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Subjective Relative Income Positions and the Priming Effect of Endpoint Anchors

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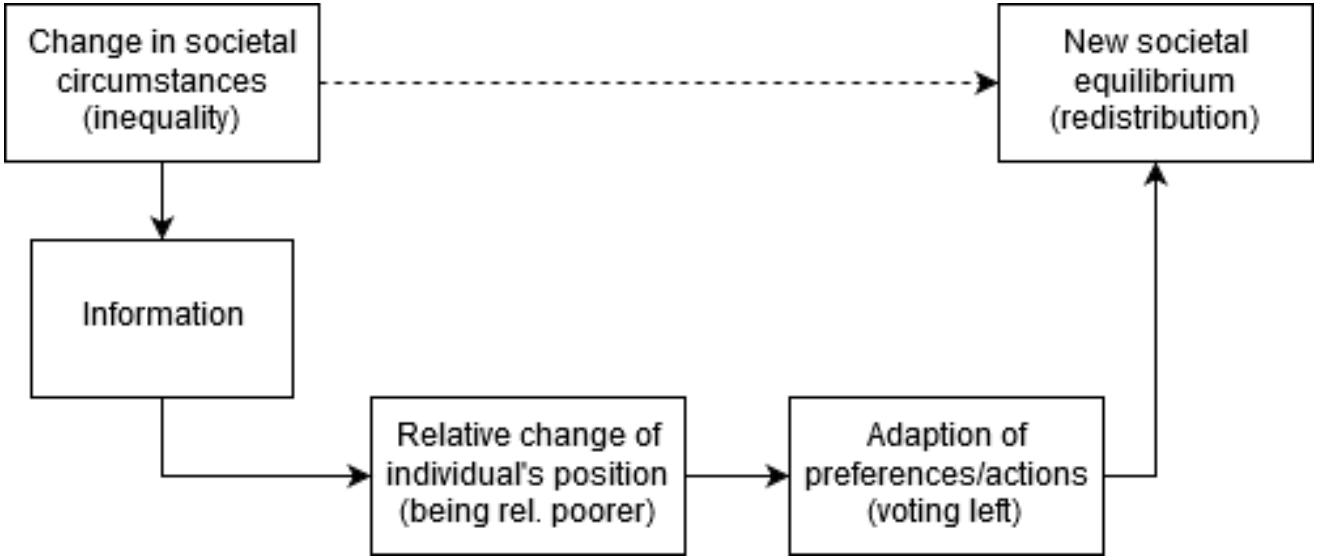
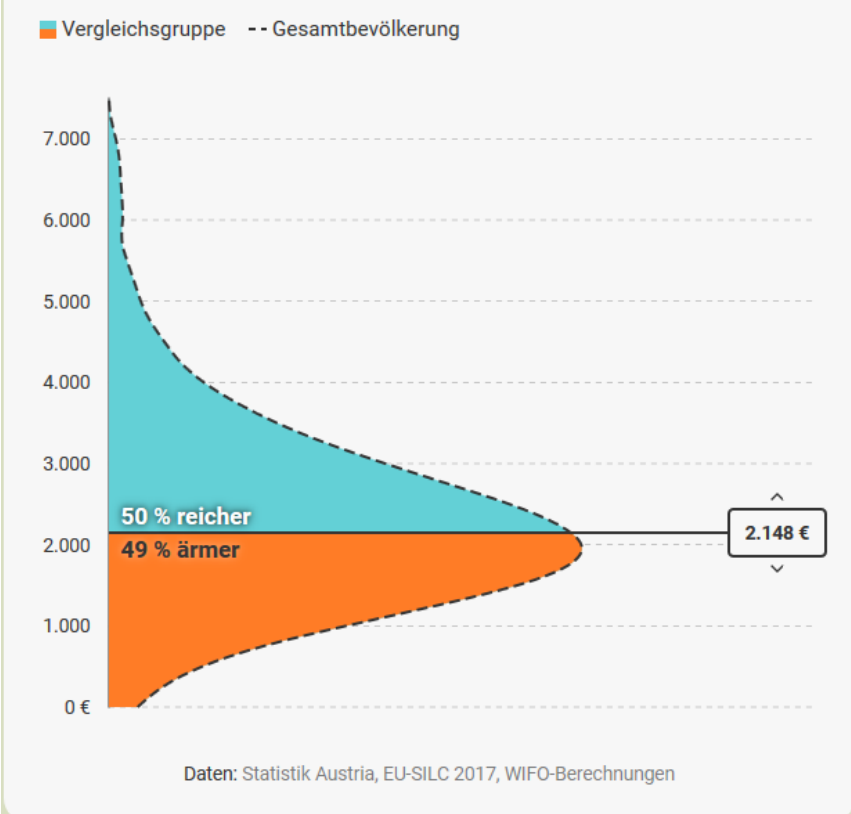

Change in societal circumstances (inequality)
New societal equilibrium (redistribution)
Information
Relative change of individual's position (being rel. poorer)
Adaption of preferences/actions (voting left)

Lebensstandard
Onlinerechner: Wie arm oder reich sind Sie im Österreich-Vergleich?



https://www.derstandard.at/story/2000110760842/onlinerechner-wie-arm-oder-reich-sind-sie-im-oesterreich-vergleich (09.11.2019)

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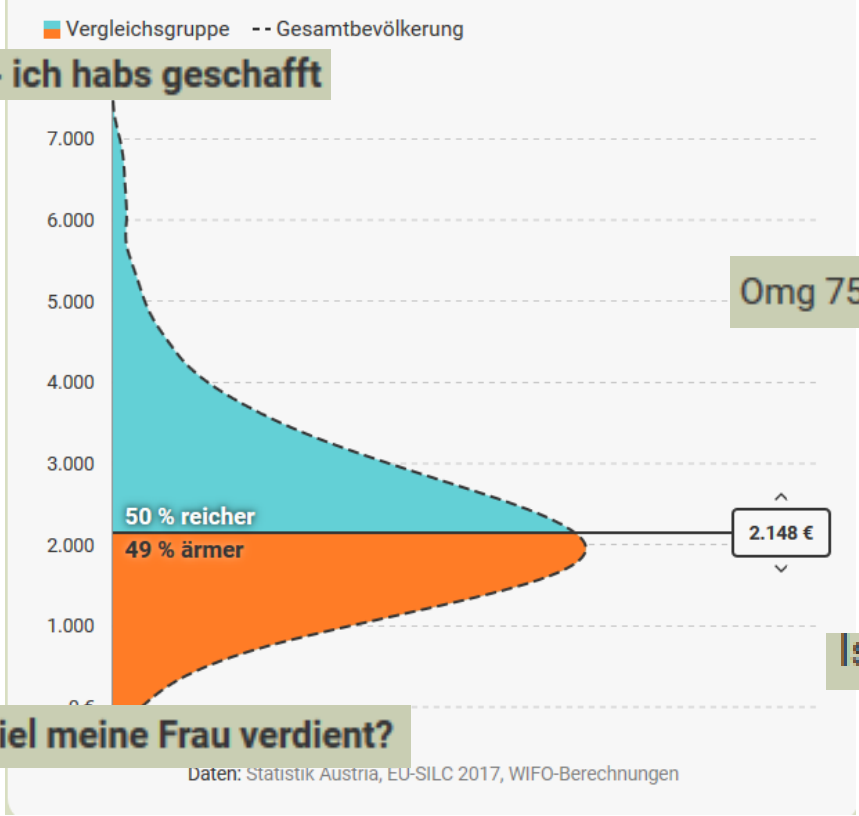


Genau in der Mitte 50% 50% - ich habs geschafft

we are the 99

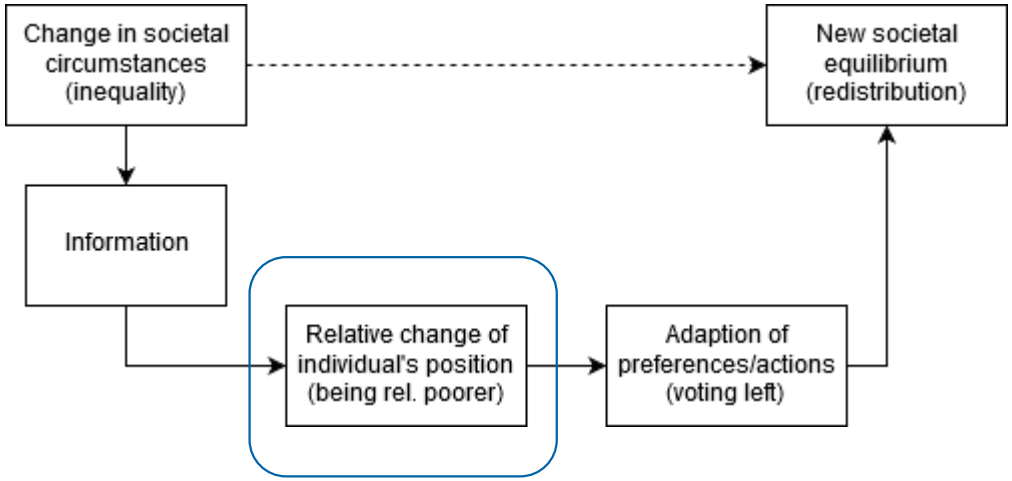
Omg 75% sind reicher als ich?

Is ma wurscht....

Woher soll ich wissen, wieviel meine Frau verdient?

https://www.derstandard.at/story/2000110760842/onlinerechner-wie-arm-oder-reich-sind-sie-im-oesterreich-vergleich (09.11.2019)

The black box of perceptions



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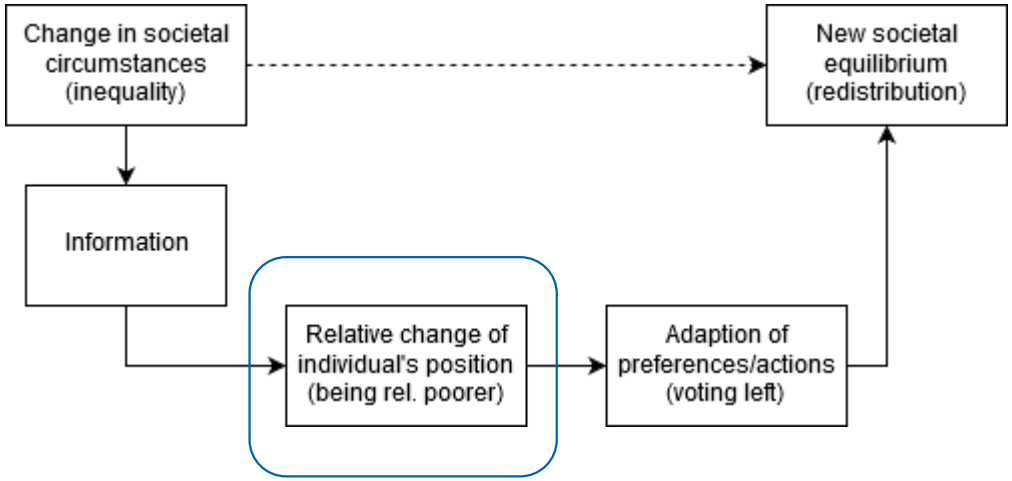

- Is the way information is retrieved relevant for resulting preferences?
- How are perceptions formed?

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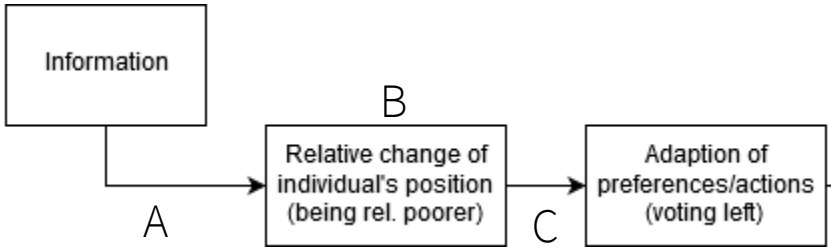
Why is this question relevant?



- A) Issues related to limited information (e.g. segregation) cannot explain the variety of perception differences (Page and Goldstein 2016) → other mechanisms must be involved

- B) Different questions lead to different estimates of respondents regarding their perceived income distribution (Eriksson and Simpson 2012) → current methods to elicit relative positions might be biased

- C) Simple Bayesian updating cannot explain the changes in preferences when information is made available (Trump 2018) → information is not processed in a net-maximizing way

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Perceptions in sociology

- Post truth debate

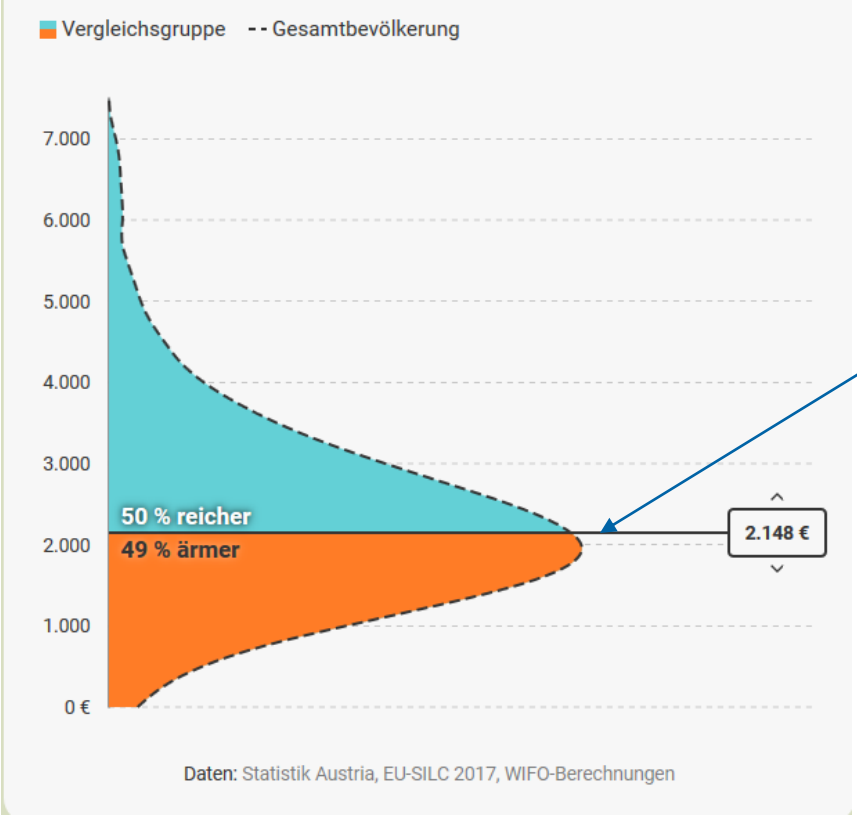
- People's perceptions about inequality in society can explain preferences for redistribution better than objective measures (Bobzien forthcoming; Cruces, Perez-Truglia, and Tetaz 2013; Gimpelson and Treisman 2018; Karadja, Mollerstrom, and Seim 2016)

- People may not differ In their values (ideal/fair/good) but in their perceptions

- Weak tradition to measure detailed beliefs about the present:
  - Beliefs are measured by general statements
    - „by and large, people deserve what they get" (Furnham 2003; Rubin and Peplau 1975)

- Strong mixture between how one sees and how one should see the world (Davidai and Gilovich 2015) (early critics Wegener 1990; Manski 2004)

Lebensstandard
Onlinerechner: Wie arm oder reich sind Sie im Österreich-Vergleich?



Relative position (of self)

https://www.derstandard.at/story/2000110760842/onlinerechner-wie-arm-oder-reich-sind-sie-im-oesterreich-vergleich (09.11.2019)

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Relative positions

- *Relative* material payoffs affect people's well-being and behavior in addition to its absolute value (Fehr and Schmidt 1999)

- One's relative position is the prime explanatory factor for life satisfaction (Easterlin, 1974; McBride, 2001; Blanchflower and Oswald, 2004; Stutzer, 2004; Ferrer-i-Carbonell, 2005; Luttmer, 2005; Weinzerl, 2006)

- People have problems estimating their relative position and the related distributions (Chambers, Swan, and Heesacker 2014; Kiatpongsan & Norton, 2014; Norton & Ariely, 2011)

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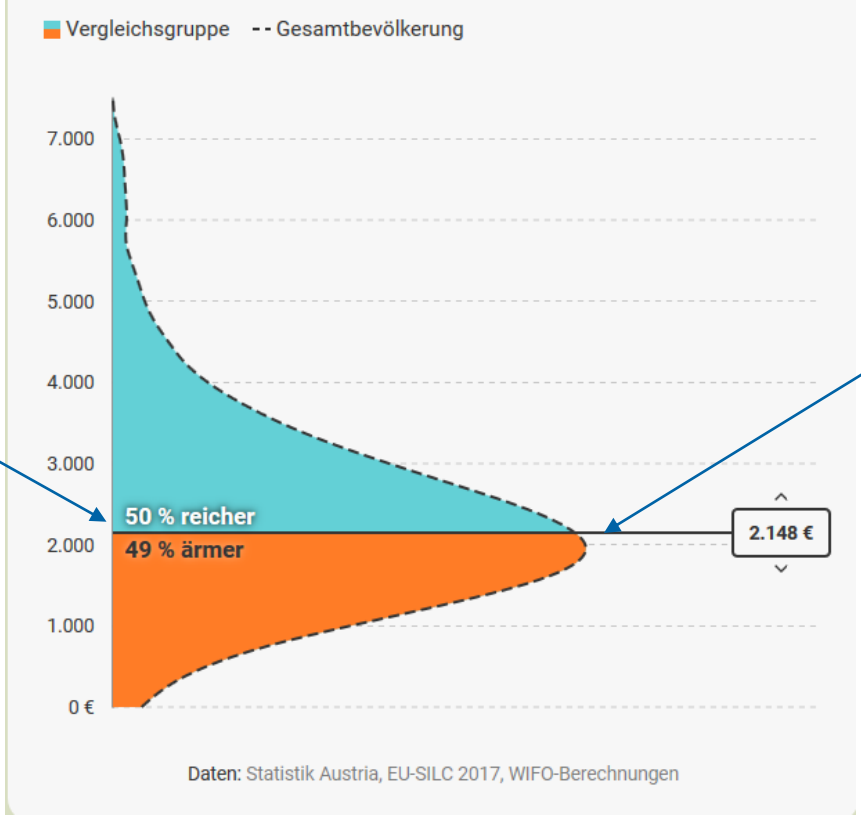
Lebensstandard
Onlinerechner: Wie arm oder reich sind Sie im Österreich-Vergleich?

Directionality
(of comparison)



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Relative positions as directed comparisons

- Social comparison is a tool in the quest for self-knowledge (Ferstinger 1954)

- People's inferences differ if confronted with information about upwards (higher) or downwards (lower) comparisons (Skylark et al. 2018).

- Terms like ‘‘more than" imply that dominant actors have more than the standard, while terms like ‘‘less than" imply that the subordinate actors have less than the standard.
  - Downwards comparison should increase fairness concerns about the poor (having too little) while upwards comparisons should increase fairness concerns about the rich (having too much)

	equality	need	equity	entitlement	inequality
Anchor higher (Ref. : lower)	+	–	0/-	–	0/-

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Study 1: Method and Data

- Sample: PUMA survey VI , representative sample of the Austrian population, N= 1088
- Approach: Randomly varied relative income question anchor

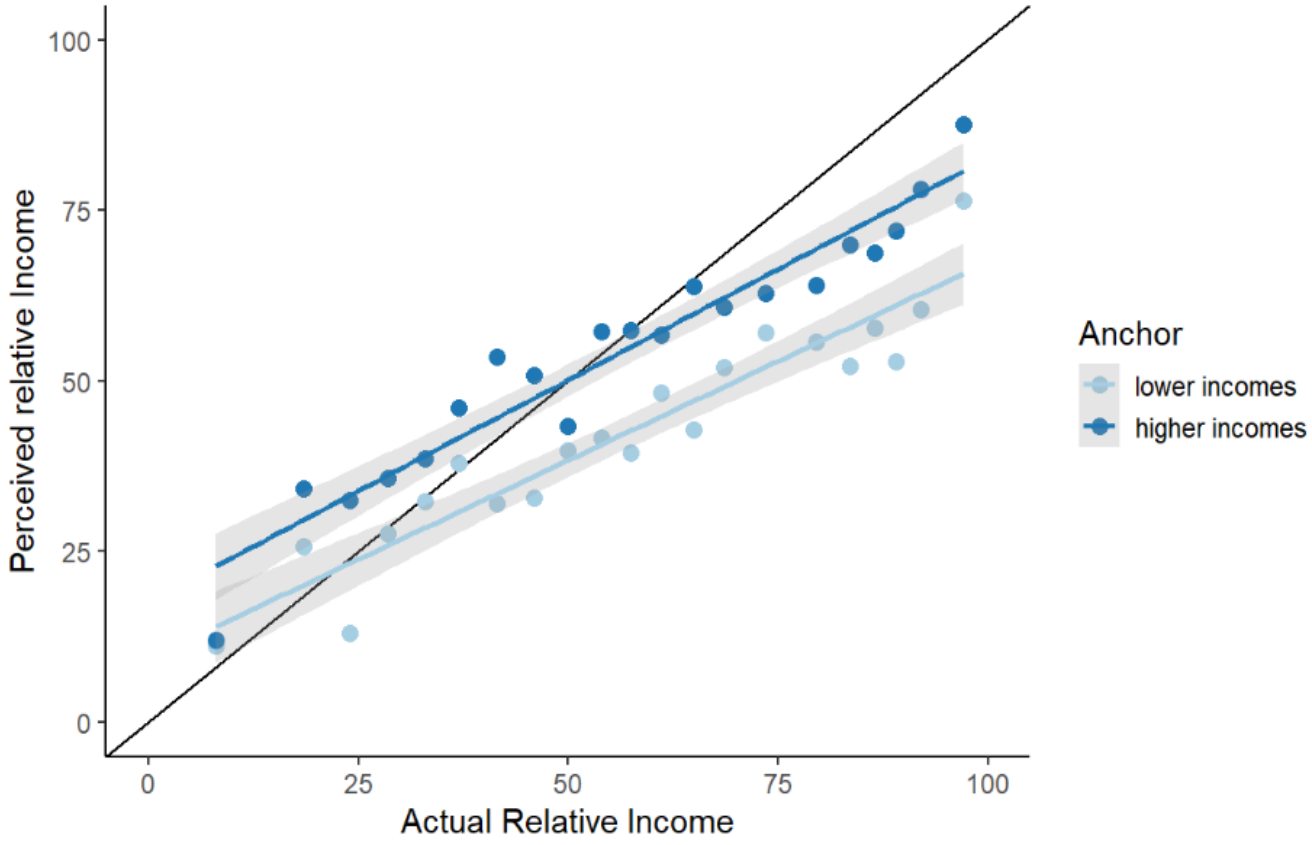
*There are 6.8 million income earners in Austria. Which part of them you guess has a **lower**/**higher** yearly gross income than you?*

- We will display the relative share of people below one's position by subtracting the higher answers from 100.

- Data sources (for calculation of actual relative positions):
  - Statistik Austria. 2018. *Statistik der Lohnsteuer 2017*.
  - ÖNB. 2018. *HFCS 2017*.
  - Statistik Austria. 2018. *Urlaubs- und Geschäftsreisen 2016*.
  - WE NEED MORE/BETTER DATA!

Study 1: Results

- Higher anchors induce upwards bias compared to lower anchors
- (M_h = 56.7, M_l = 47.3, **Δ**M=9.4, t = -6.5, df = 1009, p-value = 0.000)
- The bias is unrelated to actual income position
- The bias is unrelated to the bias towards the middle



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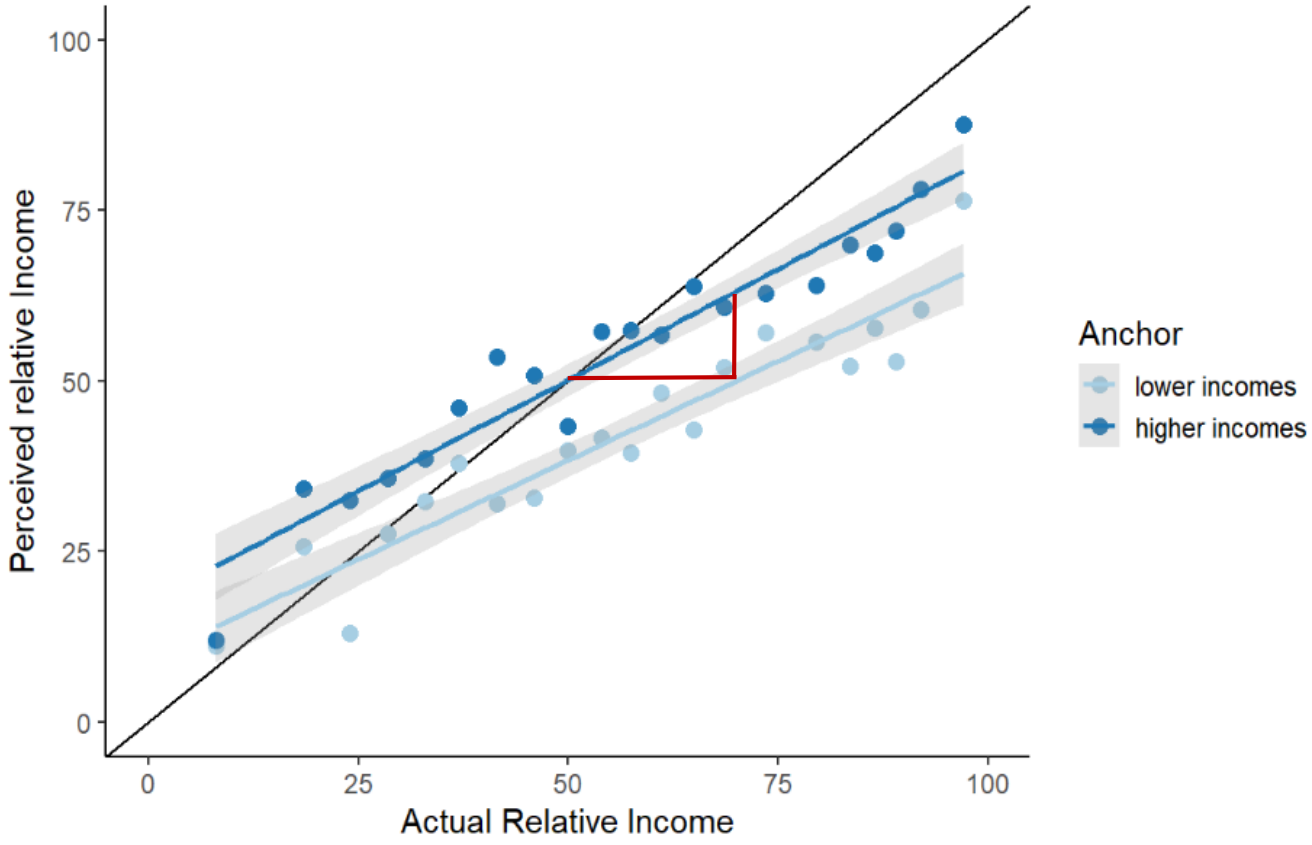

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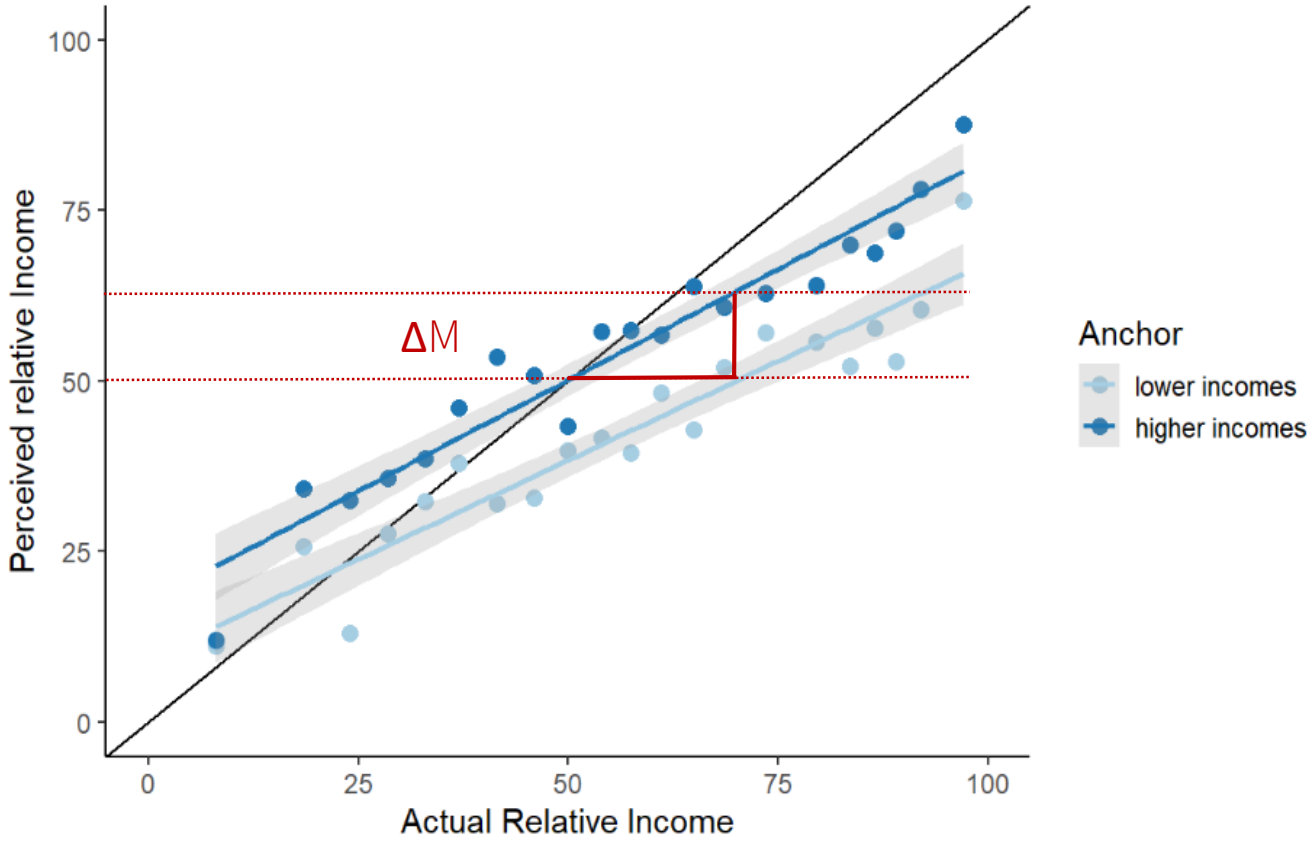

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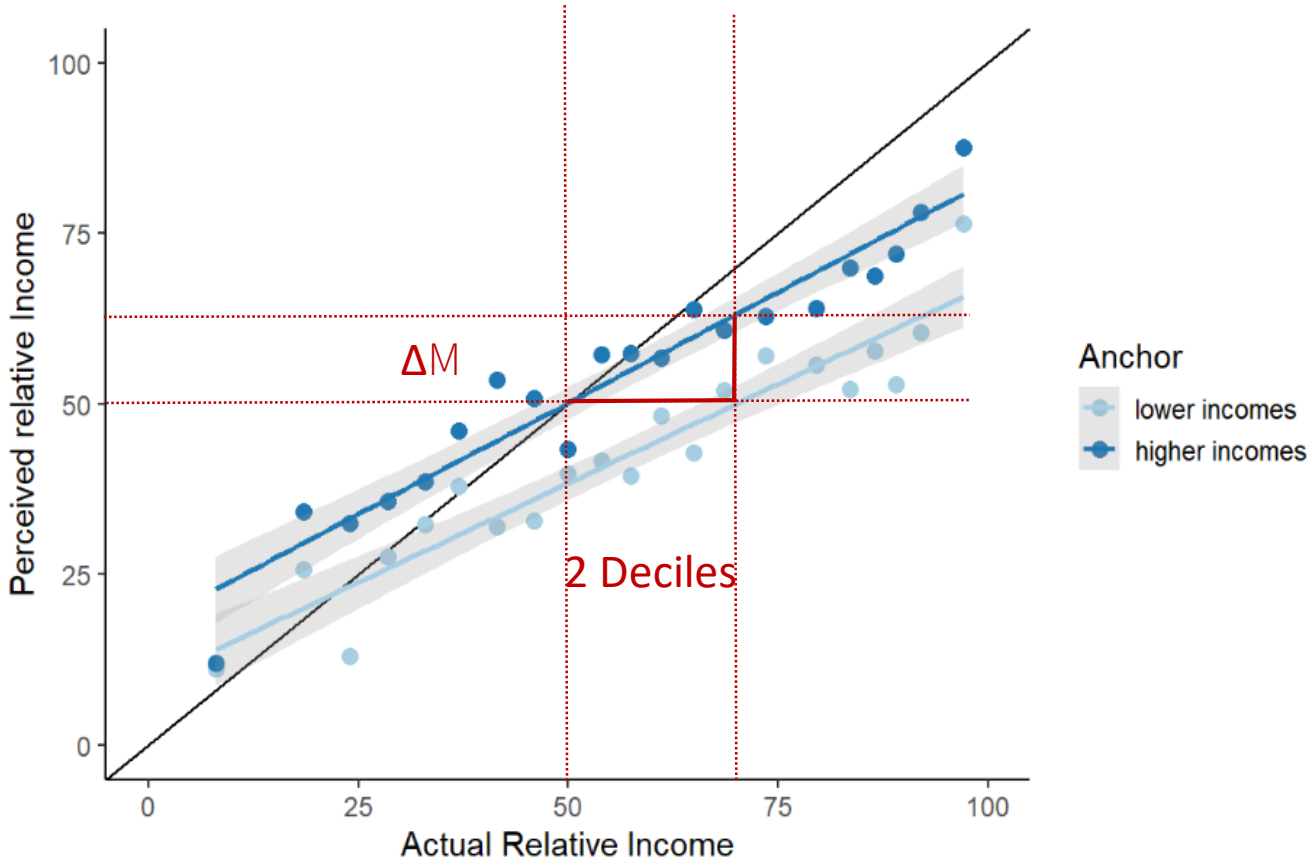
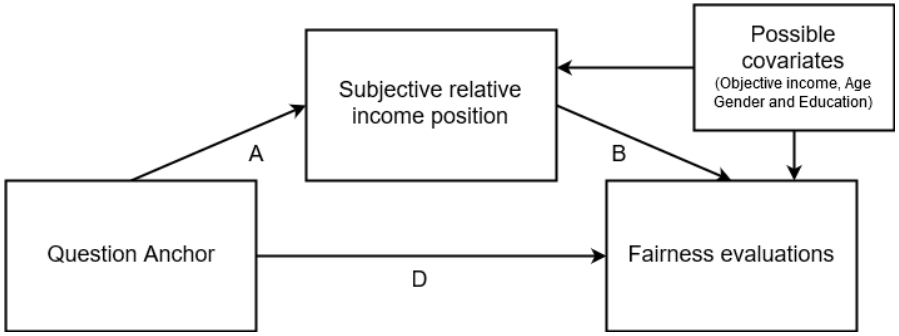


Is the way information is retrieved relevant for resulting evaluations?

	equality (1)	need (2)	equity (3)	entitlement (4)	inequality (5)	SSS (6)	Future SSS (7)
D=(Total Effect)	0.225	0.039	-0.229*	0.071	-0.055	0.12	0.29
A = IV→M	12.21***	12.21***	12.21***	12.21***	12.21***	12.21***	12.21***
B=M→DV	-0.01**	0.001	0.002	0.0068	0.0018	0.021***	0.002
A*B (ACME)	-0.124*	0.0148	0.019	0.0828+	0.022	0.259***	0.214**
IV→DV(control M) =ADE	**0.358***	0.0258	**-0.255***	-0.013	-0.082	-0.142	0.08
Evidence f. mediation (indirect e.)	✓	X	X	(✓)	X	✓	✓
Evidence f. direct effect	✓	X	✓	X	X	X	X

Bootstrapped, unstandardized effects. P<0.001***, p<0.01**, p<0.05*, p<0.1+
N=246

- Mixed results regarding direct effects of direction of comparison
- Strong evidence that the anchor affects other variables through its effect on the evaluation of one's position in the income hierarchy → e.g. subjective social status (SSS)



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How are perceptions formed?
Understanding relative self-positioning as social comparison.

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Understanding relative self-positioning as social comparison.

- Motivational perspective (MP)
  - Egoism → the social value of the evaluated trait drives the bias (BTAE & goal to think well of oneself (motivated avoidance) (Brown 2012; Guenther and Alicke 2010)

How are perceptions formed?
Understanding relative self-positioning as social comparison.

- Motivational perspective (MP)
  - Egoism → the social value of the evaluated trait drives the bias (BTAE & goal to think well of oneself (motivated avoidance) (Brown 2012; Guenther and Alicke 2010)
- Cognitive perspective (CP)
  - Enhanced accessibility → easier time recruiting evidence in line with targets (non-motivational avoidance) (Epley and Gilovich 2016; Mussweiler and Strack 1999)

Study 2: Testing the mechanisms

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Test approaches	Motivational P.	Cognitive P.
Reversing the social value of the evaluated trait (e.g. flight behavior)	Reverse bias	No effect
Measuring bias of respondents that value the underlying trait highly	Increase (reversed) bias	No effect
Treating motivational reaction (increasing value concerns by design)	Increase reversed bias	No effect / reduced bias
Measuring perceptions without comparing to the self (e.g. relative position of a neutral point)	Reduce bias	No effect / increase bias

Study 2: Method and Data

- Sample: 282 students (158 undergraduate, 124 graduate)

Within Variation	Questions	Between Variation: T1	T2	T3	T4
	Relative income position	Lower	Lower first double	Higher first double	Higher
	Median income position	Lower	Lower	Higher	Higher
	R. flight behavior km/CO2[1]				
	R. wealth position				
	Sample	1/3	1/6	1/6	1/3

Note: [1]Question wording (carbon dioxide emission and flight kilometers) varied randomly between subjects.

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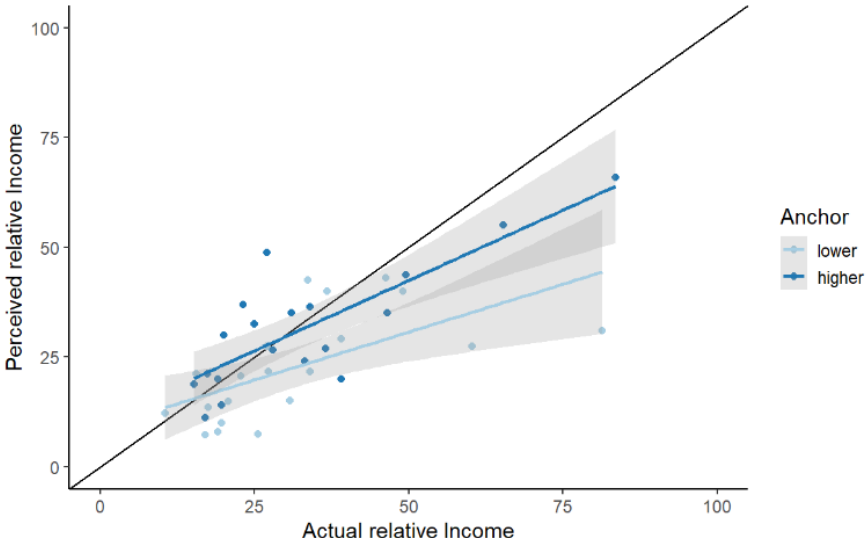
Consistency checks

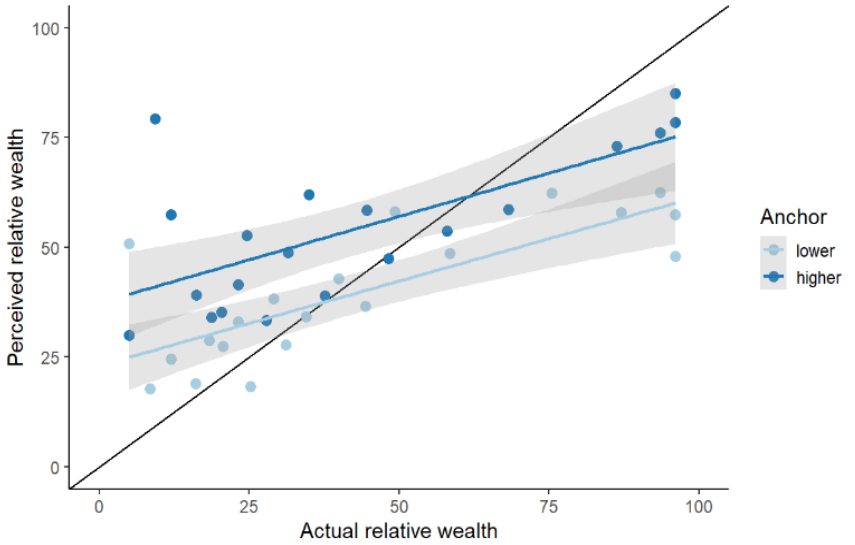
- T2 and T3
  - participants' estimates about the share of people above and below their relative position should add up to 100 (or 99)
  - Of the 78 participants who answered this question 17 failed to do so (22%)
- T1 and T4
  - if a participant earns 2000 Euros and estimates the share of people earning less than herself to be 50% and afterwards assesses the share of people earning less than 1650 Euros (the median income) and provides the answer 40%, the answers are logically inconsistent
  - Of 150 respondents 24 provided inconsistent answers of this kind (16%)

- Estimating relative positions is cognitively demanding

Results: Replication of biases with income and wealth

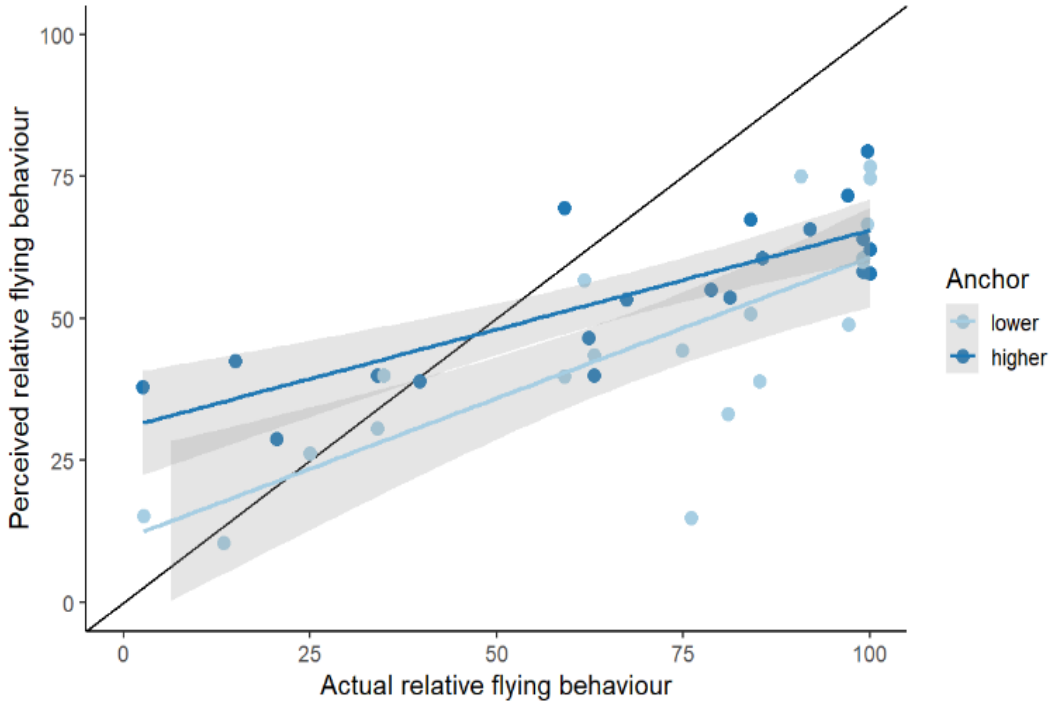


(M_l = 23.10, M_h = 33.03, t = 3.01, df = 143.2, p-value = 0.003)



(M_l = 38.89, M_h = 53.45, t = 4.44, df = 224.7, p-value = 0.000)

Reversing the scale



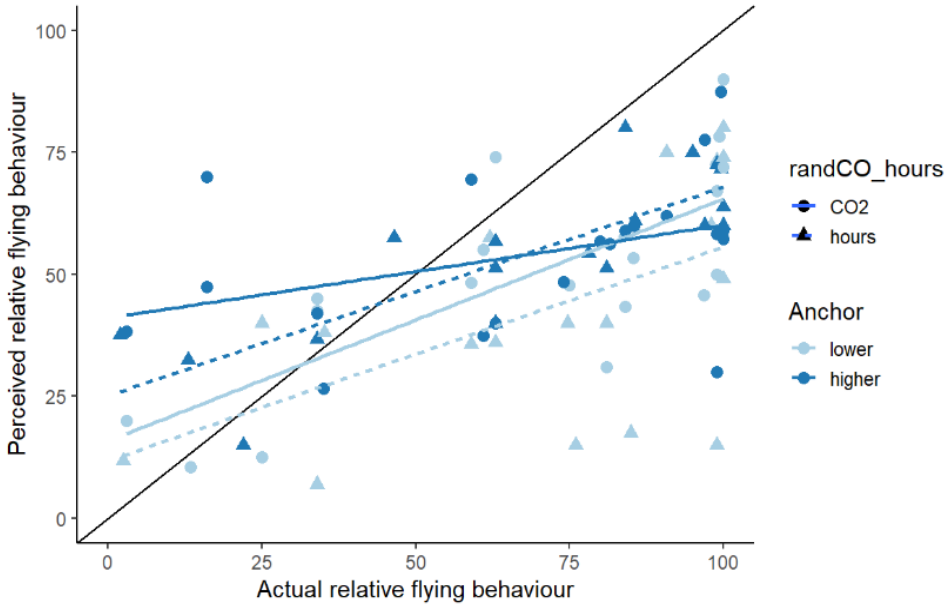
(M_l = 46.64, M_h = 54.40, t = 2.28, df = 227.7, p-value = 0.023)

Interactions of anchors and respondent‘s values

- Expected positive interaction between higher anchor and valuing the underlying trait highly

	Subj. relative income pos.		Subj. relative wealth pos.		Subj. relative flight b. pos.	
	(1)	(2)	(3)	(4)	(5)	(6)
Anchor higher (Ref. lower)	8.908**	20.774*	12.549***	28.770**	8.161**	13.328
	(2.999)	(8.740)	(2.844)	(8.779)	(2.962)	(11.627)
Value earning	1.401	3.342				
	(1.580)	(2.070)				
Anchor * Value earning		**-4.693**				
		(3.249)				
Value rich			0.794	2.932+		
			(1.136)	(1.573)		
Anchor * Value rich				**-4.389+**		
				(2.249)		
Pollution danger					-3.161*	-2.511
					(1.579)	(2.123)
Anchor * Pollution danger						**-1.465**
						(3.187)
Observations	145	145	225	225	222	222
R^2	0.267	0.278	0.330	0.341	0.298	0.299
Adjusted R^2	0.252	0.258	0.321	0.329	0.289	0.286
Note:						+p<0.1, *p<0.05, **p<0.01, ***p<0.001

Treating motivational reactions

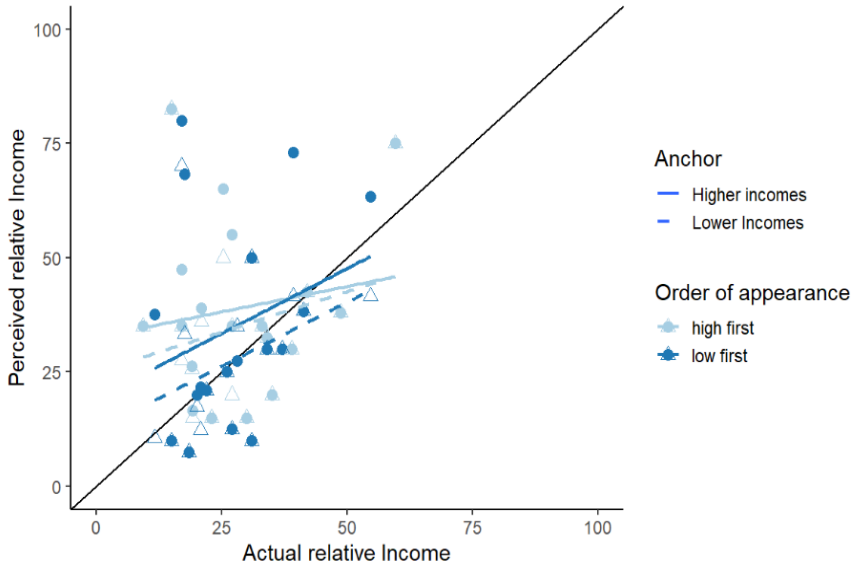


	M1
Actual relative flight position	0.432***
	(0.048)
Anchor: higher (Ref: lower)	8.402*
	(4.097)
Question wording: hours (Ref: CO2)	1.382
	(4.078)
Anchor * Question wording	**-2.149**
	(5.860)
Constant	16.269***
	(4.385)
Observations	229
R^2	0.283
Adjusted R^2	0.271
Note:	*p<0.05**p<0.01***p<0.001

Testing the cognitive mechanism

- Bias without a cause
  - Does the bias exist if we ask about higher/lower position of the median income?
  - ($M_l = 34.7$, $M_h = 52.5$, t = 8.34, df = 258, p-value = 0.000)

- Successful debiasing through double anchoring?
  - ($M_l = 27.3$, $M_h = 36.0$, t = 1.4, df = 58, p-value = 0.16)
  - Difference is not sig. anymore but low sample size
  - we cannot say that the difference (8.7) is smaller compared to the estimates with a single anchor (9.9)
  - It seems that the ordering effect (first anchor decides bias) outweighs the debiasing effect



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Conclusion and Discussion

- Studies using single anchor question systematically bias the proportion of respondents over- or underestimating their relative (income) position
- These directional biases are present in a wide variety of topics
- Results suggest that motivational mechanisms are not the prime driver for biases
- A cognitive anchoring perspective might be best suited to understand relative self-perceptions

- Media discussions highlighting either top- or bottom anchors may change how people estimate their own position in society

- Limitations
  - Motivational norms might be more important if norms are directly violated
    - E.g. underreporting of female and overreporting of male income around the 50% threshold (Roth and Slotwinski 2019)
  - Satisficing might increase biases in surveys. This would suggest lower biases in contexts outside of surveys → next step: natural experiments

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https://me.me/i/the-dangers-of-a-one-sided-story-67b82002e42e4192bc73c11113b74bd9

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APPENDIX

Full German question wording of the relative income question

Stellen Sie sich vor, Sie bekommen Ihr derzeitiges Einkommen 14-mal im Jahr ausbezahlt.

Welcher Anteil der rund 6,9 Millionen Einkommensbeziehenden[1] in Österreich schätzen Sie, hat dann ein höheres Brutto-Jahreseinkommen[2] als Sie?

[1]In dieser Gruppe sind unselbstständige Vollzeit- oder Teilzeit-Erwerbstätige, Lehrlinge sowie Pensionisten und Pensionistinnen enthalten. Auch Personen, die nicht das gesamte Jahr über Einkommen bezogen haben, sind inkludiert.

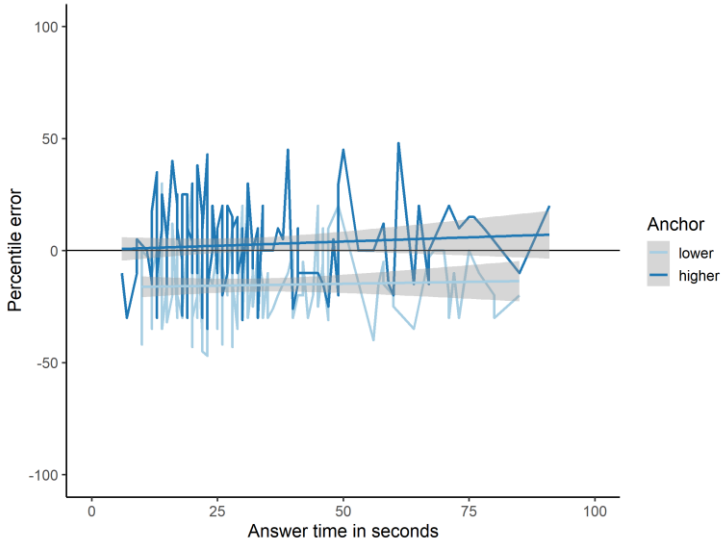
[2]Unter Einkommen verstehen wir die jährliche Summe der Bruttobezüge, definiert als Lohneinkommen vor Steuern. Dies inkludiert das 13. und 14. Monatsgehalt. Pensionen sind ebenfalls inkludiert. Staatliche Transfers, wie Arbeitslosenunterstützung und Studienbeihilfen, sind nicht inkludiert.

Tragen Sie hier den geschätzten Anteil ein: _____ %

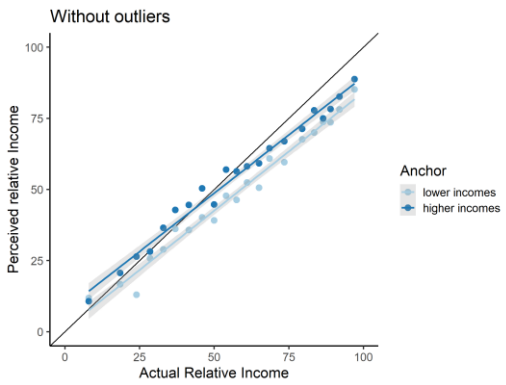
Cognitive Effort and Bias

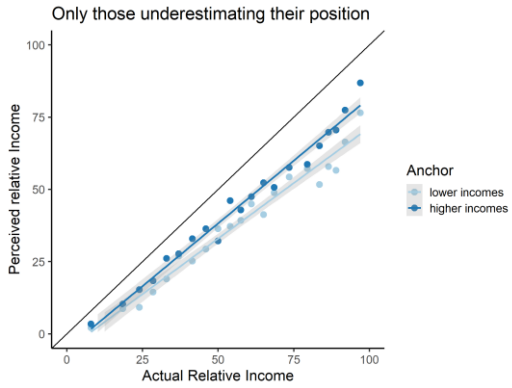
- Literature suggest easier times to answer questions with an upwards anchor (Skylark et al. 2018)
- We do not find a significant difference between the answer times of high and low questions in
- Study 1:
  - M_L65.4, M_H64.3,t = 0.27, p = 0.78)
- Study 2:
  - Income: M_L48.7, M_H44.7 t=0.825 p=0.41
  - Median: M_L31.79, M_H32.63 t=0.245, p=0.81
  - Flying: M_L 30.7, M_H27.31, t=0.65, p=0.52
  - Wealth: M_L20.36, M_H19.6,t=0.52, p=0.60

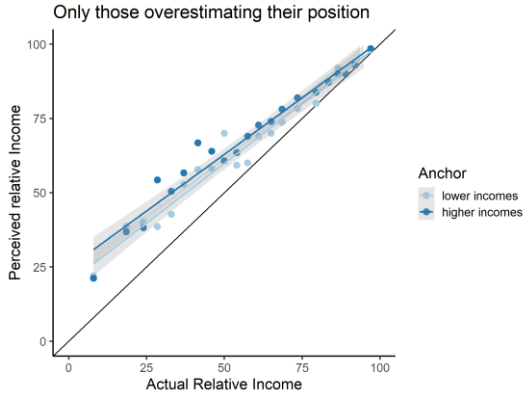
Answer error, time and bias remain quite stable



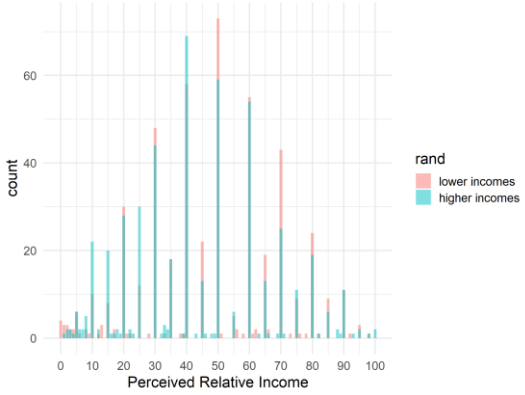
Robustness of difference (study 1)



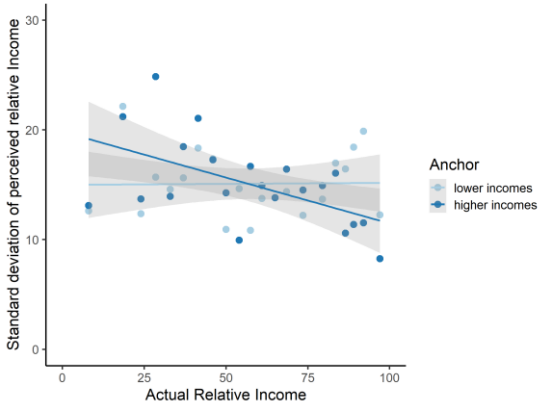




Estimating means rounding up or down



Are resp. getting more sophisticated if their own positions reaches an anchor point? ->unclear but most likely not



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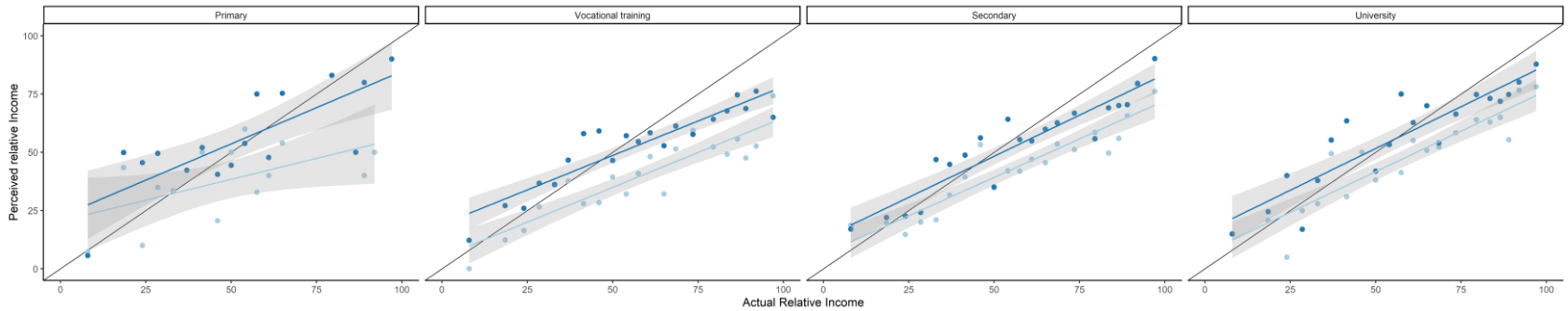

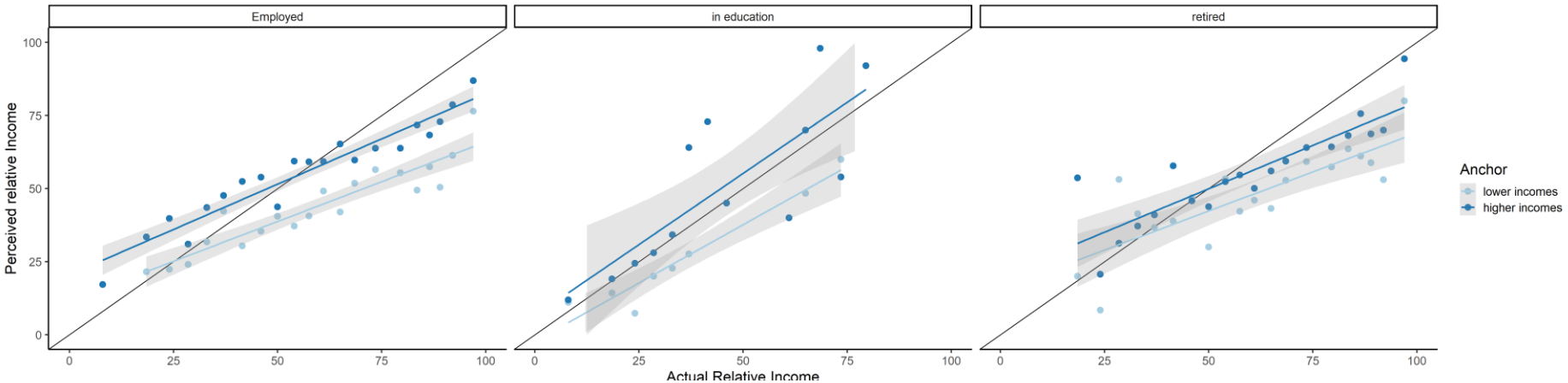

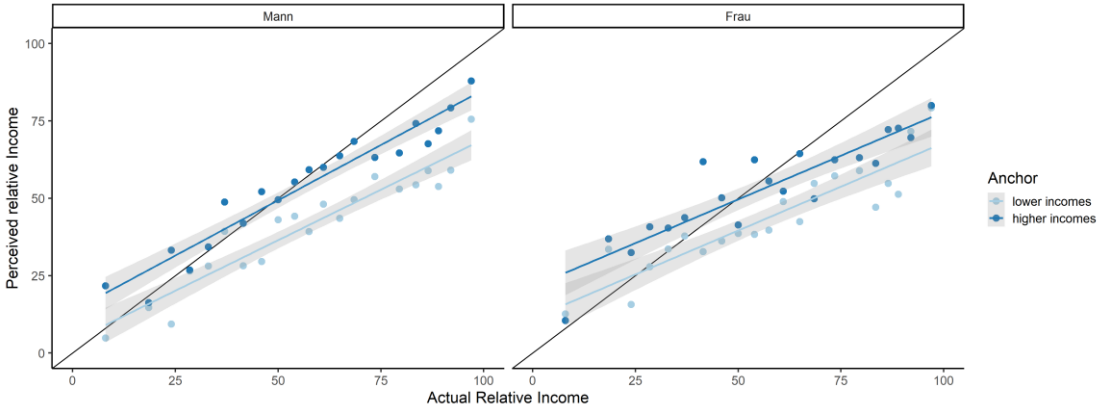

- Assumption of treatment equality
- Effects of sociodemographic variables remain quite stable betwen group high and low
- This is especially the case for the objective income

	Subjective relative income Position	
	LOW ANCHOR	HICH ANCHOR
Actual income percentile	0.528***	0.572***
	(0.039)	(0.042)
Female(Ref::male)	0.080	-2.669
	(1.591)	(1.671)
Age	-0.017	-0.060
	(0.070)	(0.078)
Vocational training (Ref. Primary Educ.)	-5.212*	-3.856+
	(2.496)	(2.085)
Secondary	-1.775	-4.487+
	(2.718)	(2.449)
University	3.645	-0.529
	(2.953)	(3.075)
in education (Ref.:employed)	-9.266**	-7.236+
	(3.513)	(3.942)
retired	4.128	-1.864
	(2.511)	(2.620)
unemployed	-1.047	-4.209
	(4.081)	(3.636)
Constant	16.502***	30.366***
	(4.564)	(4.323)
Observations	500	498
R^2	0.464	0.429
Adjusted R^2	0.454	0.418
Note:		*p**p***p<0.01

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Why a student sample might be alright in this context

- Our treatment is allocated randomly
- We show in the representative sample that the anchor effect is independent of education background age and income.
- We have a student sample that is not self-selected (students were drawn from obligatory courses)
- We do not try to evaluate the size of the effect, but test for the existence of specific mechanisms explaining the biases

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Question wording of controls etc.

Concept	*Item*	*Answer-Scale*
Inequality	The social inequality in Austria is too large	7-point rating scale
Subjective social position (present)	There are people who tend to be towards the top of our society and people who tend to be towards the bottom. On this card there is a scale that runs from top to bottom. Where would you place yourself on this scale nowadays?	10 point scale with endpoint labeling 1=top, 10 = bottom.
Subjective social position (future)	There are people who tend to be towards the top of our society and people who tend to be towards the bottom. On this card there is a scale that runs from top to bottom. Where would you place yourself on this scale nowadays?	10 point scale with endpoint labeling 1=top, 10 = bottom.
Distributive principle: equality	A society is just if income and wealth are equally distributed among the citizens.	5-point rating scale
Distributive principle: equity	A society is just if hard-working people earn more than others.	5-point rating scale
Distributive principle: need	A society is just if it takes care of those who are poor and needy.	5-point rating scale
Distributive principle: entitlement	A society is just if citizens with higher status have better living conditions than those with lower status.	5-point rating scale

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Summary

Problem:

- People's perceptions about their position in society are crucial for many beliefs and preferences
- However, individual perceptions tend to be inaccurate and systematically biased

Idea:

- Perceptions about one's relative positions in society are best understood as social comparisons

Explanations:

- The motivational explanation:
  - Perceptions are biased because of the tendency to enhance one's position compared to the target
- The cognitive explanation:
  - Perceptions are biased because of easier recollection of memories in line with target of comparison

Test strategy in the context of direction of comparison-> 2 stages:

- Study 1: Survey experiment on a representative sample of Austrians shows bias and relates it to fairness attitudes
- Study 2: Survey experiment on a student sample tests the 2 proposed mechanisms directly