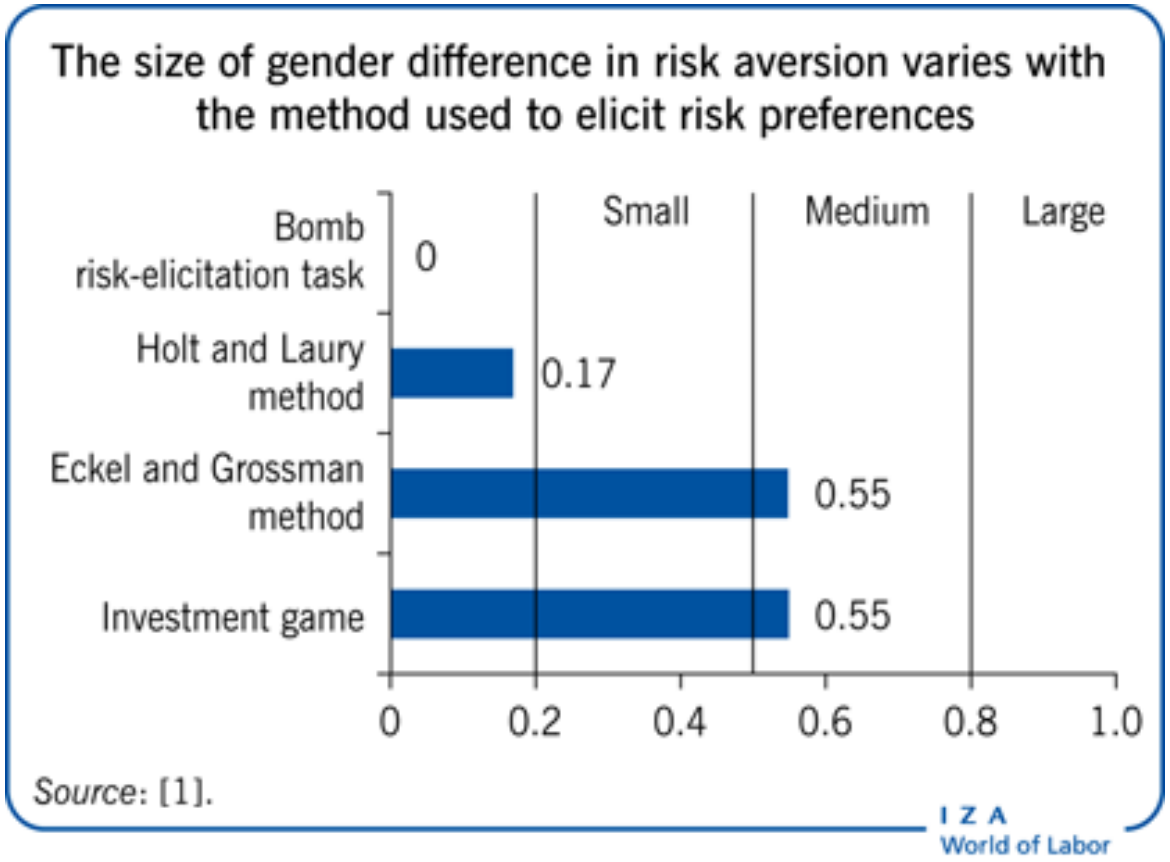
Risikobereitschaft von Männern und Frauen in sozialen Kontexten

Prof. Dr. Dr. Ulrich Schmidt

Motivation

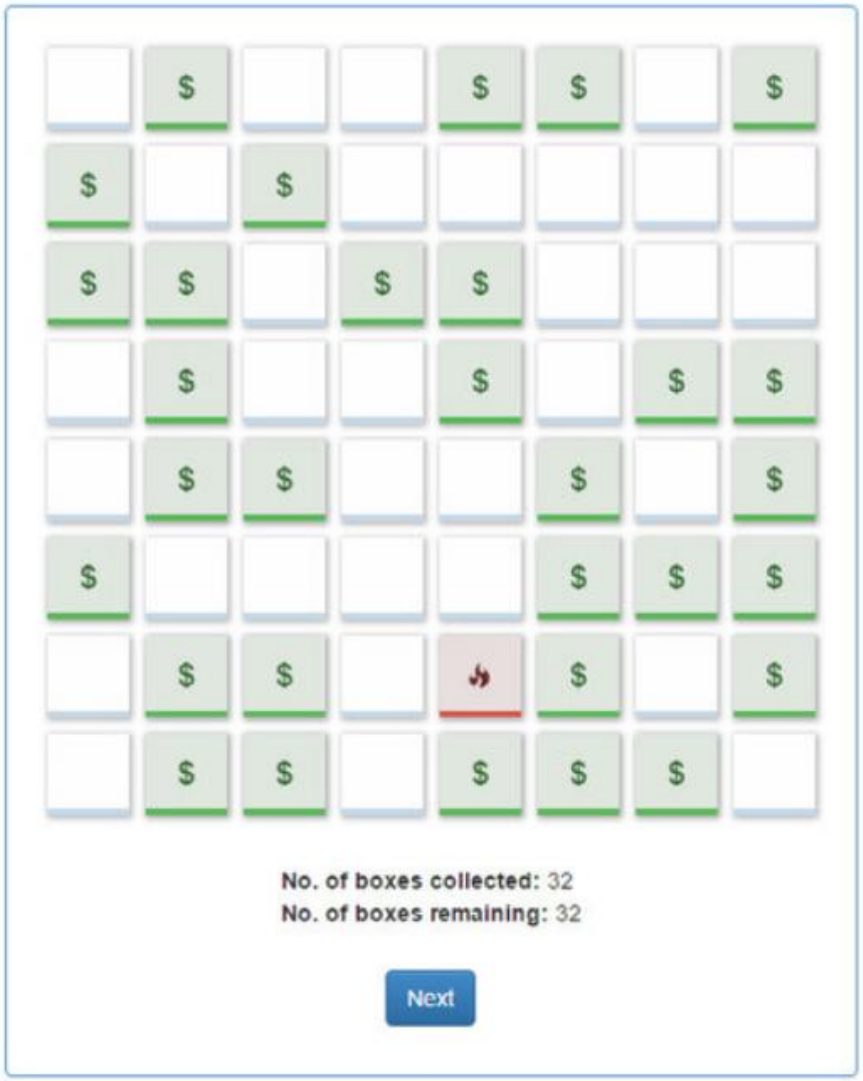
- Risk preferences are extemly important for most relevant economic decisions:
  - saving
  - investment
  - education and career choices
  - insurance
  - health
- Typical evidence that women are more risk averse than men in financial risk taking but overall the evidience is not entirely clear.

Motivation



Filippin and Crosetto (2016)

Bomb task



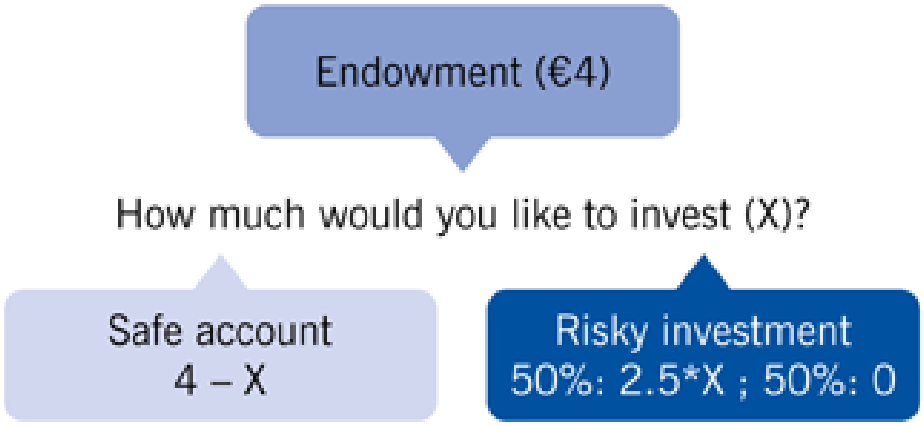
Holt and Laury (2002) task

Option A	Option B	Expected payoff difference
1/10 of \$2.00, 9/10 of \$1.60	1/10 of \$3.85, 9/10 of \$0.10	\$1.17
2/10 of \$2.00, 8/10 of \$1.60	2/10 of \$3.85, 8/10 of \$0.10	\$0.83
3/10 of \$2.00, 7/10 of \$1.60	3/10 of \$3.85, 7/10 of \$0.10	\$0.50
4/10 of \$2.00, 6/10 of \$1.60	4/10 of \$3.85, 6/10 of \$0.10	\$0.16
5/10 of \$2.00, 5/10 of \$1.60	5/10 of \$3.85, 5/10 of \$0.10	−\$0.18
6/10 of \$2.00, 4/10 of \$1.60	6/10 of \$3.85, 4/10 of \$0.10	−\$0.51
7/10 of \$2.00, 3/10 of \$1.60	7/10 of \$3.85, 3/10 of \$0.10	−\$0.85
8/10 of \$2.00, 2/10 of \$1.60	8/10 of \$3.85, 2/10 of \$0.10	−\$1.18
9/10 of \$2.00, 1/10 of \$1.60	9/10 of \$3.85, 1/10 of \$0.10	−\$1.52
10/10 of \$2.00, 0/10 of \$1.60	10/10 of \$3.85, 0/10 of \$0.10	−\$1.85

Eckel and Grossmann (2002) task

Lotteries (50/50 Chance)	**Low payoff**	**High payoff**	**Expected value**	**Variance**
Lottery 1	€ 4.00	€ 4.00	€ 4.00	0.00
Lottery 2	€ 3.50	€ 5.00	€ 4.25	1.06
Lottery 3	€ 3.00	€ 6.00	€ 4.50	2.12
Lottery 4	€ 2.50	€ 7.00	€ 4.75	3.18
Lottery 5	€ 2.00	€ 8.00	€ 5.00	4.24
Lottery 6	€ 1.00	€ 9.00	€ 5.00	5.66

Investment Game of Gneezy and Potters (1997)



Motivation and background

- Another reason for this contradictory evidence may be the fact that the social context plays a different role in the single experiments
- Growing number of papers analyze social context and risk taking (Linde & Sonnemans, 2012; Vendrik & Woltjer, 2007; Lahno & Serra-Garcia, 2013; Bault et al. 2008; Friedl et al., 2014; Gächter et al., 2017; Ambler et al., 2021; Grimm et al., 2021; Bikhchandani et al., 2024; Celse et al., 2023; Fang et al., 2024;)

Motivation and background

	H	T
A	9	9
B	18	4

Motivation and background

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

- Inequality aversion
- Behindness aversion

Motivation and background

- Why social context relevant for gender differences?
- Evolutionary perspective:
  - Men had higher intrasexual competition in the access to mates and less parental investment than women
  - Fitness of men depends to a higher degree on social ranking
  - Men care more for *relative*, women more for *absolute* income
  - This affects risk attitudes

Motivation and background

- Schmidt, Eichenseer, Friedl and Miranda (2021):
  - Classroom experiment on risk taking
  - Subjects can buy lottery ticket which yields 10€ with 50% prob. (die shows 4, 5, or 6)
  - 2 treatments:
    - correlated risk (die is rolled once for all subjects)
    - uncorrelated risks (die is rolled individually for each subject)
  - Evolutionary theory implies that risk taking should be higher for correlated risks and this effect should be stronger for men

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		

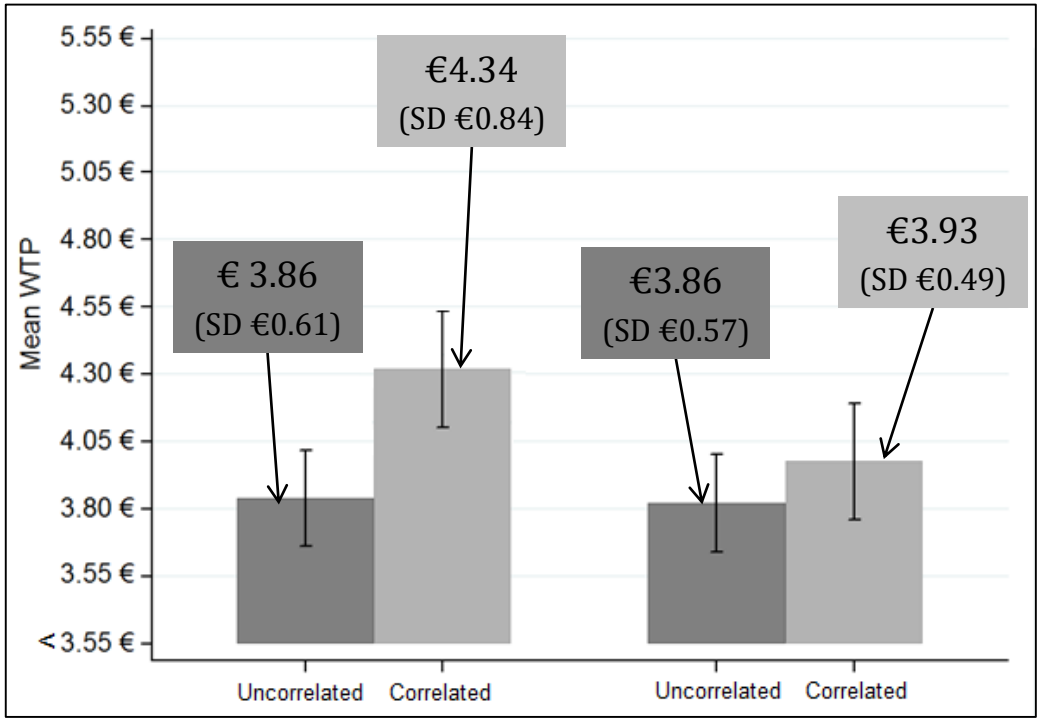
- Switching point is taken as WTP
- Randomly drawn price is relevant for all subjects

Risk Taking and Social Ranking: Experiment

Men

Women

Mean WTP by Gender and Treatment



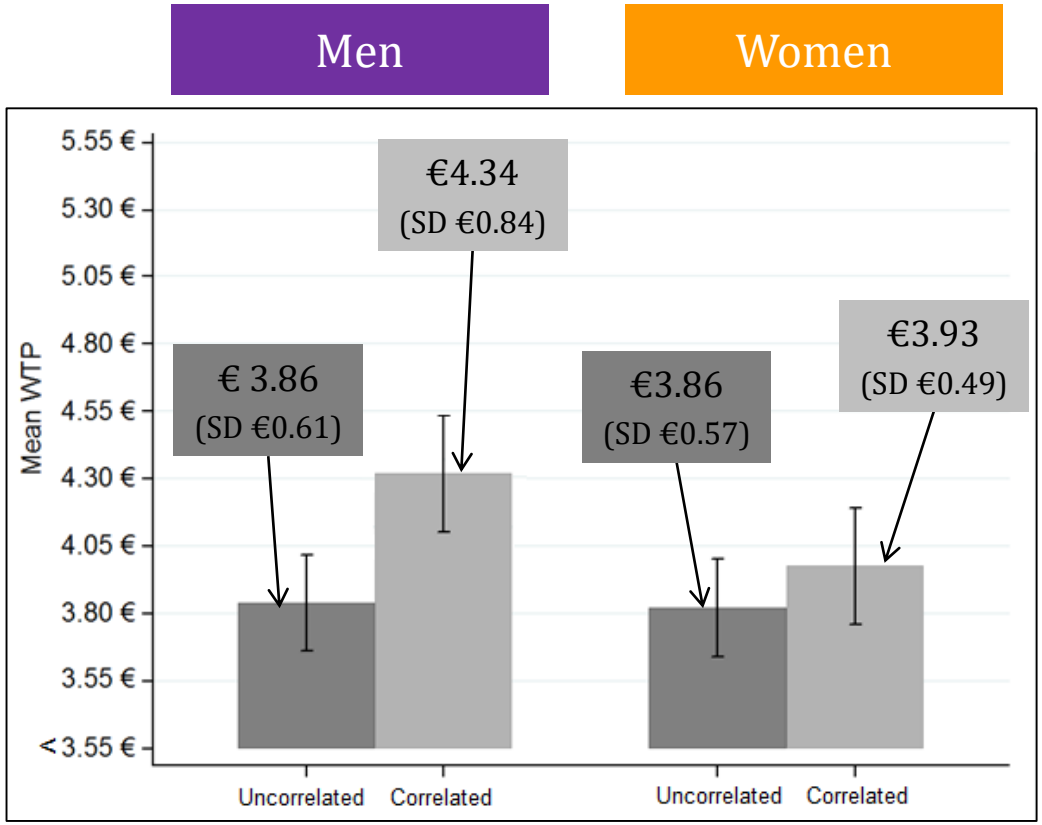
Difference of WTP between treatments

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)

Today

- Two papers where the social context is even more important
  - Group decision making
  - Decision making under social responsibility

Risk taking under Social Responsibility: The Role of Nurture

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[2] Kiel Institute for the World Economy, Germany
[3] University of Johannesburg, Department of Economics and Econometrics, South Africa

Journal of Economic Psychology, 2020

Motivation

- Social responsibility: My decision affects also outcome of another subject
- Typical observations:
  - Conservatism (Charness, 2000, Charness & Jackson, 2009)
  - Conformism (Bolton et al., 2015)
  - Inequality aversion
- Questions:
  - Role of gender?
  - Role of nurture?

Motivation

- High degree of risk aversion reduces female economic outcomes
  - Career choice (Bertrand and Hallock, 2001; Sapienza et al, 2009)
  - Investments (Watson and McNaughton, 2007)
- If gender differences in risk aversion are driven by nurture they can be possibly changed through policy interventions
- Booth and Nolan (2012): No gender difference for pupils from single-sex school whereas girls from coeducational schools are more risk averse

Experimental Design

- Bolton et al. (2015)
- Differences:
  - Analyze gender differences
  - Analyze the role of nurture by considering two subject pools: German students and a sample from Papua New Guinea
  - Small-scale, matrilineal society

Experimental Design

- Eckel Grossmann method

Tick	Pair	Card 1	Card 2
	1	 2,50 EURO	 2,50 EURO
	2	 3,50 EURO	 2,00 EURO
	3	 4,50 EURO	 1,50 EURO
	4	 5,50 EURO	 1,00 EURO
	5	 6,50 EURO	 0,50 EURO
	6	 7,00 EURO	0 EURO

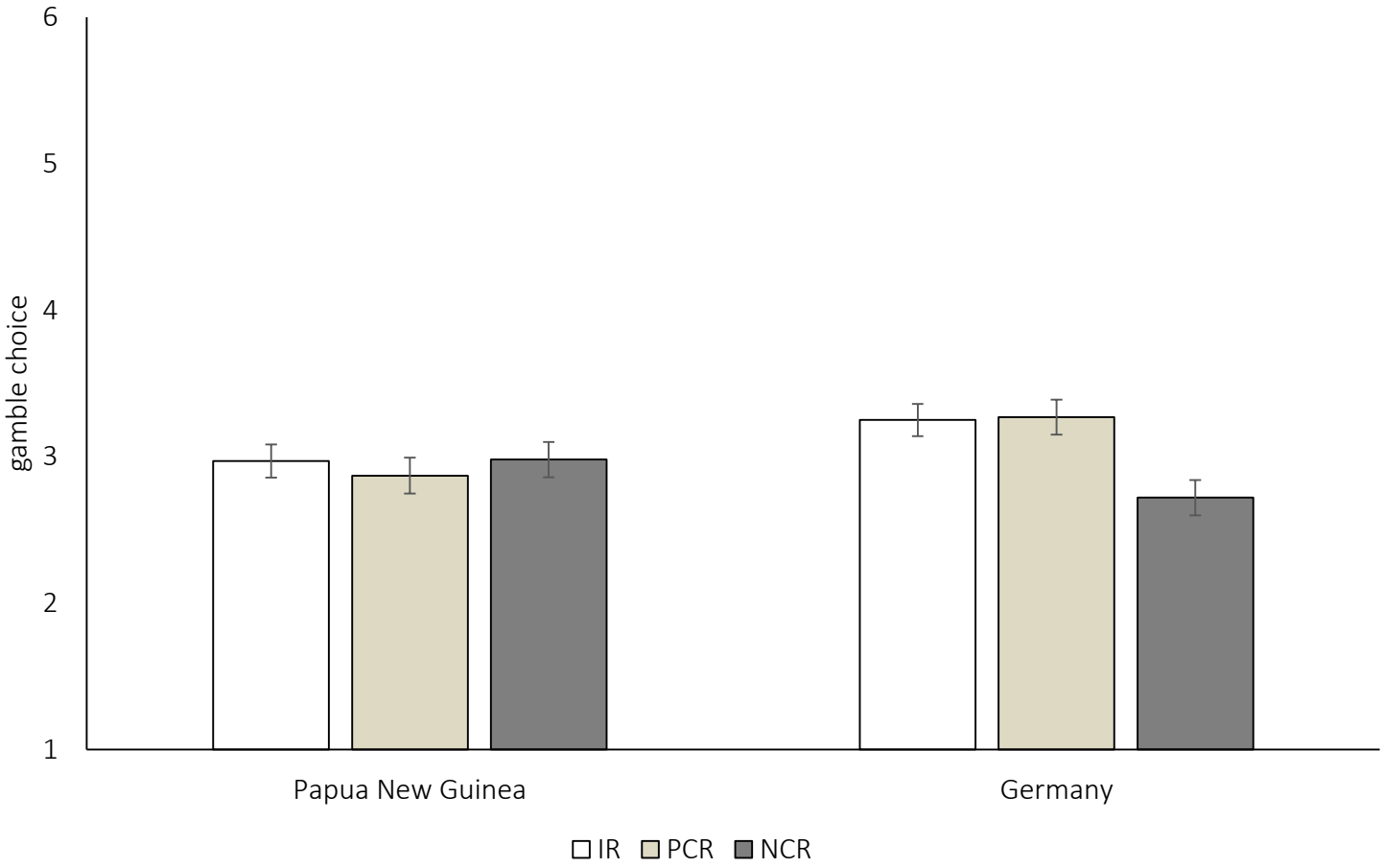
Experimental Design

- Three desisions:
  - IR: individual risk preference (always first)
  - PCR: matched participant receives the same payment
  - NCR: matched participant receives opposite payment
  - Order PCR-NCR randomized
  - One decision paid out
  - 192 university students from Germany (96 men, 96 women, age = 22.21, SD = 3.58)
  - 156 people in Papua New Guinea (76 men, 80 women, age = 39.05, SD = 13.10)

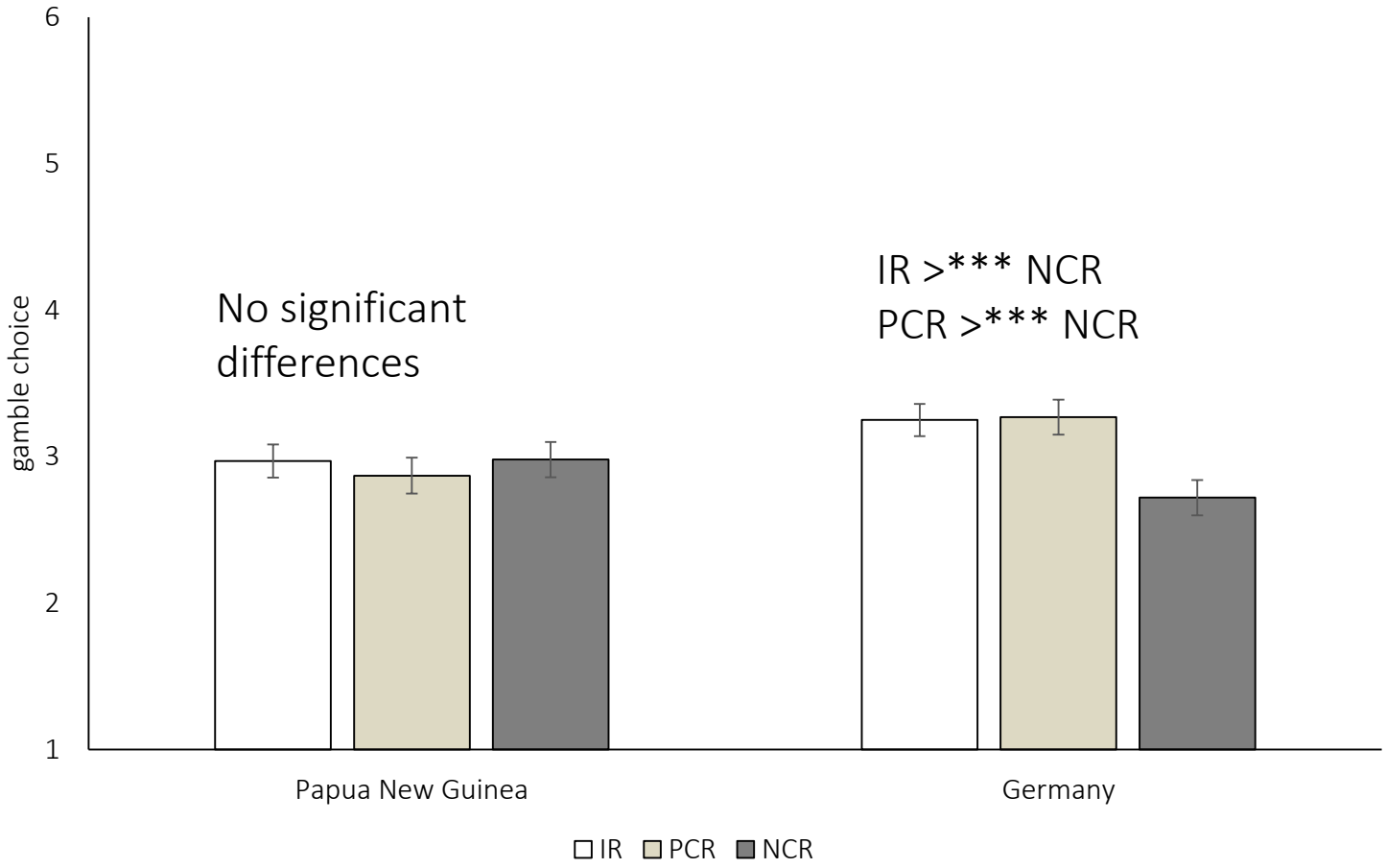
Hypotheses

- Conservatism: PCR/NCR < IR
- Inequality Aversion: NCR < PCR
- Conformism: IR < (>) PCR/NCR for subjets who think they are more (less) risk tolerant than others
- Gender: ?
- Nurture: ?

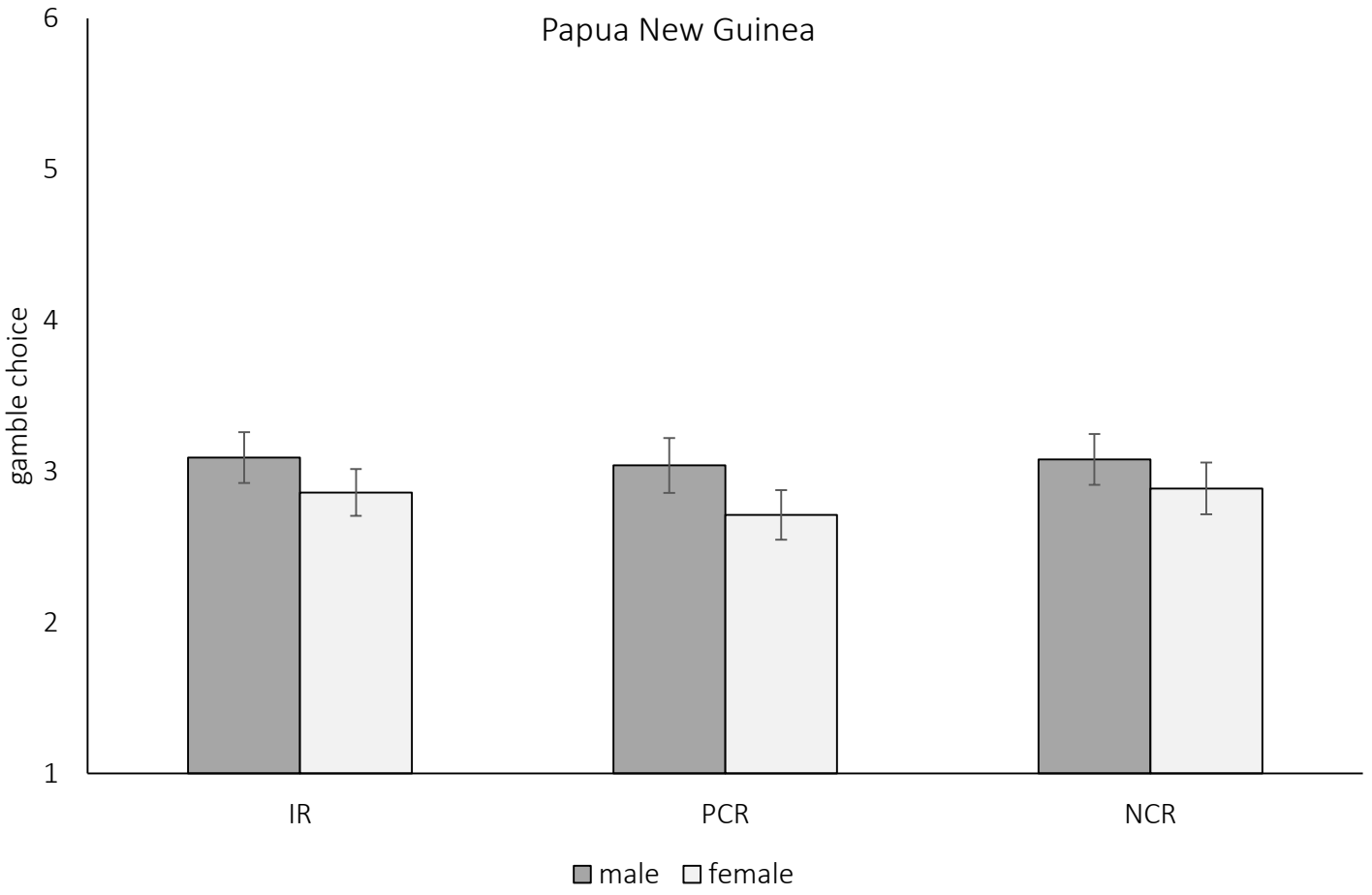
Results



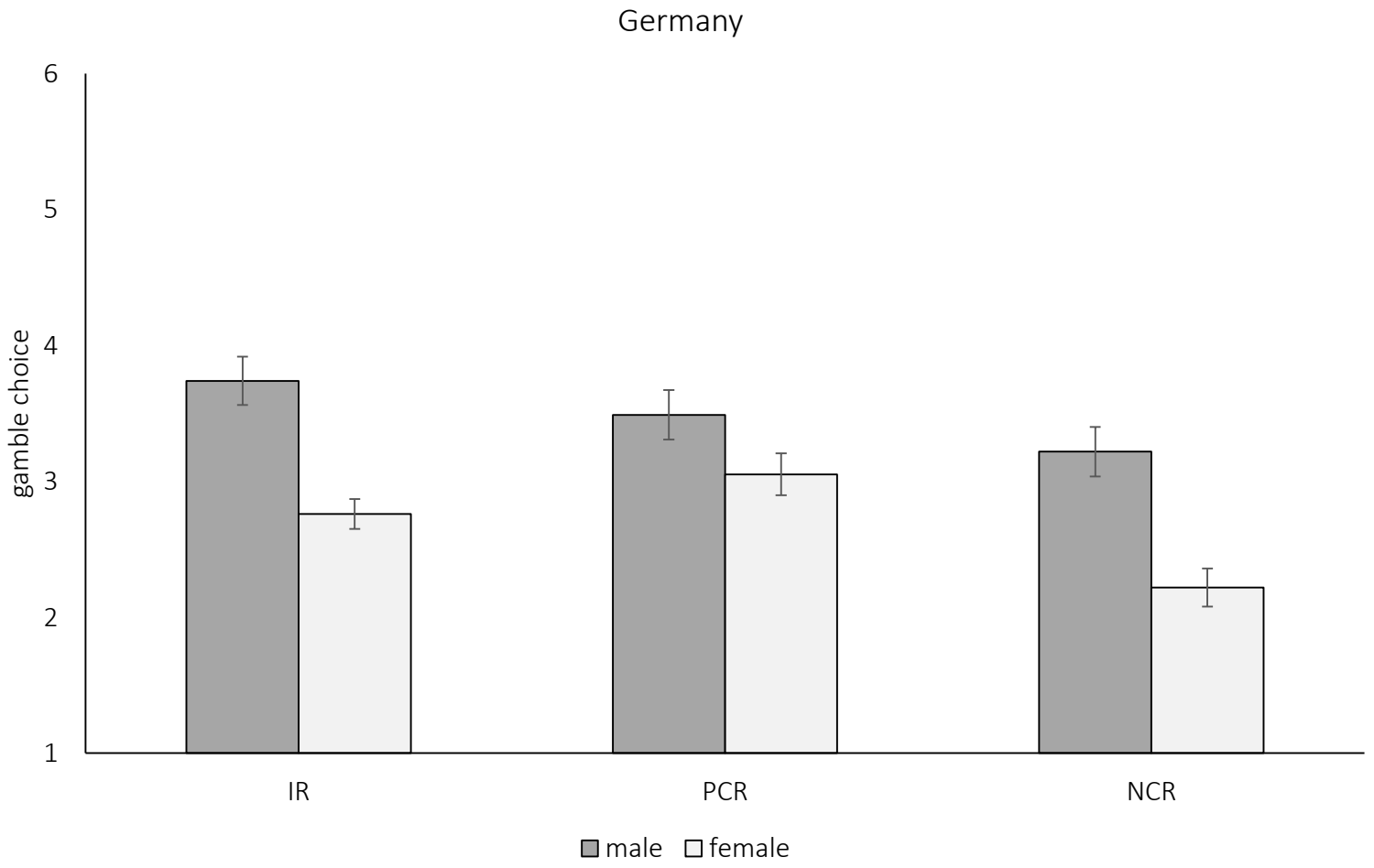
Results


6
5
4
3
2
1
gamble choice
No significant differences
IR >*** NCR
PCR >*** NCR
Papua New Guinea
Germany
IR
PCR
NCR

Results

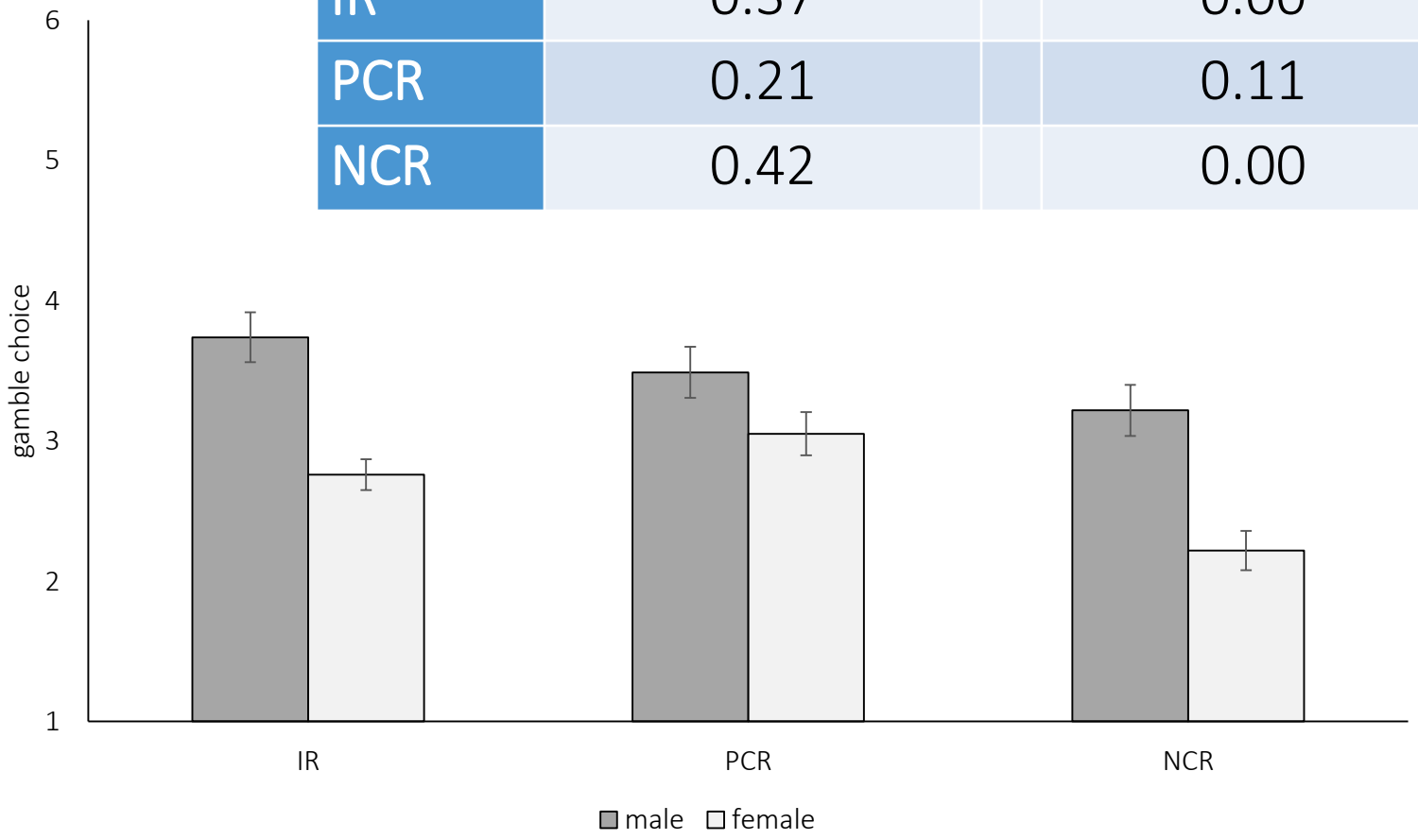

Papua New Guinea
gamble choice
6
5
4
3
2
1
IR
PCR
NCR
male
female

Results



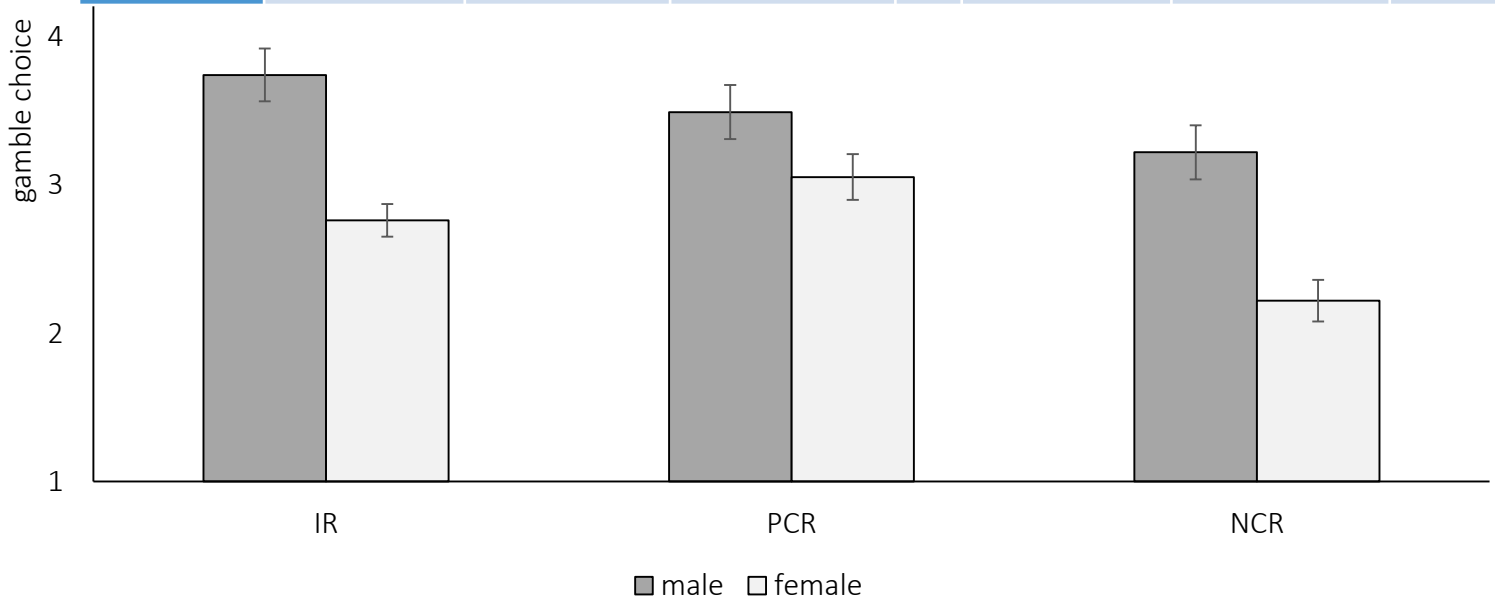
Results

	Papua New Guinea		Germany
	Male=Female		Male=Female
IR	0.37		0.00
PCR	0.21		0.11
NCR	0.42		0.00



Result

	Papua New Guinea				Germany		
	IR=PCR	IR=NCR	PCR=NCR		IR=PCR	IR=NCR	PCR=NCR
Male	0.86	0.96	0.99		0.86	0.02	0.08
Female	0.61	0.91	0.48		0.07	0.00	0.00



Results

		Papua New Guinea			Germany	
		PCR-IR	NCR-IR		PCR-IR	NCR-IR
Risk seeking relative to others	Mean	-0.098	-0.122		-0.265	-0.750
	S.D.	(1.854)	(2.227)		(1.849)	(2.111)
	n	n=41	n=41		n=68	n=68
	p-value	0.629	0.250		0.364	0.024
Risk averse relative to others	Mean	-0.096	0.035		0.138	-0.415
	S.D.	(2.091)	(1.986)		(1.600)	(1.394)
	n	n=114	n=114		n=123	n=123
	p-value	0.341	0.540		0.032	0.003

Conclusion

- Strong effect of nurture: no treatment or gender effects in Papua
- Strong gender effect in Germany
- Some evidence for conservatism
- Strong Evidence for inequality Aversion in Germany
- Conservatism is mainly caused by inequality aversion
- Some evidence for Conformism

Can Gender Diversity Prevent Risky Choice Shifts?

The Effect of Gender Composition on Group Decisions under Risk

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Experimental Economics, 2025

Motivation

- In many countries a women quota for the board of directors of big companies has been introduced
- Germany: 30%
- How does this change decision making
- Risk Taking
- How does the gender composition influence risky decisions of groups?

Effect of gender quotas

- Policy making: No impact on policy making (Ferreira & Gyourko, 2014), Increase in quality of elected politicians (Baltrunaite et al., 2014)

- Financial Markets: All-male markets generate higher speculative bubbles than all-female markets (Eckel & Füllbrun, 2015), mixed-gender composition reduces mispricing across different types of asset markets (Cueva and Rustichini, 2015)

- Management:
  - Better performance of more diverse teams in business games (Apesteguia et al., 2012; Hoogendorn et al., 2013) and real firms (Bansak et al., 2011; Adams and Ragunathan, 2015)
  - Negative impact on firm performance (Ahern & Dittmar, 2012; Adams & Ferreira, 2008)

Background: Risk taking of groups

- Social psychology
  - Risky shift: Groups take higher risk than individuals (Stoner, 1961; Kogan and Wallach, 1967)
  - Risk as value hypothesis (Vidmar, 1970; Bauer and Turner, 1974)
  - ➢ Risky shift can be regarded as excessive risk taking
- Economics
  - Group decisions under risk with monetary incentivized experiments
  - Inconclusive findings: Groups take less risk than individuals (Masclet et al., 2009; Baker et al., 2008; Shupp and Williams, 2008; Pahlke et al.,2012) vs. groups take more risk (Sutter, 2009; Nieboer, 2015)

Gender differences in risk taking

- Individual level
  - In general women more risk averse than men (e.g. Croson and Gneezy, 2009),
  - Sometimes small and task specific (Filippin & Crosetto, 2016)

- Group level little evidence
  - Risk taking increases with male members (Nieboer, 2015)
  - Mixed teams take higher risks (Bogan et al., 2013)

Contribution

- We investigate the impact of gender composition on group decision,
- particularly the difference between group and individual decision.
- We propose a gender-specific polarization hypothesis:
  - Risk taking a cultural norm for men (Trimpop, 1994)
  - Based on *risk as value hypothesis* risky shifts should mainly occur in male dominated groups.
  - Men take more risk in public than in private condition, but no effect for women (Daly and Wilson, 2001).
- We test our proposition in simple lottery choice experiment.

Experimental design

- Kiel University, students canteen
- 255 participants
- 2€ participation fee, additional payoff according to their decisions
- Groups of three with varying gender composition:

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 procedure

1. Take a risky decision as a group

   Elicitation of Group Choice (GC) with lottery choice task (Eckel and Grossmann, 2002)

   → One out of six lotteries (1-no risk to 6-high risk)

2. Fill out a questionnaire individually

   a) Elicitation of Individual Choice (IC) (same as group task, payoff/3)

   b) Additional questions (gender, age, highest educational degree, number of siblings, happiness, Big Five personality traits)

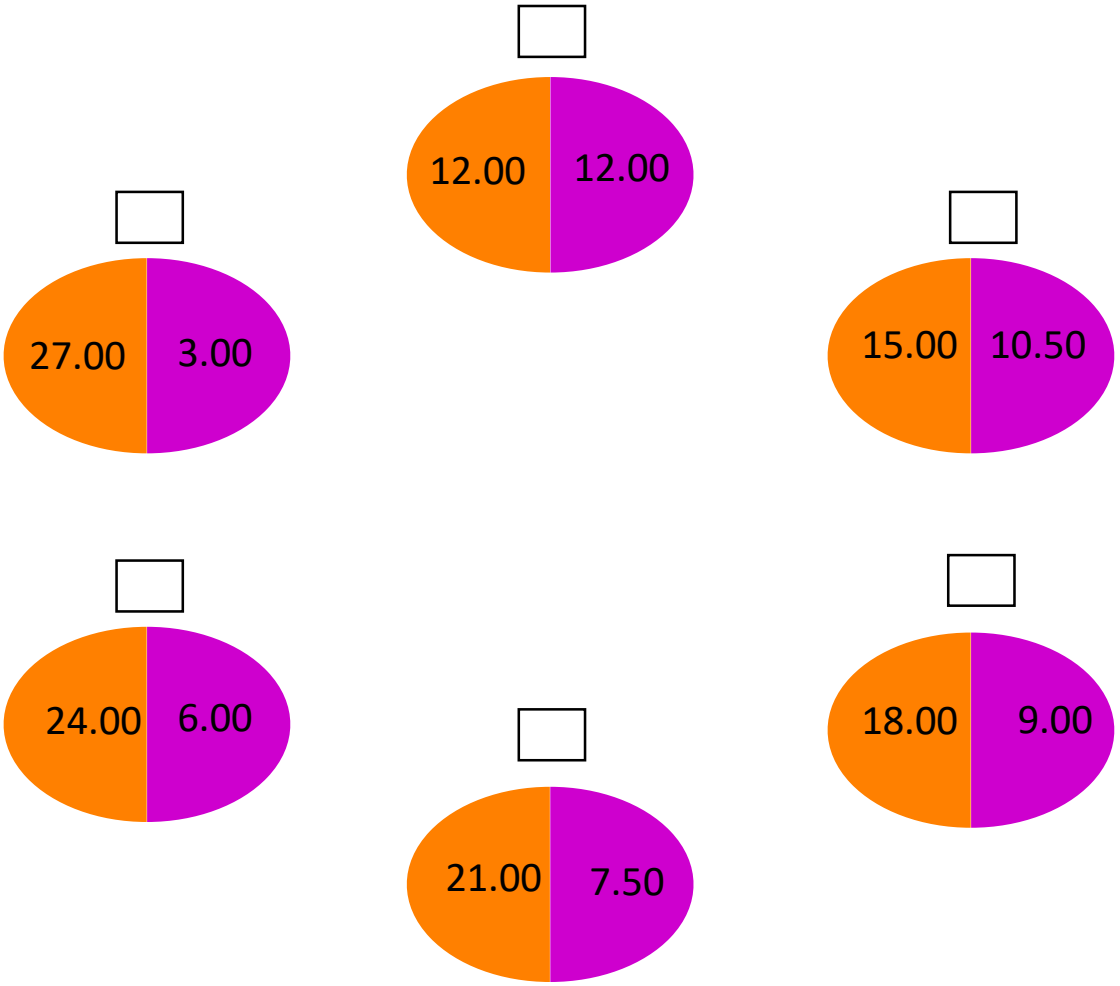
3. Reunite in initial group to receive payment

   Payout mechanism: Two coin flips

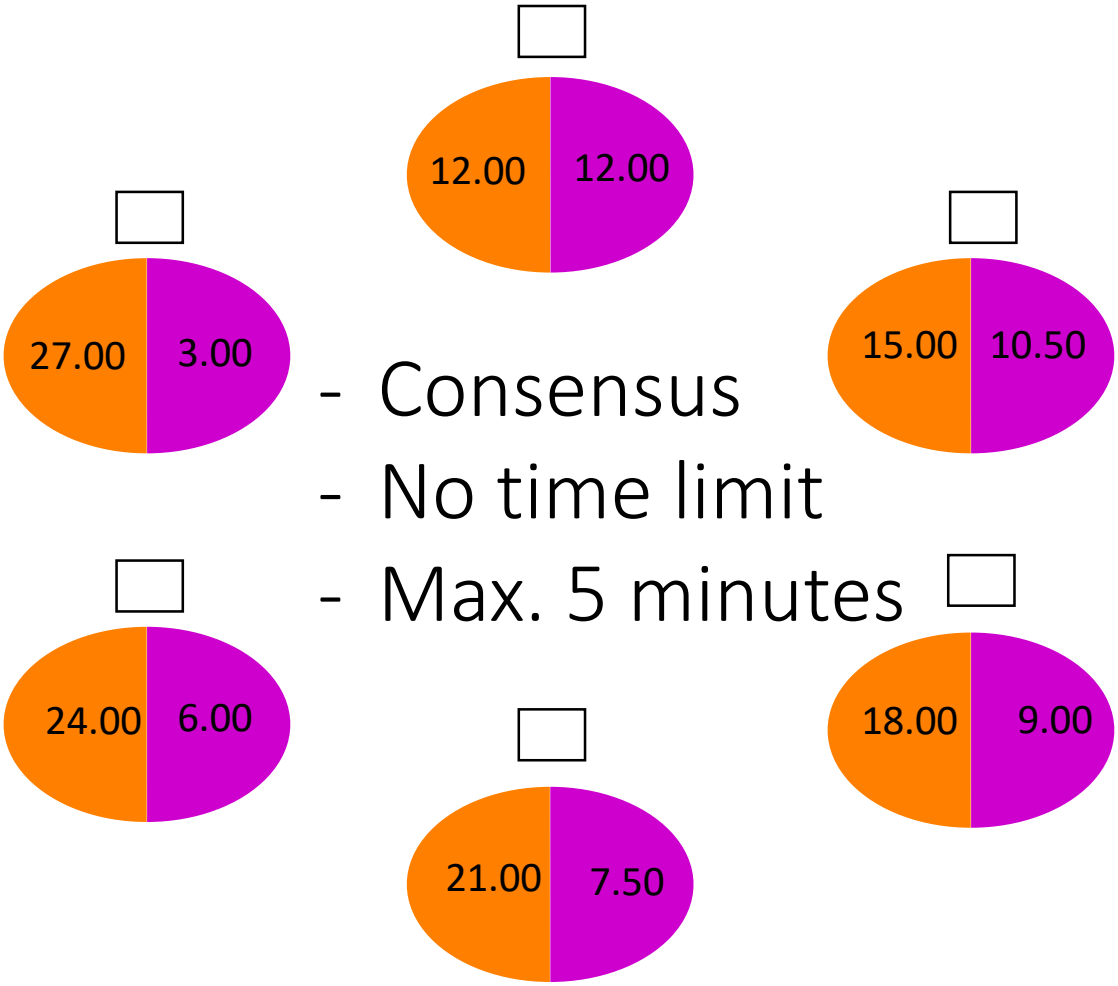
   a) Individual or group decision

   b) High or low payoff

Group Decision



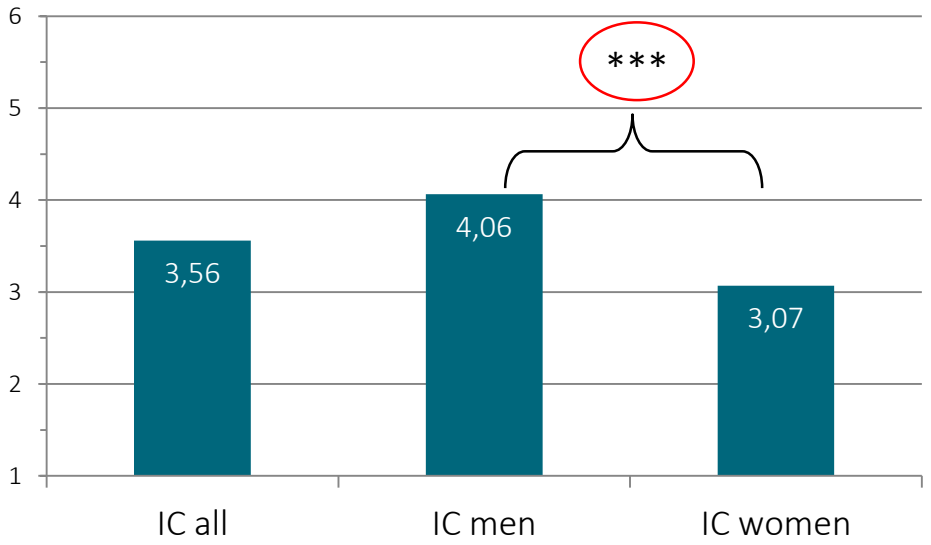
Group Decision



- Consensus
- No time limit
- Max. 5 minutes

Women are more risk averse than men

Average individual choice (IC) by gender



Note: Two-sample Wilcoxon rank-sum test (z-stat = 4.634, p = 0.000)

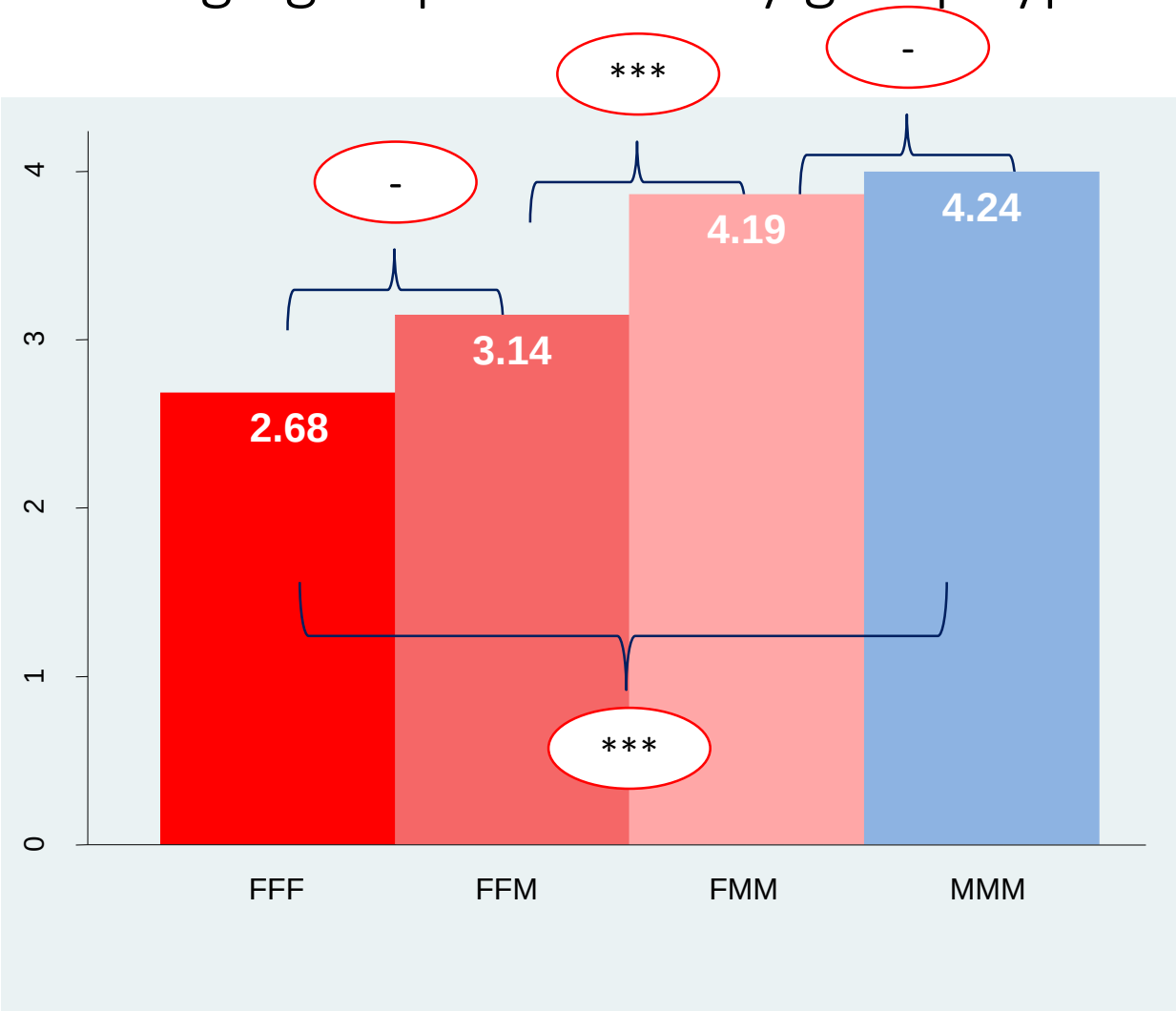
- IC is lower for women
- IC is not influenced by group composition

Order of choices

- Prior decision set an anchor which can bias the later ones (Ariely et al., 2003)
- Social context influences decisions (Castillo et al., 2015)
- Ordering of individual and group choice showed no influence on individual risk preference (Harrison et al., 2010)

➢ We find that the individual choice is not influenced by group composition

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)

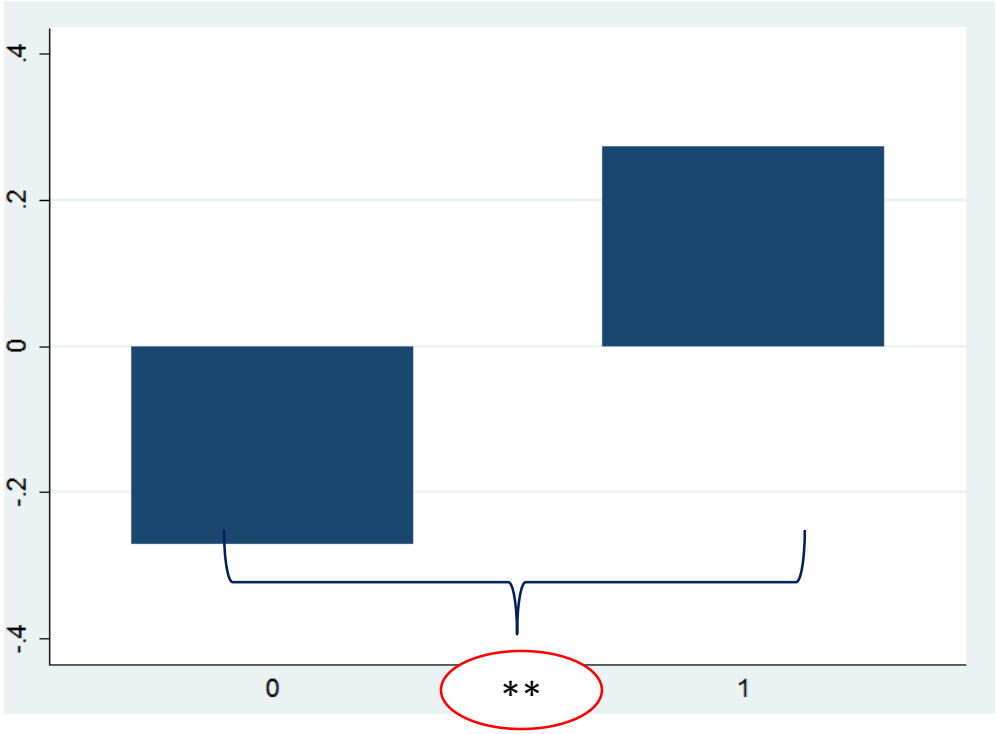
GC – IC is higher for male dominated groups

	Group type	GC	IC	GC – IC	N
1	All	3.55 [3.17, 3.94]	3.56 [3.34, 3.77]	0.01	254
2	Female dom. (FFF & FFM)	2.91 [2.41, 3.41]	3.18 [2.89, 3.46]	- 0.27	129
3	Male dom. (FMM & MMM)	4.21 [3.70, 4.73]	3.95 [3.64, 4.26]	0.26	125

Note: 95% confidence intervals in parenthesis

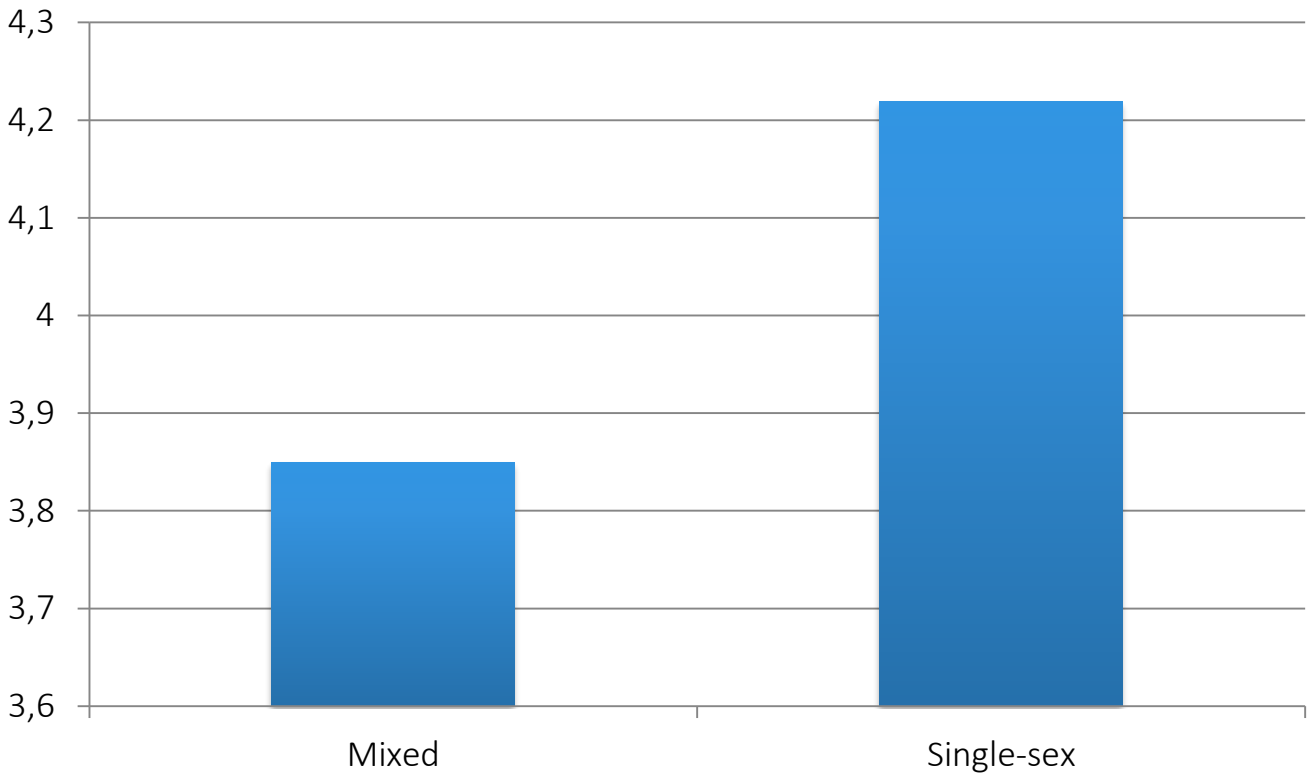
GC – IC higher in male dominated groups

Mean difference between group choice and individual choice (GC – IC)
divided into female (0) and male (1) dominated groups



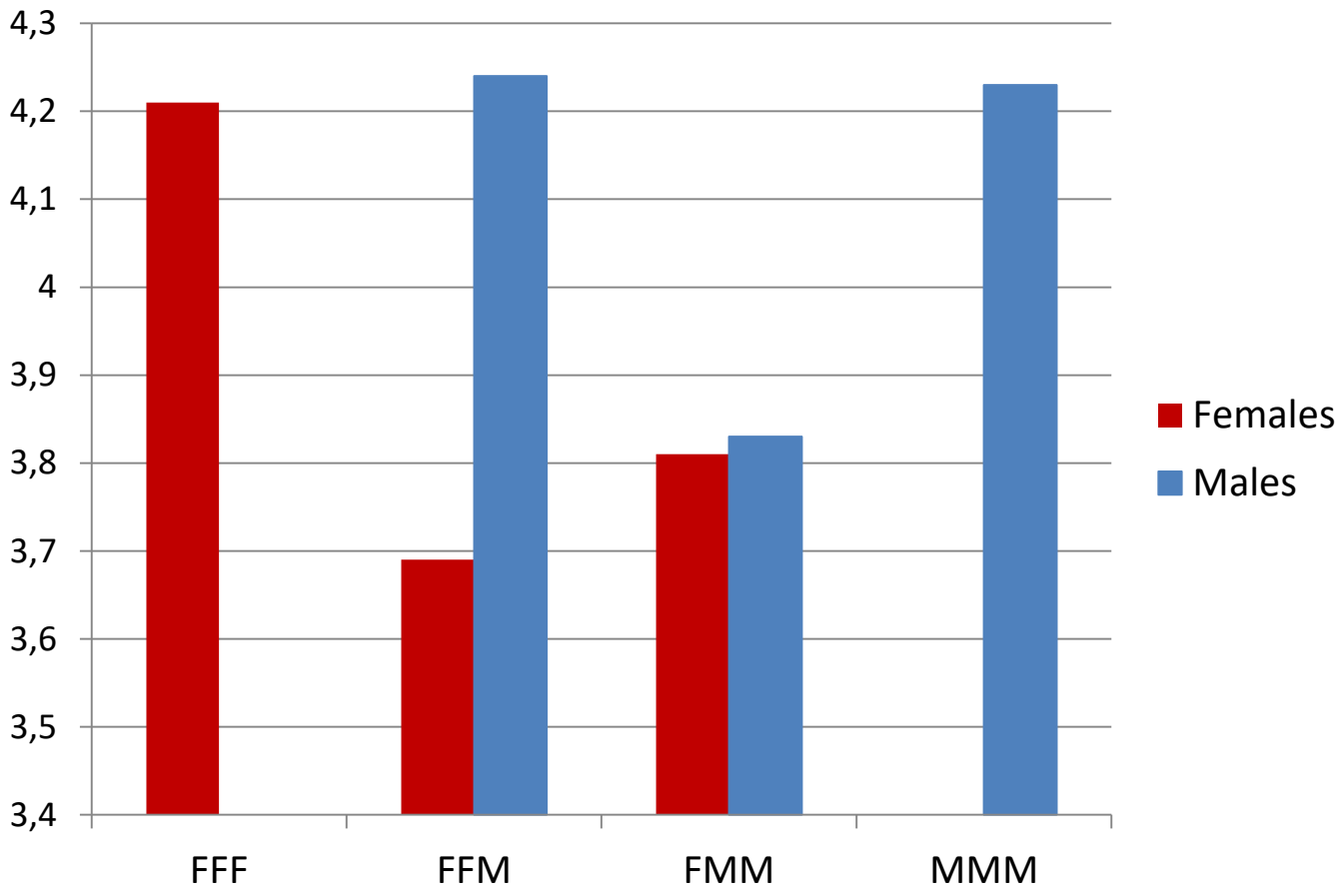
Note: Pair wise comparison of GC-IC with a two-sample Wilcoxon rank-sum test (z=-2.046, p=0.04)

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

Overall summary

- Women are not always but in some situations more risk averse than men
  - Elicitation method
  - Social context
- Differences are in line with evolutionary theory
- Nurture seems to play a major role for observed differences
- Gender balance is important for efficient group decision making