Risk Taking, Gender, and Social Context

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Social Comparison and Gender Differences in Risk Taking

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Motivation and background

- Risk averse choices reduces female economic outcomes
  - Career choice (Bertrand and Hallock, 2001; Sapienza et al, 2009)
  - Investments (Watson and McNaughton, 2007)
- In experimental studies women are often more risk averse than men (Croson & Gneezy, 2009), but the evidence is not entirely conclusive (Filippin & Crosetto, 2014)
- One reason for this contradictory evidence may be the fact that the social context plays a different role in the single experiments
- Why is the social context important for risk taking?

Motivation and background

- Evolutionary perspective:
  - Men had higher intrasexual competition in the access to mates and less parental investment than women
  - Fitness payoff in mating effort is higher for men
  - Fitness of men depends to a higher degree on social ranking
  - This affects risk attitudes

Motivation and background

- Growing number of papers analyze social context and risk taking (Linde & Sonnemans, 2012; Vendrik & Woltjer, 2007; Lahno & Serra-Garcia, 2013; Bault et al. 2008)

	H	T
A	9	9
B	18	4
Peer	6	6
A´	9	9
B´	18	4
Peer	16	16

- Present paper:
  - Theory how the social context impacts utility
  - Gender-specific hypothesis
  - Derive results concerning attitudes towards correlated and idiosyncratic risks
  - Expertimental test of the theory

Risk Taking and Social Ranking: Theory

- Social Ranking will be formalized by a social reference point
- Reference-Dependent Preferences:
  - (Cumulative) Prospect Theory
  - Köszegi and Rabin (2006, 2007), De Giorgi and Post (2011)
- $V = \eta[pu(x_1) + (1 - p)u(x_2)] +$
  $\psi[pv(u(x_1) - u(r_1)) + (1 - p)v(u(x_2) - u(r_2))]$
- Loss aversion: $v(a) < -v(-a)$

Risk Taking and Social Ranking: Theory

- Two subjects, A and B
- Initial wealth x
- Risky asset
  - Costs c
  - Pays out y with prob. p and 0 with prob. 1-p
  - Higher risk taking: higher critical value of c
- No social comparison ($\psi = 0$):

$EU^{I} = \eta[pu(x + y - c) + (1 - p)u(x - c)] > EU^{NI} = \eta u(x)$,

Risk Taking and Social Ranking: Theory

- With social comparison
  - Correlation matters (Perfect positive, no correlation)
  - Expectations matters (A believes that B buys the asset with prob. $\beta > 0$)
  - If A does not buy the asset, her final wealth is deterministic and correlation is irrelevant:

$$SU^{NI} = EU^{NI} +$$

$$\psi\beta[pv(u(x) - u(x + y - c)) + (1 - p)v(u(x) - u(x - c))]$$

Risk Taking and Social Ranking: Theory

- Perfect positive correlation

$SU^{I}_{pc} = EU^{I} +$

$\psi(1 - \beta)[pv(u(x + y - c) - u(x)) + (1 - p)v(u(x - c) - u(x))]$

- Idiosyncratic risks

$SU^{I}_{id} = EU^{I} +$

$\psi\beta[p^2v(0) + (1 - p)^2v(0) + p(1 - p)v(u(x + y - c) - u(x - c)) + (1 - p)pv(u(x - c) - u(x + y - c))] +$

$\psi(1 - \beta)[pv(u(x + y - c) - u(x)) + (1 - p)v(u(x - c) - u(x))]$

Risk Taking and Social Ranking: Theory

- **Proposition 1:**

  With social comparison, risk taking of loss averse subjects is higher for positively correlated risks than for idiosyncratic risks. The opposite holds for gain seeking subjects.

- **Proposition 2:**

  With increasing weight attached to the gain-loss utility, i.e. increasing influence of social comparison on utility, the influence of the correlation structure on risk taking – as characterized in Proposition 1 – becomes stronger.

Risk Taking and Social Ranking: Theory

- Hypothesis 1:

  In a social context, WTP to invest in a risky asset is higher for correlated than for uncorrelated risks

- Hypothesis 2:

  Correlation structure has higher impact for men than for women

Risk Taking and Social Ranking: Experiment

- Classroom Experiment
- Subjects receive endowment of 6 EUR
- They can buy risky asset which either pays 10 EUR or 0 with equal prob.
- Elicit WTP via choice list

Risk Taking and Social Ranking: Experiment

		Buy lottery?	
Ball	Price	Yes	No
1	3.55		
2	3.80		
3	4.05		
4	4.30		
5	4.55		
6	4.80		
7	5.05		
8	5.30		
9	5.55		
10	5.80		

- Switching point is taken as WTP
- Randomly drawn price is relevant for all subjects

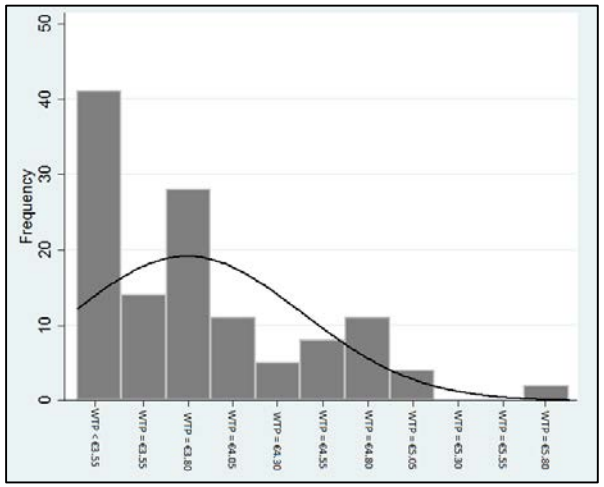
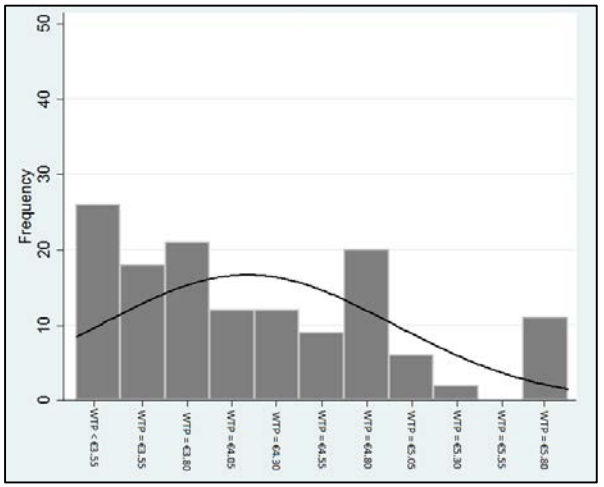
Risk Taking and Social Ranking: Experiment

- Baseline Treatment (N = 133)

  Die is rolled individually for each subject, win 10 EUR if 4, 5, or 6, lose otherwise
- Correlated Treatment (N = 127)

  Die is rolled once for ALL subjects

Risk Taking and Social Ranking: Experiment

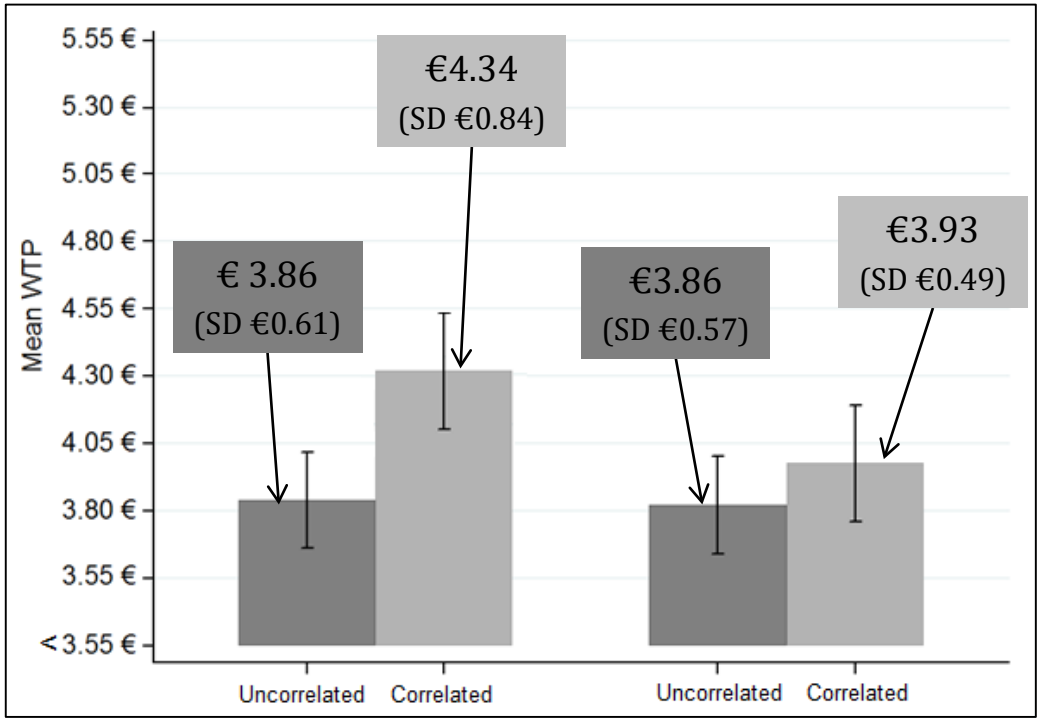
	Uncorrelated Treatment	Correlated Treatment
Frequency tables		
WTP>€5 (€5=EV)	WTP > €5: 5%	WTP > €5: 14%
WTP is higher for Correlated treatment	Wilcoxon rank-sum test confirms that average WTP between the two treatments is significantly different at 1% level (z = -2.701, p = 0.0069)	

Risk Taking and Social Ranking: Experiment

Men

Women

Mean WTP by Gender and Treatment



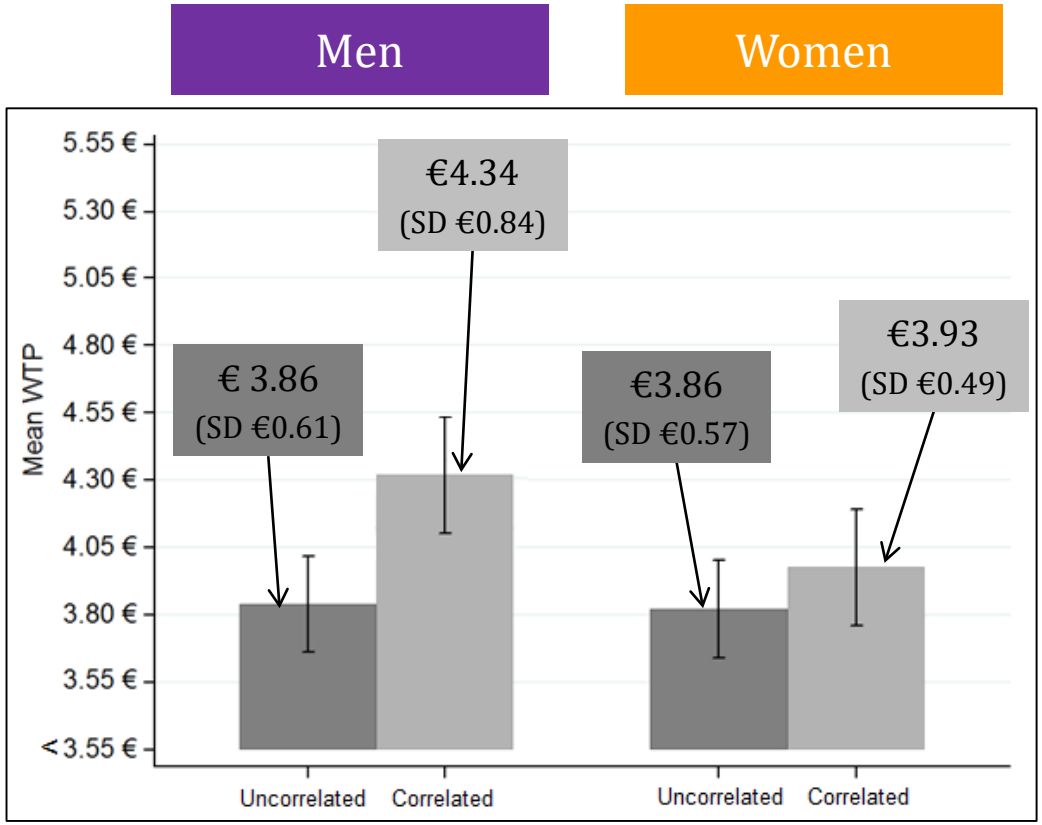
Difference of WTP between treatments

Significant
(z = -3.315,
p = 0.0009)

Insignificant
(z = -1.283,
p = 0.1995)

Risk Taking and Social Ranking: Experiment

Mean WTP by Gender and Treatment



Difference of WTP between gender

Correlated Treatment Significant
(z = -2.528, p = 0.0115)

Uncorrelated Treatment Insignificant
(z = 0.232, p = 0.8166)

Risk Taking and Social Ranking: Experiment

	OLS	OLS interaction	Tobit	Tobit interaction	only females	only males
correlated	1.127***	0.228	1.641***	0.461	0.281	1.987***
	(0.335)	(0.481)	(0.625)	(0.546)	(0.688)	(0.534)
male	0.781**	-0.153	0.800*	-0.461	—	—
	(0.342)	(0.495)	(0.565)	(0.661)		
age	0.003	0.032	0.019	0.056	-0.005	-0.075
	(0.073)	(0.074)	(0.180)	(0.126)	(0.177)	(0.122)
hour_work	0.041	0.042*	0.069*	0.069**	0.040*	0.045
	(0.025)	(0.025)	(0.050)	(0.037)	(0.050)	(0.039)
rel_wealth	-0.057	-0.039	-0.174	-0.157	-0.110	0.000
	(0.192)	(0.190)	(0.380)	(0.318)	(0.523)	(0.271)
corr X male	—	1.738***	—	2.294**	—	—
		(0.671)		(0.921)		
Constant	2.798	2.523	1.864	1.548	3.548	1.237
	N = 260	N = 260	N = 260	N = 260	N = 125	N = 135

Conclusion

- Experiment confirms evolutionary theory
- Sex differences in risk taking are context-specific and depend on social comparison
- Ambiguity of the literature may be due to different degrees of social comparison in the single experiments

Risk taking in groups: Gender and Polarization

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Motivation

- Important economic decisions are usually taken by groups (e.g. parliaments or executive boards)
- Share of women in these groups has been increasing in recent years
- In many countries a women quota for the board of directors of big companies has been introduced (Germany: 30%)
- How does this increasing share of women influence decision making?

Motivation

- Decision making literature focuses mainly on individual decision making
- No systematic study whether and how gender composition influences risk taking of groups
- (Excessive) risk taking
- Is excessive risk taking a consequence of group decision processes?
- Which role does the gender composition play?
- As women are usually more risk averse than men (Croson & Gneezy, 2009), a higher share of women may prevent excessive risk taking

Risk Taking of Groups

- Social psychology
  - Group polarization: Decisions and opinions of groups are more extreme than those of individuals
  - Risky shift: Groups take higher risks than individuals (Stoner, 1961)
- Economics
  - Criticized the experiments from social psychology
  - No clear-cut evidence whether groups are more or less risk averse than individuals (Masclet et al., 2009; Baker et al. 2008; Sutter, 2007; Shupp and Williams, 2008)
  - No analysis of gender composition

Experimental Design

- July 2015 at the canteen of the University of Kiel
- 255 participants, 129 women
- 2€ participation fee
- People were assigned to gropus of three subjets each

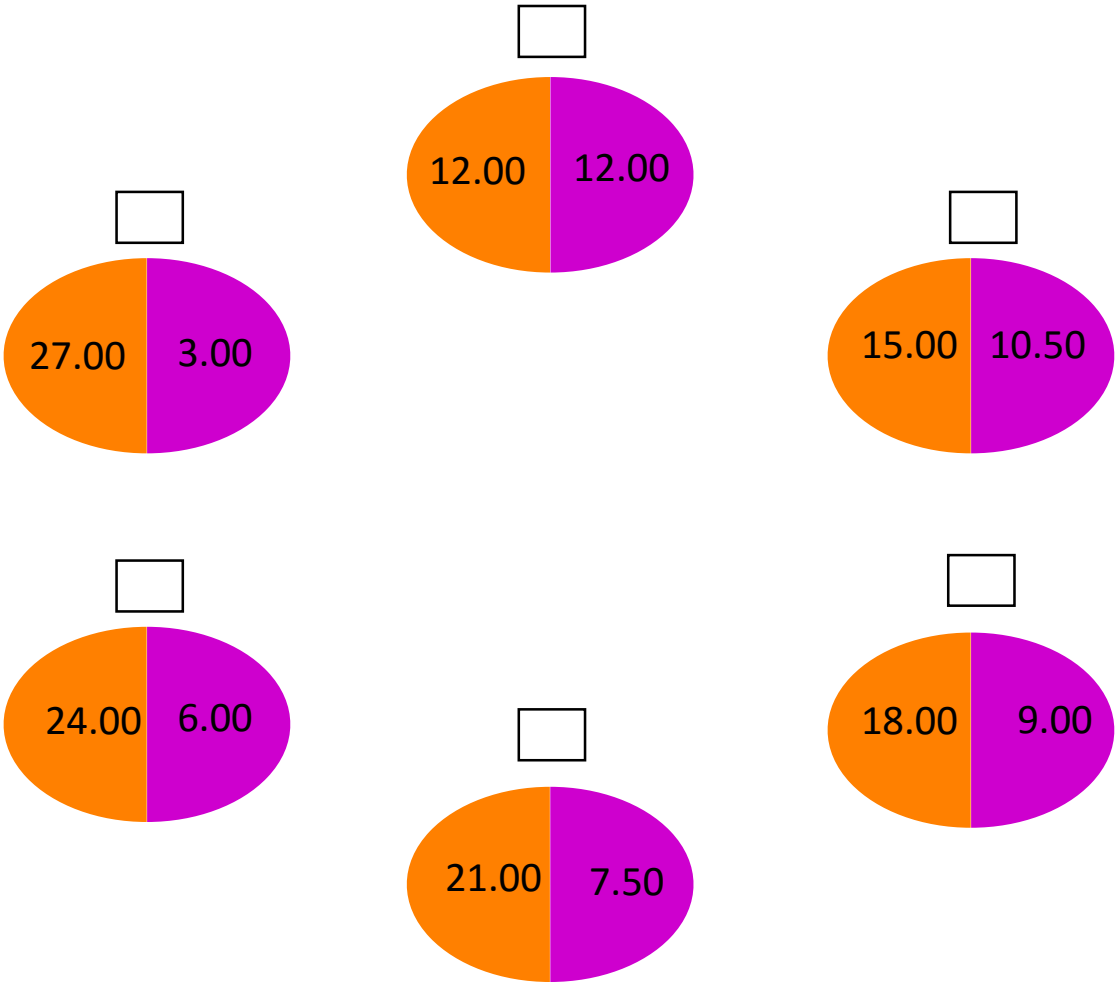
Experimental Design

Gender composition	Nb of groups	Nb of participants
FFF	22	66 women
FFM	21	42 women; 21 men
FMM	21	21 women; 42 men
MMM	21	63 men
Overall	85	255

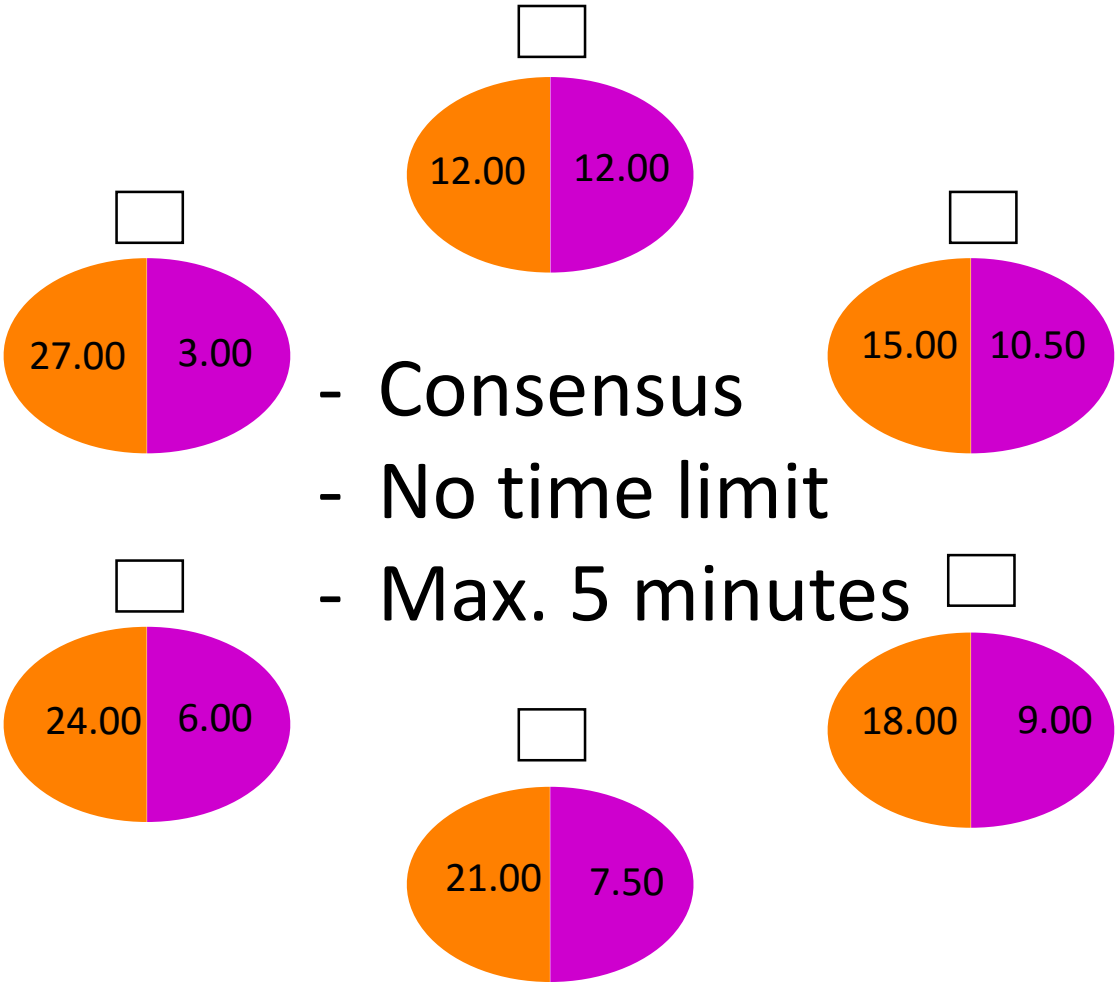
Experimental Design

- As the groups were formed, participants were told that
  - they had to take a risky decision as a group first
  - then had to fill out a questionnaire on their own
  - in the end had to reunite in their initial group to receive their payment.

Group Decision



Group Decision



- Consensus
- No time limit
- Max. 5 minutes

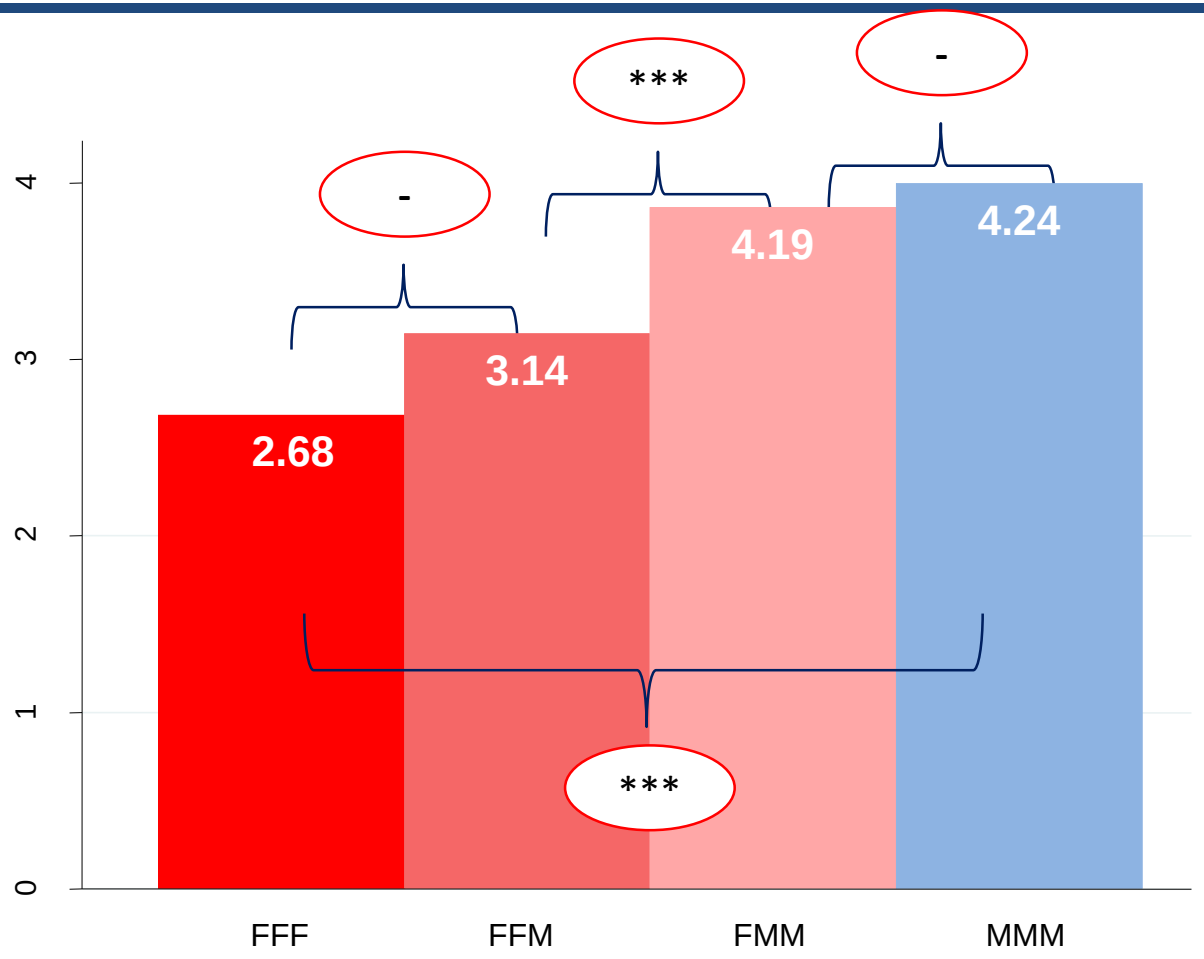
Questionnaire

- individual risk preference task (same as group task, outcome divided by 3)
- basic demographic questions (gender, age, highest educational degree, number of siblings, …)
- Happiness
- satisfaction with the group decision
- questions on the Big Five personality traits

Payout

- Two coinflips
- Individual or group decision
- High or low payoff

Average group decision by group types



Comparison between individual and group choice

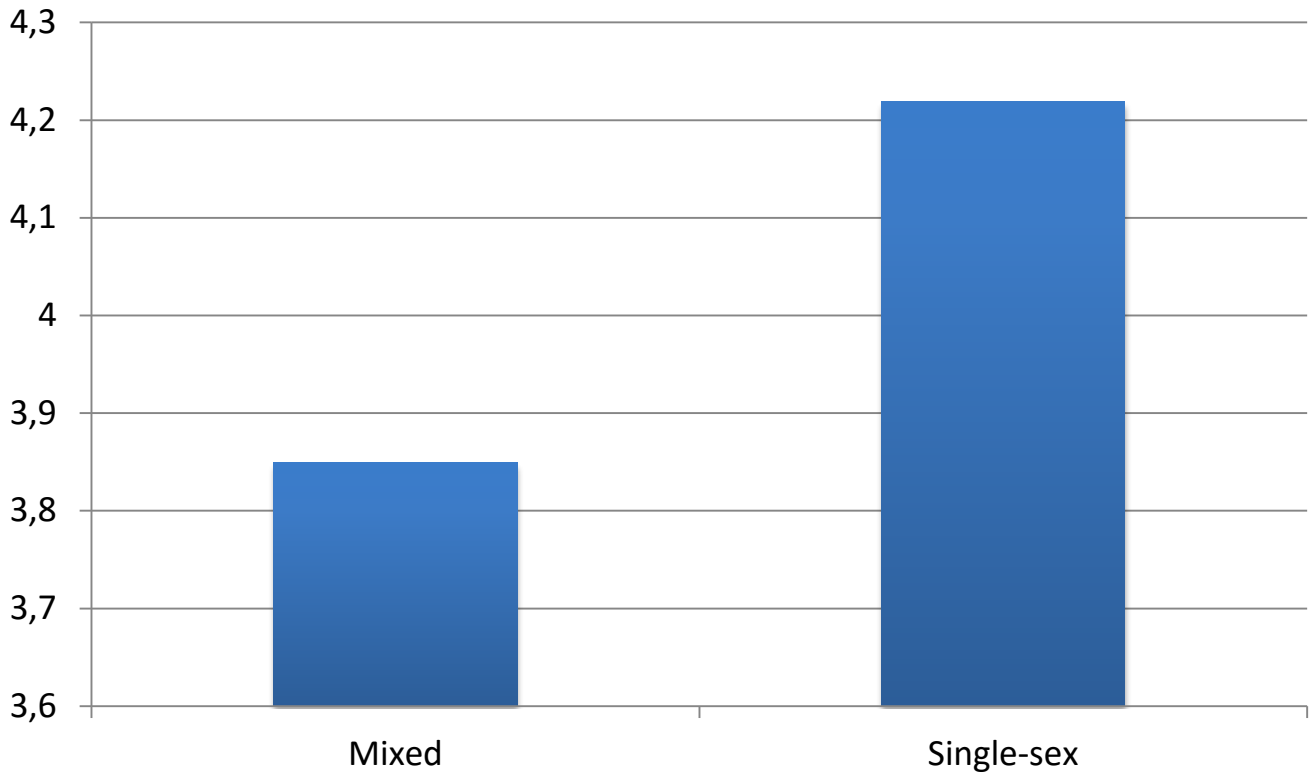
Group type	Indiv. Choice	Difference Ind. vs. Group	Group Choice
All groups	3.56 (SD 1.74)	=	3.55 (SD 1.78)
Female dominated (FFF & FFM)	3.18 (SD 1.65)	> **	2.91 (SD 1.63)
Male dominated (FMM & MMM)	3.95 (SD 1.56)	< **	4.22 (SD 1.61)

For female dominated groups (FFF & FFM) we find that the group choice is more risk averse than the individual choice on average, while for male dominated groups (FMM & MMM) the opposite holds.

Comparison between individual and group choice by gender

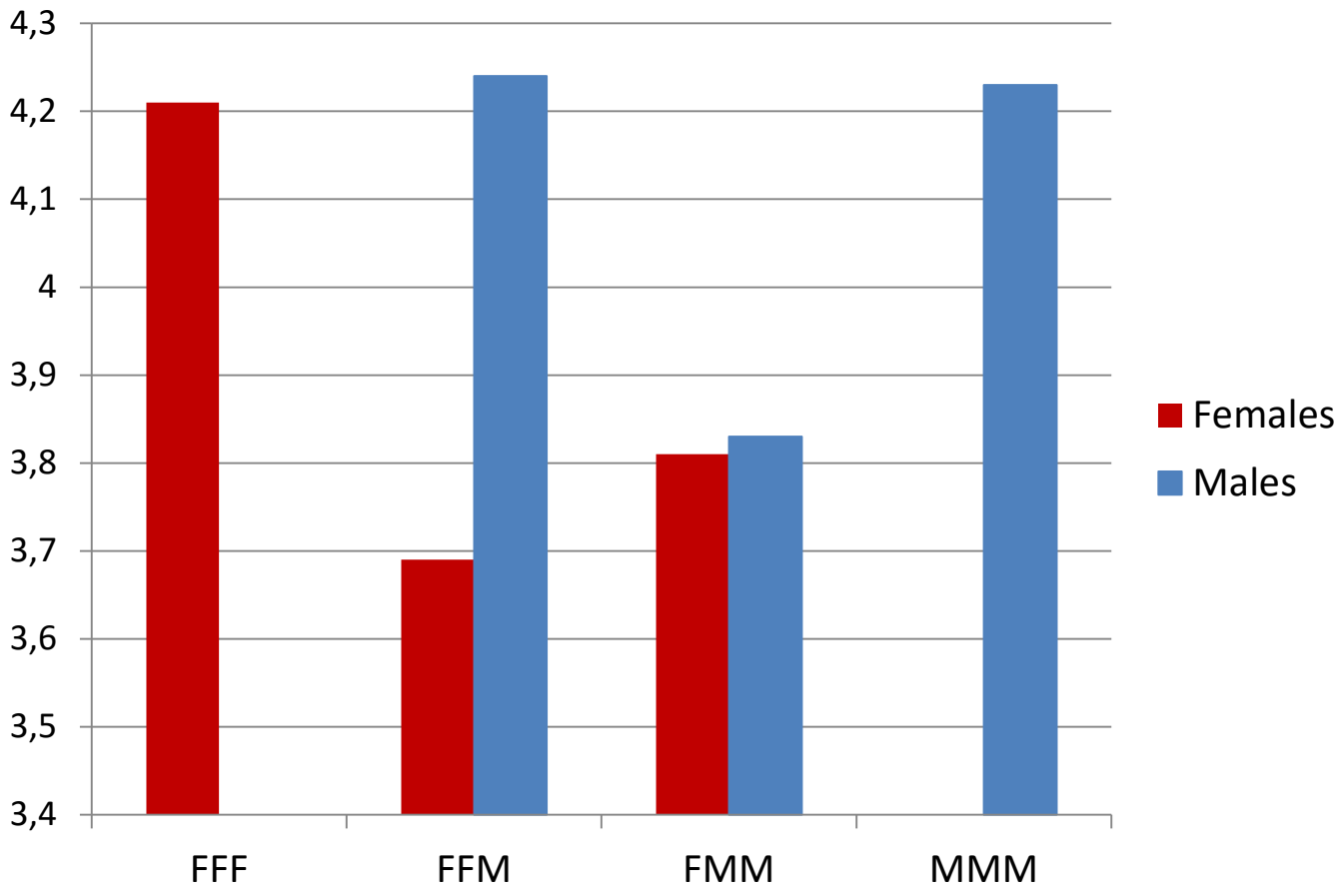
Group type	Indiv. Choice Women	Difference Ind. vs. Group	Group Choice	Difference Ind. vs. Group	Indiv. Choice Men
FFF	2.82 (SD 1.58)	> Not significant	2.68 (SD 1.50)	-	-
FFM	3.36 (SD 1.66)	> Not significant	3.14 (SD 1.74)	< **	3.95 (SD 1.56)
FMM	3.29 (SD 1.98)	< **	4.19 (SD 1.78)	< Not significant	4.38 (SD 1.70)
MMM	-	-	4.24 (SD 1.32)	> **	3.89 (SD 1.67)

Satisfaction with group choice



Dover, Major & Kaiser, 2016

Satisfaction with group choice



Conclusion

- Dominating gender determines group choice
- Evidence for polarization, in particular in male groups
- Less satisfaction in mixed groups