

Which income comparisons matter to people, and how?

Evidence from a large field experiment

Xiaogeng Xu¹

Satu Metsälampi²

Michael Kirchler³

Kaisa Kotakorpi⁴

Peter Hans Matthews⁵

Topi Miettinen¹

¹Hanken School of Economics and Helsinki GSE

²University of Turku

³University of Innsbruck

⁴Tampere University and FIT

⁵Middlebury College and Helsinki GSE

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Motivation: Income rank matters for well-being

Theoretical arguments:

- ▶ Social comparison theory (Festinger, 1954).
- ▶ Relative income hypothesis (Veblen, 1899; Duesenberry, 1949).
- ▶ Inequality aversion and fairness (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Cappelen et al. 2007).

Empirical evidence:

- ▶ People take actions to improve their rank (e.g. Kuziemko et al., 2014) or relative payoff (Bellemare et al. 2008)
- ▶ Stronger association of *rank* than *income* with satisfaction (Clark et al., 2008; Boyce et al., 2010)

Life Satisfaction of Finns: at a time point

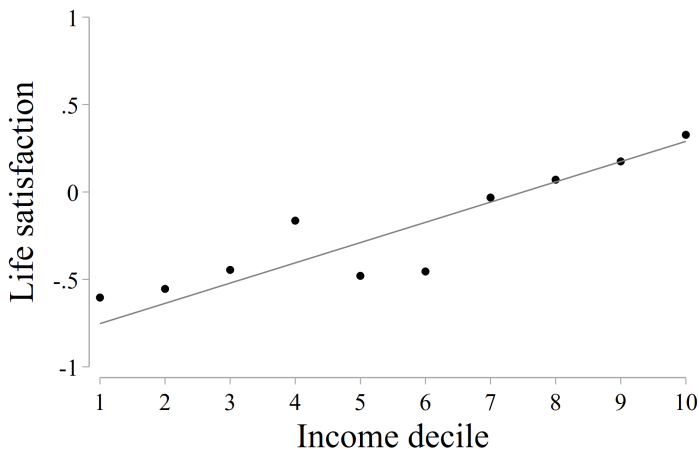


Figure 1: Standardized life satisfaction for Finns in the workforce, aged 35 to 45, ESS Round 9 (2018).

This paper

1. **Causality:** We provide an experiment that implements exogenous variation in rank information to study the causal effects of rank on well-being
2. **Which comparisons matter?** What are the relevant reference groups?
 - ▶ compatriots, locals, colleagues, age cohort, educational peers?
 - ▶ We provide exogenous information on rank in one reference group only to disentangle the importance of different comparisons
3. **How do they matter?** Dimensions of welfare
 - ▶ income-related well-being measures - satisfaction with disposable income, wage satisfaction, fairness perceptions
 - ▶ general well-being measures - life satisfaction, job satisfaction

Related literature

- ▶ Effects of relative income or rank in one (assumed) reference group on happiness or satisfaction (Card et al. 2012; Clark et al. 2009; Ferrer-i-Carbonell, 2005; Godechot and Senik 2015; McBride 2001; Alesina et al. 2004; Perez-Truglia, 2020)
- ▶ Descriptive evidence emphasizing the importance of comparisons in the workplace (Clark and Senik 2020)
- ▶ Misperceptions of rank in different reference groups and the effect of rank information on e.g. fairness views (Hvidberg et al. 2022)
- ▶ Information provision experiments - effects of rank or relative income information on other outcomes (Karadja et al. 2017, Fehr et al. 2022, Haaland et al. 2023)

Research design: Survey experiment

Online survey to run a pre-registered information provision experiment

1. Background questions
2. Belief elicitation: Respondent indicates **perceived income rank** among five different reference groups:
 - ▶ Age, Municipality, Education, Occupation, and National
3. Information treatment: Respondent receives information about her **actual rank** in one reference group
4. Standard survey questions and decision tasks

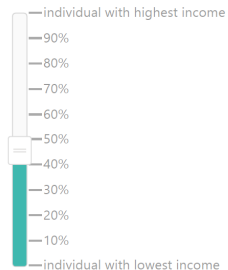
Research design: Treatment groups

Treatment	Description
CONTROL	No information about rank
AGE	Exogenous information: rank relative to people born in the same year
MUNICIPALITY	Exogenous information: rank relative to adults living in the same municipality
EDUCATION	Exogenous information: rank relative to people with same level of education (Basic, upper secondary, bachelor, master or higher)
OCCUPATION	Exogenous information: rank relative to people with same occupation (Classification on 2-digit level, e.g. "teaching professionals", "sales workers")
NATIONAL	Exogenous information: rank relative to adult Finns
CHOICE	Endogenous information: rank relative to the chosen reference group

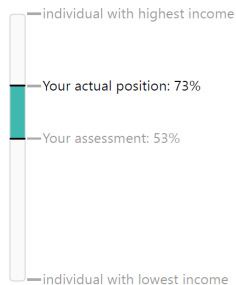
Research design: Belief elicitation example

What was the proportion of **people with the same educational degree**, who had lower disposable income than you? You indicated your educational degree was **Bachelor's or equivalent level**. Please tap on the bar below to indicate your assessment.

"**46%** of people with the same educational degree had lower disposable income than I."



Research design: Treatment example



According to your assessment, 53% of people who had the same level of education had lower income than you in 2018.

Actually, based on register data, 73% of people who had the same level of education had lower income than you in 2018.

Research design: Outcomes

- ▶ Focus in this paper on individual well-being
 - ▶ income-related well-being measures - fairness perceptions, satisfaction with disposable income, wage satisfaction
 - ▶ general well-being measures - life satisfaction, job satisfaction
- ▶ The survey included also other outcomes: policy attitudes (redistribution, labor market, migration), trust in institutions, social preferences, just-world beliefs

Implementation and sampling

- ▶ Survey carried out in co-operation with Statistics Finland (SF)
- ▶ Representative sample of 20,000 Finns from the sub-population of interest (35 to 45 years olds)
- ▶ 6642 (33%) started the survey, of whom 6121 (92%) completed
- ▶ Starters and completers are both balanced across treatments
- ▶ Incentives: the payment to each participant was 15 € for finishing and 5 € for correct assessment of income rank (in a randomly chosen reference group)

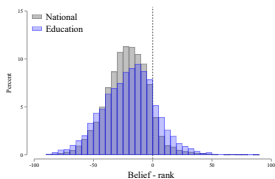
Causal effects: Identification and main specification

Intuition: We can't generate exogenous variation in rank itself, but we can induce variation in "experienced rank" or, to be more precise, beliefs about rank.

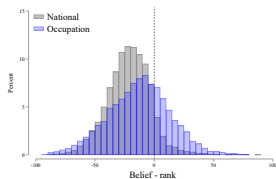
$$Y_i^k = \beta_0 + \beta_1(ER_i^j - R_i^j) + \beta_2 T_i^j + \beta_3 T_i^j(ER_i^j - R_i^j) + \gamma \mathbf{X}_i + u_i \quad (1)$$

- ▶ Y_i is the value of outcome k for individual i
- ▶ R_i^j is i 's actual rank in distribution j
- ▶ ER_i^j is the same individual's belief about her rank in j , so that $ER_i^j - R_i^j$ is her misperception about rank
- ▶ T_i^j is a treatment indicator that is equal to 1 if i is shown her actual rank, and 0 otherwise
- ▶ \mathbf{X}_i is a vector of controls

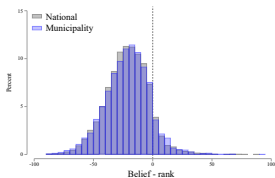
Misperceptions (perceived rank - actual rank)



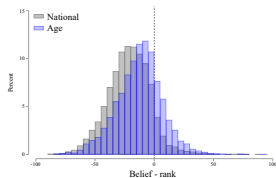
(a) National and Education



(b) National and Occupation



(c) National and Municipality



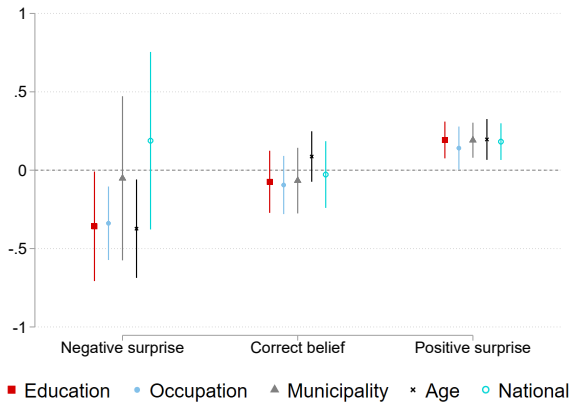
(d) National and Age

Satisfaction with disposable income

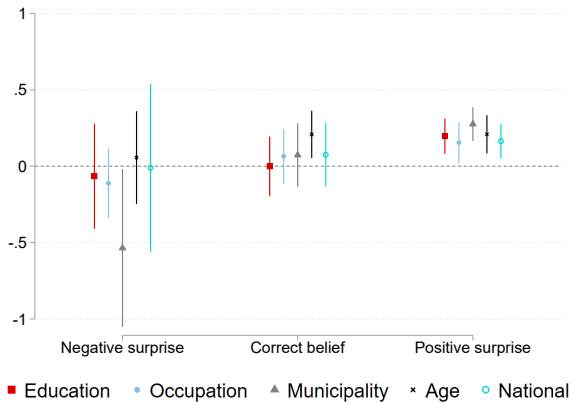
	(1) Age	(2) Municipality	(3) Education	(4) Occupation	(5) National
Treatment	-0.003 (0.057)	-0.041 (0.075)	-0.108 (0.064)	-0.083 (0.054)	0.120 (0.080)
Misperception	0.051 (0.189)	0.675*** (0.200)	0.583*** (0.164)	0.223 (0.138)	0.495* (0.202)
Treatment × Misperception	-0.768** (0.258)	-0.735** (0.268)	-0.871*** (0.227)	-0.594** (0.199)	-0.074 (0.284)
Female	-0.217*** (0.048)	-0.156** (0.049)	-0.212*** (0.049)	-0.226*** (0.050)	-0.210*** (0.051)
High education	0.420*** (0.057)	0.363*** (0.056)	0.309*** (0.060)	0.374*** (0.062)	0.385*** (0.061)
Spouse	0.201** (0.064)	0.234*** (0.063)	0.206** (0.065)	0.162* (0.067)	0.197** (0.066)
Child(ren)	-0.079 (0.059)	-0.018 (0.059)	0.057 (0.059)	0.008 (0.063)	-0.008 (0.063)
Metropolitan area	0.275*** (0.055)	0.268*** (0.056)	0.302*** (0.057)	0.283*** (0.060)	0.236*** (0.060)
Constant	-0.141* (0.070)	-0.082 (0.079)	-0.113 (0.074)	-0.137 (0.070)	-0.071 (0.083)
Observations	1521	1501	1519	1505	1498

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

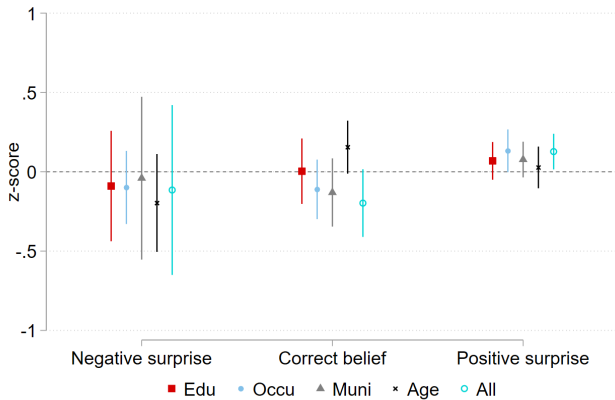
Satisfaction with disposable income



Fairness of own income

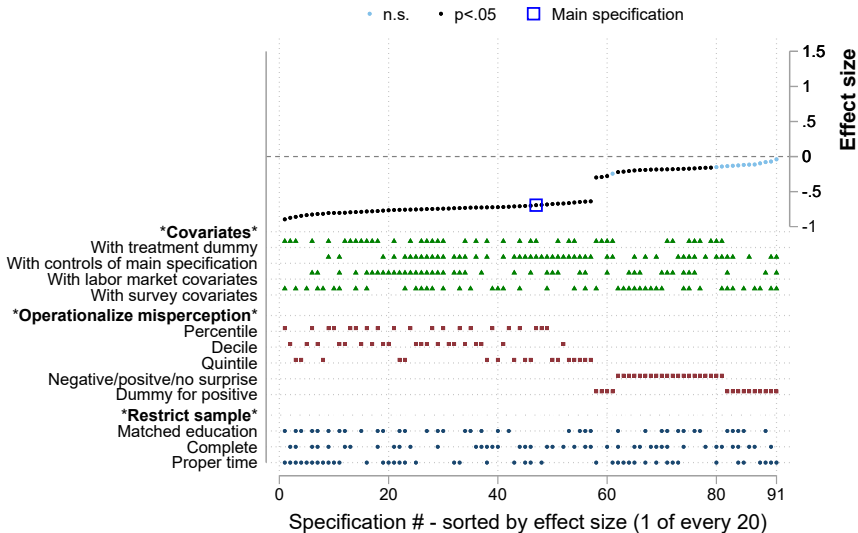


Life satisfaction



- ▶ We conduct a multiverse analysis (Simonsohn et al., 2020; Young & Holsteen, 2017)
- ▶ We estimate the effect of interest, i.e. coefficient on $\text{Treatment} \times \text{Misperception}$, in various model specifications
 - ▶ restricting the sample;
 - ▶ operationalizing the misperception;
 - ▶ including covariates.
- ▶ An example with education as the reference group and fairness as the outcome on the following slide
 - ▶ The coefficient of interest in the main specification is -0.69 (s.e. 0.23)

Treatment (Education) × Misperception on Fairness



Notes: 1548 of 1824 (85%) specifications show $p < 0.05$.

Concluding remarks

- ▶ We provided participants randomized information about rank in different reference groups
- ▶ The results are informative about fundamental preference parameters: nature of social preferences
- ▶ Our information treatments were successful in undoing the effects of individuals' initial misperceptions
- ▶ Reference group matters: (Information on) rank in narrowly-defined reference groups is particularly important for well-being
- ▶ Dimensions of welfare: rank information affects income satisfaction but not life satisfaction

Regressions of misperception

	(1) Age	(2) Municipality	(3) Education	(4) Occupation	(5) National
Female	-0.01 (0.005)	-0.033*** (0.005)	-0.007 (0.006)	-0.035*** (0.007)	-0.027*** (0.005)
Age	0.004*** (0.001)	-0.003*** (0.001)	-0.007*** (0.001)	-0.005*** (0.001)	-0.002** (0.001)
Spouse	0.027*** (0.006)	0.028*** (0.006)	0.045*** (0.007)	0.048*** (0.009)	0.032*** (0.006)
Chil(dren)	-0.051*** (0.006)	-0.032*** (0.006)	-0.058*** (0.007)	-0.080*** (0.008)	-0.039*** (0.006)
Private sector	0.022*** (0.005)	0.023*** (0.005)	0.012* (0.006)	0.025*** (0.007)	0.020*** (0.005)
High education	0.002 (0.006)	0.044*** (0.005)	0.16*** (0.006)	0.040*** (0.008)	0.046*** (0.005)
Metropolitan area	-0.031*** (0.008)	0.052*** (0.005)	-0.007 (0.006)	-0.025** (0.008)	0.013* (0.005)
Constant	-0.26*** (0.030)	-0.13*** (0.029)	0.044 (0.034)	0.086* (0.040)	-0.15*** (0.028)
Observations	6337	6337	6337	6337	6337

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Joint tests for Treatment (Edu) \times Misperception

Outcome	Treatment	Test statistic	Observed result	<i>P</i> value
Fairness of income	Education	Share of significant results	1548 of 1824 specifications	$P < 0.002$
		Median effect size	Rank info. decreases the slope of misperception by 0.702 SD	$P < 0.002$
		Aggregate all <i>P</i> -values	Stouffer $Z = 126.59$	$P < 0.002$