
- All should get the same amount of money just for participating and regardless of their performance in this experiment.
- The main point is I earned a lot.
- I do not care for the earnings of other participants.
- My decisions in this experiment were easy.
- My partner in this experiment is simpatico.

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