Income Misperception and Populism

Thilo Nils Hendrik Albers (HU Berlin)
Felix Kersting (HU Berlin)
Fabian Kosse (University of Würzburg)

Discussion Paper No. 344

October 25, 2022

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Thilo N. H. Albers[†]   Felix Kersting[‡]   Fabian Kosse[§]

October 24, 2022

Abstract

We propose that false beliefs about the own current economic status are an important factor for explaining populist attitudes. Along with the subjects' receptiveness to right-wing populism, we elicit their perceived relative income positions in a representative survey of German households. We find that people with pessimistic beliefs about their income position are more attuned to populist statements. Key to understanding the misperception-populism relationship are strong gender differences in the mechanism: Misperception triggers income dissatisfaction for both men and women, but the former are much more likely to channel their discontent into affection for populist ideas.

Keywords: Perception, Income, Populism.
JEL classification: D63, D72, D91, P16.

[†]Humboldt University Berlin, and Lund University; `thilo.nils.hendrik.albers@hu-berlin.de`.
[‡]Humboldt University Berlin; `f.kersting@hu-berlin.de`.
[§]University Würzburg; `fabian.kosse@uni-wuerzburg.de`

1 Introduction

Many countries have experienced a rapid increase in the support for right-wing populist parties in the past two decades. However, we still lack sufficient knowledge on the precise mechanisms through which economic and cultural factors fuel populism (Guriev and Papaioannou, 2022). In particular, the role of income is not well-understood. While studies often find strong evidence for a negative income-populism relationship on the macro level, the evidence at the household level is inconclusive at best. Attempting to resolve this paradox, studies have shifted the focus from the current economic status to beliefs about the future status (Berman, 2021). Yet, what if individuals find it even difficult to form accurate beliefs about their current socioeconomic status?

We tackle this question by leveraging the methods and insights from a fast-growing literature that connects the perception of one's status, rather than the actual status, with political preferences concerning migration and the demand for redistribution.[1] We document a strong link between the pessimism about the own position in the income distribution and right-wing populist attitudes based on a representative survey of German households. Our additional evidence mitigates endogeneity concerns through a novel instrument and, exploring the heterogeneity in our sample, uncovers a strong gender bias: The male part of our sample drives much of the observed relationship.

The analysis rests on a questionnaire that elicits the respondents' perceived relative income position as well as their receptiveness to populist ideas. We embed our survey in the Innovation Sample of the German Socio-Economic Panel (SOEP) for about 1500 individuals. In operationalising misperception we follow the literature in calculating the difference between the subjective and objective percentile in the national income distribution. To measure populism, we depart from many studies in economics, which typically rely on questions about affection for political parties or election outcomes. Instead, we incorporate recent advances in opinion research and political science by implementing a multidimensional measure based on 12 survey items (Akkerman et al., 2014; Schulz et al., 2018). In practice, we capture right-wing populist attitudes and use the phrases 'populism' and 'right-wing populism' interchangeably henceforth.[2] Sure enough, our composite populism measure captures far-right voters, but it also captures those whose attitudes have not yet translated into voting for a populist party.

The correlational evidence suggests that, conditional on their actual income position, individuals that underestimate their relative income position hold more right-wing populist views relative to those that form more accurate beliefs about their economic status. This

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[1]See, for example, Alesina et al. (2022), Cruces et al. (2013), Karadja et al. (2017), and Fehr et al. (2022).

[2]The measure by Akkerman et al. (2014) and Schulz et al. (2018) has been applied in other European countries and aims to capture populist attitudes at both ends of the political spectrum. It does not do so in the German case, possibly because the motifs and language that right- and left-wing populist politicians employ are more distinct than elsewhere.

correlation is robust to a large set of controls, including local economic conditions, and economically meaningful: A decrease of two percentiles in the underestimation of one's relative income position or moving up the actual income distribution by one percentile are associated with the same decrease in populist attitudes.

Our instrumental variable (IV) approach rests on the insight that the local income distribution provides a reference frame. Some individuals live in counties in which the local distribution resembles the national one in the parts relevant to their position. Hence, they have better information about the national distribution. Empirically, we place each individual into a) the local income distribution in her county of residence and b) the national income distribution. The *absolute* difference between the respective percentile ranks in these distributions constitutes the individual's information set—our instrumental variable. Conditioning on the local (median) income and its distribution, the IV approach reaffirms the positive link between misperception and populism.

We also speak to the question of how misperception translates into support for populism in two steps. Individuals' incorrect beliefs lead to discontent with their incomes. This discontent then makes them more receptive to populist ideas. However, strong gender differences emerge in this second step. Even though men and women hardly differ in their ability to predict their own income position and the subsequent translation of misperception into income dissatisfaction, men's misperception is much more strongly associated with populist attitudes. In light of the common finding of a stronger 'self-serving bias' among men (Campbell and Sedikides, 1999), i.e., taking credit for personal success but blaming external factors for personal failure, we interpret these results as evidence for gender differences in coping with dissatisfaction resulting from income misperception.

Our study is related to three strands of literature. First, we add to research on the economic and cultural origins of populism (see the recent overviews by Berman, 2021; Colantone et al., 2022; Guriev and Papaioannou, 2022; Rodrik, 2021). In terms of methodology, we apply and validate a refined measure of populist attitudes from outside the economics literature. Economists' studies of populism typically rely on voting results or intentions, both of which come with particular methodological challenges. While the regional analysis of actual voting outcomes bears the danger of ecological fallacy, capturing voting intentions through surveys often leads to an underestimation of the support for extreme parties (Breen, 2000; Durand et al., 2004). In contrast, the indirect elicitation of populist beliefs such as in this paper allows for a representative individual analysis of extreme political preferences. In terms of novel explanations, we introduce how a false belief about current status—rather than a belief/anxiety about the future status—affects attitudes towards right-wing populism.[3] Acknowledging the important role of perception of income relative to actual income also

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[3]Relatedly, Burgoon et al. (2019) study the role of relative income development by analyzing the correlation between positional deprivation, i.e., the growth of individual income relative to the national average, and support for radical parties.

helps to rationalise the inconclusive household level evidence on the income-populism relationship: Households' distorted beliefs about their income position dilute the statistical relationship between actual income and populism.

Second, the results of this study relate to a growing literature on the effect of misperception on political preferences (Alesina et al., 2018; Cruces et al., 2013; Karadja et al., 2017; Fehr et al., 2022; Hvidberg et al., 2021). The existing literature documents the importance of income misperception for demand for redistribution. Our results indicate that income misperception also matters for wider political preferences, especially for the male part of the population. Moreover, we also complement this literature from a methodological point of view. While most previous studies use short-run survey experiments, we employ natural occurring variation. Survey experiments allow for controlled shifts in beliefs and their causal interpretation is straightforward, but these shifts may be short-term depending on the depth of the information set (as Grigorieff et al. 2020 show for beliefs about immigration). While the causal interpretation of our IV results relies on stricter assumptions, these allow for a more long-term perspective above and beyond the experimental situation.

Finally, our study speaks to the literature on gender differences in political preferences. Women tend to vote less for extreme parties (Harteveld et al., 2019) and are more pro-redistribution (Alesina and Giuliano, 2011). Recent experimental studies suggest that these differences are due to male overconfidence and different expectations regarding economic circumstances (Buser et al., 2020; Ranehill and Weber, 2022). However, when it comes to populism in particular, gender is an often understudied aspect (Abi-Hassan, 2017), with some notable exceptions (Harteveld et al., 2015; Harteveld and Ivarsflaten, 2018). Relative to the existing literature, we document that income misperception contributes to gender differences in political preferences.

The remainder of this paper is structured as follows. Section 2 describes the empirical operationalisation of our key concepts: Income perception and populism. Section 3 contains the quantitative analysis including correlational evidence and the instrumental variable approach. Section 4 explores the mechanism. Section 5 concludes.

2 Measuring perception and populism

Our survey was part of the SOEP's Innovation Sample, a representative longitudinal survey of German households.[4] The SOEP-IS is conducted using computer-assisted personal interviewing. For our analysis, we designed two tailor-made survey modules, one on income misperception, one on populism. The survey took place in 2019.

Among the 1990 respondents, 1502 end up in our final sample. This attrition is due to three main reasons, all of which carry roughly equal quantitative importance. First, some

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[4]For more information on the SOEP, see Goebel et al. (2019) and on the SOEP-IS see Richter et al. (2015).

respondents did not answer the question on income perception. Second, we restrict our sample to households consisting of one or two adults. Third, we lose some observations due to the IV strategy, which we describe later.

2.1 Measuring perception

To measure income misperception, we follow previous studies (Cruces et al., 2013, Karadja et al., 2017, Hvidberg et al., 2021, and notably Fehr et al., 2022, who also embed their survey in the SOEP-IS). In the SOEP-IS, households are regularly asked for their net household income. The concept is clearly and explicitly defined. Based on this information, we calculate the household's objective position (P_i^O). We chose net over gross income as the income concept as i) individuals typically have better knowledge about the former and ii) net income is the concept that the respondents of the SOEP-IS are most familiar with.[5] We focus on households rather than individuals, because the German tax system strongly favours couples. This makes it difficult to interpret 'individual' income after taxes and even harder for the interviewees to conceptualise a distribution of such income. Since our question on the subjective position in the income distribution comes much later in the survey, we reiterate the definition of net household income when asking the following question: *"What do you estimate: What percentage of households in Germany in 2018 had a lower net household income than your household?"* The respondent's answer to this question provides us with her subjective percentile (P_i^S). We define the difference between P_i^O and P_i^S as misperception. A positive value indicates pessimism, i.e., the individual underestimates her position in the income distribution, a negative value optimism, i.e., an individual overestimates her position in the income distribution.

Overall, the positive and negative misperception almost balance each other out: The average bias is 5 percentiles and its standard deviation 25 percentiles.[6] Figure 1a—a binned scatter plot, in which one dot represents 75 observations—documents that individuals in the bottom half of the income distribution tend to overestimate their income position while individuals in the top half underestimate their position.[7] This pattern confirms the middle-class bias identified in previous studies (Evans and Kelley, 2004; Cruces et al., 2013; Fehr et al., 2022).

Validating the chosen measure, Figure 1b suggests that income misperception has real consequences. The bin scatter reports the relationship between misperception and income

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[5]The non-response rates for gross income are substantially higher than those for net income in past surveys (Schräpler, 2004, p. 131). Germans are more familiar with net income since employers withhold social security contributions, health insurance, and taxes.

[6]These values lie within the range of other studies. For instance, Fehr et al. (2022) find an average misperception of 1 (SD= 29) using the same question in the same survey for the years before.

[7]This is not primarily driven by mean reversion. In this case mean reversion means that individuals at the very top can only weakly overestimate their position, while the opposite is true for individuals at the very bottom. Following Hvidberg et al. (2021), Appendix Figure C.1 reports an alternative version of the Figure 1a accounting for the mean-reversion type logic.
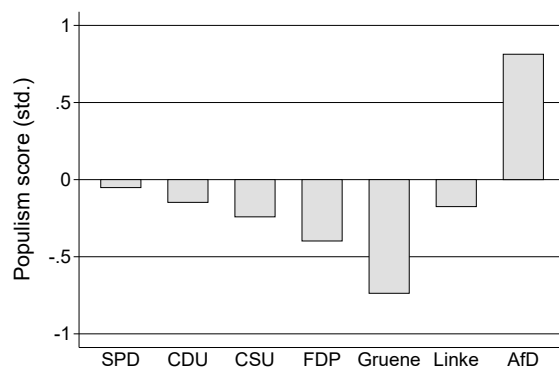
Figure 1: Measures of perception and populism

a) Perception by actual income position

b) Misperception & income satisfaction
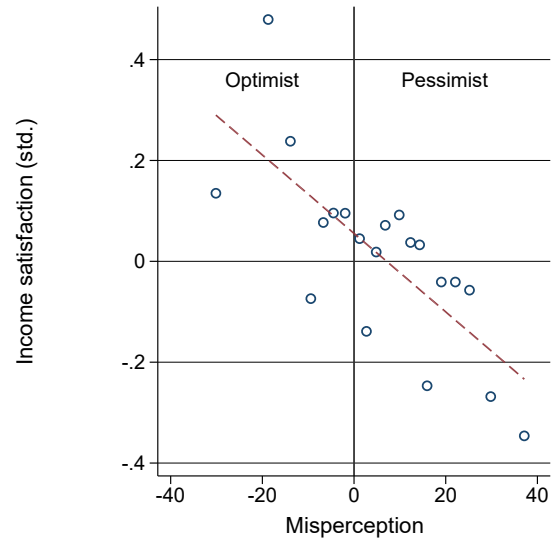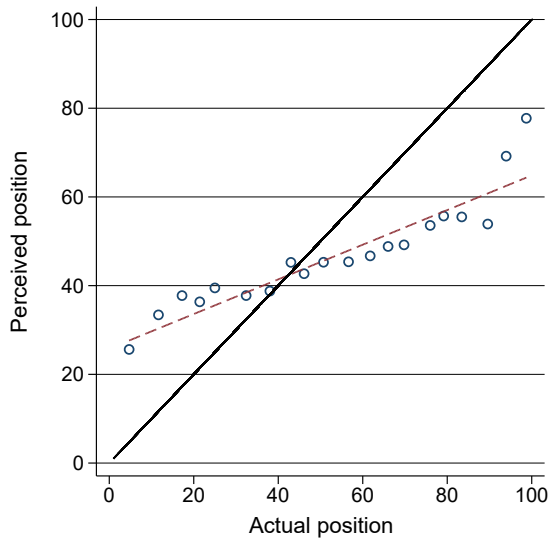
c) Populism & political orientation
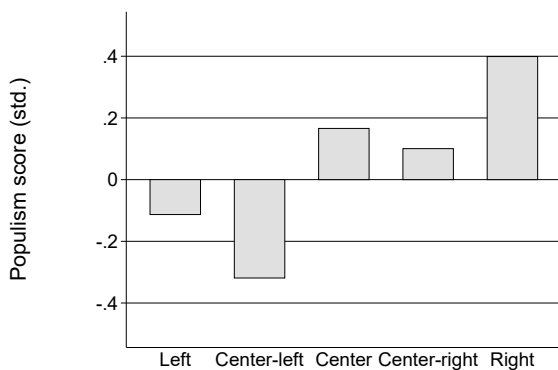
d) Populism & party preference

Notes: Own calculation based on SOEP-IS. Figures 1a and 1b are based on binned scatter plots. Each dot represents 75 observations. The variable "income satisfaction" in Figure 1b is standardised as is the populism score in Figures 1c and 1d. The measure of political orientation in Figure 1c is based on a 11-point-Likert scale. We define individuals as "Left" with a score of 0 or 1, "Center-left" with a score from 2 to 4, center with a score of 5, "Center-right" with a score from 6 to 8, "Right" with a score of 9 and 10. The party preferences in Figure 1d are based on a limited sample of 800 observations as only half of our sample did answer this question.

satisfaction. Income satisfaction is measured on a 11-point Likert scale. Conditional on their objective position in the income distribution, people who underestimate their income position (pessimists) are less satisfied with their income than people who overestimate their position (optimists). The correlation is substantial: the coefficient for the regression line in Figure 1b is about 40% of the size of the one for the objective income position. Misperception strongly matters for income satisfaction.

2.2 Measuring populism

Typically, existing research in economics employs electoral support for populist parties to measure populism.[8] While this approach follows the revealed preference paradigm, it fails to fully capture populism as a concept and, in particular, its multi-dimensionality. We depart from this approach by designing a survey to elicit populist attitudes based on the conceptual and empirical work by political scientists and opinion researchers.

Populism is perhaps best described by being a "thin ideology", a substrate that accommodates or even requires other ideologies to build on (Mudde, 2004; Stanley, 2008). What is the essence of this substrate on which left-wing and right-wing populism breeds? Mudde (2004, p.543) defines populism as "an ideology that considers society to be ultimately separated into two homogeneous and antagonistic groups, the pure people versus the corrupt elite, and which argues that politics should be an expression of the volonté générale (general will) of the people."

From this set of definitions, Schulz et al. (2018) extract three operationalisable dimensions of populism: The people, perceived as superior on moral grounds, is thought to be a homogeneous group opposing the elites (*anti-elitism attitudes*). Typically, this view spurs the demand that this group should have a larger and more direct stake in the political process (*preference for popular sovereignty*). Because the people is seen as homogeneous, the level of tolerance is low and compromises are considered as selling out on one's principles (*belief in the homogeneity and virtuousness of the people*). For each of these three dimensions of populism, Schulz et al. (2018) construct four statements to which respondents can agree or disagree on a five-point Likert-scale.[9] We follow their widely-used approach. Appendix A.2 reports the exact statements. Based on the twelve answers, we generate the final populism score via a principal component analysis and standardise it ($\mu = 0$; $\sigma = 1$).[10]

When plotting the populism score based on its three sub-dimensions and the political preferences in Figure 1c, we clearly see that the populism score is highest for individuals at the political right and lowest for individuals at the political centre-left. In contrast to studies with the same statements/questionnaire in other countries (e.g. Akkerman et al., 2014, for the Netherlands), we seem to only elicit right-wing populist attitudes (rather than such attitudes at both ends of the political spectrum). The underlying reason may be that some of the 12 statements in the Schulz et al.-catalogue contain the word 'Volk'. Since this term was of paramount importance to the core ideological foundations of Nazi Germany (Gschnitzer et al., 1992) and is still crucial for the rhetoric of the right-wing *Alternative für*

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[8]For an overview on the definition of populism from an economist's point of view see Guriev and Papaioannou (2022, section 2).

[9]Their approach builds upon Akkerman et al. (2014) and Hawkins et al. (2012).

[10]Some individuals do not answer all questions. We employ the missMDA R-package to extrapolate their non-responses based on answered questions and the response patterns of all other individuals (Josse and Husson, 2016).

Deutschland (AfD) ([Wildt](), 2017), it antagonises left-leaning individuals. Shifting the focus to 'revealed' populist attitudes for a subset of the data, Figure 1d plots the populism score by party preference.[11] The figure reaffirms our ability to capture right-wing populism: By far, the AfD exhibits the highest score.

Eliciting populist attitudes through a composite measure rather than a single question on party preferences has two distinct advantages. First, while expressing sympathy with a populist party reveals populist attitudes, not expressing it does not preclude populist attitudes. An outcome variable measuring affection for populism should also encapsulate individuals with populist attitudes that report alignment with parties that are not classified as populist or no party at all, the latter of which are 47% in our sample. Second, surveys and polls tend to under-report extremist positions ([Durand et al.](), 2004). Indeed, selective non-response patterns on party-leaning appear to be also present in the SOEP-IS: The populism score of those who do not answer the party-leaning question or do not align with a particular party is a third of a standard deviation higher than the score for those that do answer it. Hence, relying on party-leaning would severely misrepresent the incidence of populist attitudes among respondents. In contrast, our elicitation of populist beliefs allows for a representative individual analysis of extreme political preferences.

3 Misperception and populism

Does the misperception of the own position in the income distribution foster populist attitudes? To answer this question, we proceed in two steps. First, our correlational evidence highlights the important optimist-pessimist distinction and provides a yardstick for the importance of income misperception relative to other factors (Section 3.1). Second, we lay out an instrumental variable strategy that exploits the insight that some individuals form more correct beliefs about their position in the national income distribution than others because their local distribution provides a better reference point (Section 3.2).

3.1 Correlational patterns

We begin by analysing the relationship between income misperception and populism by estimating the following equation:

$$\text{Populism}_i = \alpha + \beta_M \text{Misperception}_i + \beta'_X X_i + \epsilon_i \tag{1}$$

where 'Populism$_i$' provides populism score for individual i. 'Misperception' denotes $P_i^O - P_i^S$, the difference between the objective and subjective percentile of i. Given the importance of differentiating between positive and negative biases ([Karadja et al.](), 2017; [Fehr et al.](), 2022),

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[11]Here, we rely on a sub-sample of individuals who lean towards a political party. The SOEP does not include an election poll but asks participants if they generally lean towards a party and if yes, which one.

let us call individuals with Misperception$_i > 0$ pessimists and all others optimists. X_i is a vector of controls, including the household's relative income (i.e., the household's objective percentile: P_i^O) and age (age, age^2).

In addition to individual-specific controls, we also account for local economic conditions. Previous work suggests a strong positive link between regional inequality and populism (e.g. Rodríguez-Pose, 2018). Indeed, Germany still exhibits considerable regional income differences, both between the former East and West and within these two areas. Moreover, there appears to be some correlation of voting patterns along these lines (Dorn et al., 2020). Hence, we estimate median household gross income for each county c from the German tax statistics.[12] To account for the experience of local inequality, we also generate the local P90-P50 ratio, i.e. the ratio of thresholds to enter the respective percentile. To comply with data protection requirements by the data provider, i.e., making it impossible to identify the county of residence of a household, we bin these variables into deciles.

Table 1: Misperception and populism, OLS

Dep. var.:	Populism score (std.)			
Sample:	All		Pessimists	Optimists
	(1)	(2)	(3)	(4)
Misperception (in pp)	0.008***	0.007***	0.009***	-0.000
	(0.002)	(0.002)	(0.002)	(0.003)
Actual percentile in distribution	-0.015***	-0.013***	-0.017***	-0.009***
	(0.001)	(0.001)	(0.002)	(0.002)
Age	0.025**	0.023**	0.025*	0.022
	(0.011)	(0.010)	(0.014)	(0.016)
Age squared	-0.000**	-0.000*	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Local median income (deciles)		-0.048***	-0.045***	-0.052***
		(0.010)	(0.012)	(0.016)
P90/P50 ratio (deciles)		-0.035***	-0.030**	-0.041**
		(0.011)	(0.014)	(0.016)
Mean dep. var.	0.00	0.00	-0.08	0.11
SD dep. var.	1.00	1.00	0.99	1.00
Observations	1502	1502	877	625
R-squared adjusted	0.10	0.13	0.16	0.09

Notes: Standard errors, clustered at the household level, are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable "populism score" is standardised.

Table 1 provides the results for three different samples: including all individuals (1-2), pessimists (3), and optimists (4). Comparing the coefficient on misperception across the three samples reaffirms the asymmetric effects of misperception on belief formation found in earlier studies (Karadja et al., 2017; Fehr et al., 2022). The effect for optimists—that is people overestimating their actual position in the income distribution—is close to zero and

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[12]In the German tax statistics, these are called the *Gesamtbetrag der Einküfte* (see Appendix B).

far from significant at any conventional level. The reverse bias, however, is associated with a strong positive and significant slope. Hence, the effect observed in the full sample is driven by the pessimists, which make up close to 60% of the sample.

To gauge the magnitudes implied by the range of coefficients ($0.007 - 0.009$), consider the following empirically meaningful illustration: A person is actually solid-upper middle class (percentile 75) but thinks of herself to be at the lower end of the middle class (percentile 50). In this case, the person's misperception resembles one standard deviation of the misperception measure. The implied effect of being such a person rather than one with perfect information, i.e., zero misperception, amounts to an additional 0.18-0.23 in the standardized populism score.[13] This corresponds to between a fifth and a quarter of the average populism score of voters for Germany's right-wing populist party *Alternative für Deutschland* of 0.81.

Our control variables provide another yardstick for the relevance of these magnitudes. First, the local median income (in deciles) provides a good comparison. Moving from a county at the bottom of the regional income distribution to the average (5 deciles) is associated with a decrease of populist attitudes similar to those outlined above. Second, the coefficient on the actual percentile in the distribution is strongly negative, suggesting that better-off individuals are less likely to exhibit populist attitudes. Since the standard deviations of misperception and the actual percentile are very similar in the full sample, we can simply compare the coefficients: Having 'a percentile' better information about the own position in the income distribution is associated with a decrease in populist attitudes that corresponds to 55% of the effect of moving up one actual percentile in the income distribution.

Notwithstanding the caveats discussed above, party preferences can provide a final check for the relevance of the correlation between misperception and populism. In an alternative specification, we therefore employ AfD-leaning instead of the refined populism measure as the dependent variable. The results are consistent with the evidence presented thus far (Appendix Table C.1): A 10 percentiles increase in misperception is associated with a 1 pp increase in the sympathy for AfD, relative to the sample mean of 8.9. All in all, the correlational evidence suggests that there is a statistically strong and economically meaningful association between misperception and populism.

While this insight is robust to the inclusion of a set of age and income controls and holds when using AfD attachment as the dependent variable, omitted variables and reverse causality may bias the reported coefficients. In terms of omitted variables, a concern is that the control variable "actual percentile in distribution" captures socio-economic status (SES) imperfectly. If further aspects of SES are negatively correlated with the populism score but positively related to misperception, the coefficient of misperception would be downward biased.

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[13]For this, we multiply 25×0.007 (column (2)) or 25×0.009 (column(3)) of Table 1.

Regarding the direction of the bias emanating from reverse causality, on the one hand, supporters might gain utility from adhering to right-wing populism and the status of the nation (Shayo, 2009; Bonomi et al., 2021). If such processes translate to feelings of having a higher status (i.e., lower misperception for pessimists), this would, too, bias the OLS estimates downwards. On the other hand, populist ideas may exacerbate or create a feeling of 'not getting the fair share', leading to more misperception for pessimists and, hence, an upward bias in OLS estimates. As a complement to the now-common survey-experiment approach (Cruces et al., 2013; Karadja et al., 2017; Fehr et al., 2022), we field an IV approach to mitigate these endogeneity problems.

3.2 IV approach and results

Individuals in our sample experience *local* income distributions, which are likely to affect their ability to form an estimate of their position in the *national* income distribution as individuals tend to rely on their local environment to form perceptions (Hauser and Norton, 2017). We model their experience by placing them in the local distribution and in the national distribution. Some individuals live in areas which exhibit a distribution similar to that of Germany as a whole, making them, by coincidence, relatively well informed about the national distribution. Others live in areas which exhibit a skewed income distribution relative to the national one, making it harder for them to form a correct estimate about their own position in the national income distribution.

To define the instrument formally, recall that our measure of individual i's income misperception is defined as the difference between the objective (O) and subjective (S) percentile P in the *national* (N) income distribution: $(P_i^{O,N} - P_i^{S,N})$. Individual i lives in county c and, correspondingly, her position in the *local* (L) income distribution is P^{O,L_c}. Hence, a parsimonious measure for the information content of the local distribution with respect to the national income distribution is the *absolute* difference in the position in the local versus national income distribution: $|P_i^{O,L_c} - P_i^{O,N}|$. Taking the absolute difference ensures that our instrument does not capture living in poor vs. rich countries or more equitable vs. less equitable counties.

As discussed above, local tax statistics only provide households' gross (rather than net) incomes. Hence, we generate gross household incomes for our SOEP-IS sample and place the respective individuals in the corresponding local distributions.[14] Figure 2a graphically draws out the variation that we exploit, with each dot representing an individual. The closer the individual is to the 45° degree line, the richer is her information set about her household's position in the national distribution. Taking the absolute distance to the 45° degree line, Figure 2b summarises the distribution of the instrumental variable. Again, taking the absolute distance ensures that our instruments picks up the information content.

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[14]Appendix B provides the respective technical details on the construction of the instrumental variable.

Figure 2: Instrumental variable - variation

a) Source of variation   **b)** Distribution
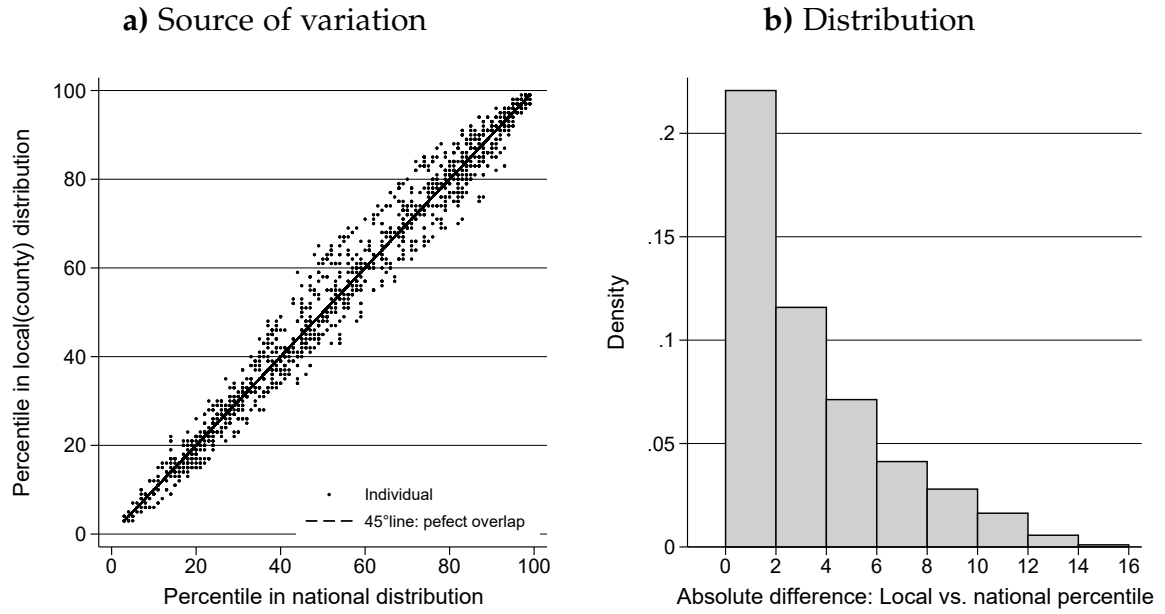
Notes: The dots in Figure 2a represent individuals. The 45° line implies the equality of the position in the local and national distribution. Figure 2b shows the distribution of the instrument: The absolute distance from the 45° line. The sample only includes pessimists. For further details on the calculation of the instrument, see Section 3.2 and Appendix B.

It precludes the possibility that the instrument derives its power from potential differences of more vs. less equitable counties. In addition, we condition our instrument on the local median income and a general distributional measure—the P90/P50 ratio discussed above—to ensure its excludablity with respect to populism.

We estimate the following first stage equation:

$$\text{Misperception}_i = \alpha + \beta_z \text{Local distr. information}_i + \beta'_X X_i + \epsilon_i \qquad (2)$$

where 'Local distr. information' is our instrument ($|P_i^{O,L_c} - P_i^{O,N}|$). X is a vector of controls pertaining to local income and its distribution, age, and the own actual income position. The second stage regression corresponds to equation 1, with the only difference that we employ the predicted values for misperception from the 1st stage ('$\widehat{\text{Misperception}}$') rather than the variable ('Misperception') itself. In line with our previous discussion of the differences between optimists and pessimists, this part of the analysis focuses on the pessimists.

Table 2 reports the results for the first (columns 3 and 4) and second stage regressions (columns 1 and 2) for two specifications, which either ex- or include the local income level and distributional information as control variables. For both specifications, the $F-$stat is clearly above 10, which shows that our instrument has power. Likewise, the p-value of the Anderson-Rubin test gives no indication that the instrument is weak. At the same time, the inclusion of the local income and distributional control does not have profound effects on either the coefficients or F-stat. This is reassuring: the power of the instrument does not

originate in local conditions themselves, i.e. whether the local distribution is more or less equitable or a given county rich or poor.

Table 2: Misperception and populism, 2SLS

Dep. var.:	Second stage Populism score (std.)		First stage Misperception (in %)	
	(1)	(2)	(3)	(4)
Misperception (in pp)	0.044**	0.037*		
	(0.022)	(0.019)		
Local distr. information			0.571***	0.632***
			(0.163)	(0.170)
Mean dep. var.	-0.08	-0.08	22.37	22.37
SD dep. var.	0.99	0.99	14.84	14.84
F-stat excluded instrument	12.22	13.81		
P-value Anderson-Rubin Wald test	0.033	0.049		
Income control	✓	✓	✓	✓
Age control	✓	✓	✓	✓
Local income & distribution controls		✓		✓
Observations	877	877	877	877
R-squared adjusted			0.16	0.17

Notes: Standard errors, clustered at the household level, are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Income control: Actual percentile in distribution. Age controls: Age and age squared. Local income & distribution controls: Local median income (in deciles) and P90/P50 ratio (in deciles). The sample is restricted to the "pessimists".

Comparing column (2) of Table 2 and column (4) of Table 1 indicates that the IV-coefficient is larger than the corresponding OLS-coefficient. This suggests that the OLS estimate is indeed downward biased either because we insufficiently control for socio-economic status or because populists evoke positive feelings to their followers' achievements (see the discussion at the end of Section 3.1). There are two additional potential explanations for the differences between the OLS and the IV coefficients. First, our identification might capture a local average treatment, which might be different from the average effect for the general population (Imbens and Angrist, 1994). Second, our independent variable is measured with noise as respondents find it difficult to conceptualize the income distribution (i.e., attenuation bias in OLS estimates). Nonetheless, our instrumental variable estimates suggest that the effect of income misperception on populist attitudes is indeed causal and possibly substantially larger than the correlational evidence suggests.

4 Channeling a false belief: the role of gender

How do individuals channel misperception into populism? Recent research highlights the role of feelings of deprivation and marginalization for populist attitudes (e.g. Spruyt et al., 2016; Gidron and Hall, 2020). Hence, a plausible transmission sequence is that i) misperception results in dissatisfaction and ii) that individuals channel this dissatisfaction into pop-

ulist attitudes. Since other studies have found that women are less likely to channel general discontent into votes for populist parties (Harteveld et al., 2015), we expect gender differences in step ii). In our context, two factors may lead to them. Women internalise rather than externalise failure (Campbell and Sedikides, 1999)—the mirror image of the overconfidence bias in behavioral economics[15]—and are better able to control prejudice (Harteveld and Ivarsflaten, 2018). Hence, we expect that our male subjects channel their discontent associated with misperception into populist attitudes to a larger degree than their female counterparts.

Step i) of our proposed channel posits that misperception matters for dissatisfaction. To elucidate the association of these two variables, we estimate the following OLS regression:

$$\text{IncomeSatisfaction}_i = \alpha + \beta_{MP}\text{Misperception}_i + \beta_{male}\text{Male}_i$$
$$+\beta_{int}(\text{Misperception}_i \cdot \text{Male}_i) + \beta_X' X_i + \gamma_{HH} + \epsilon_i, \tag{3}$$

in which β_{MP} captures the effect of 'Misperception' on 'IncomeSatisfaction' for female individuals, whereas the sum of β_{MP} and β_{int}, the latter being the coefficient for the interaction between the 'Male' dummy and 'Misperception', measures the effect of misperception for men. In one specification, we add the household fixed effect γ_{HH}. Hence, we focus on gender differences within households keeping all household characteristics constant, including the household's actual position in the income distribution.

Columns (1) to (3) of Table 3 report the results on the misperception-dissatisfaction transmission.[16] All specifications suggest that increases in misperception are associated with lower income satisfaction. In particular, an increase of 1 SD in misperception corresponds to a decline of about 0.2 of a SD in income satisfaction (column 1). Adding regional controls (column 2) or very restrictive household fixed effects (column 3) decreases the coefficient slightly, but it remains highly statistically significant and economically meaningful. However, the results provide no indication that gender matters for the link between misperception and income dissatisfaction. Irrespective of the individual's gender, having incorrect beliefs about the own position in the income distribution translates to dissatisfaction with the own income.

While we do not observe any gender differences in the translation of misperception to income dissatisfaction, the results in columns (4) to (5) of Table 3 document that gender differences are present in the link between misperception and populism. Conditional on household income, age, and local income and distributional control variables, the marginal effect for males is almost twice as large as the one for females. The male dummy itself is

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[15]As a result of overconfidence, men more often relate own success to skill rather than luck. See Buser et al. (2020) for an application on the preference for redistribution.

[16]In this section, we use the full sample as it did not appear plausible to classify households rather than individuals into optimists and pessimists.

Table 3: Misperception, income satisfaction, and populism by gender

Dep. var.:	Income satisfaction (std.)			Populism score (std.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Misperception (in pp)	-0.008***	-0.007***	-0.006**	0.006***	0.005***	-0.002
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
Male (dummy)	-0.047	-0.044	-0.032	0.023	0.013	-0.043
	(0.045)	(0.045)	(0.061)	(0.042)	(0.042)	(0.052)
Male (dummy) × Misperception	-0.001	-0.001	0.001	0.005***	0.005**	0.004*
(in pp)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Mean dep. var.	0.01	0.01	0.08	0.00	0.00	-0.02
SD dep. var.	1.00	1.00	0.91	1.00	1.00	1.03
Income control	✓	✓		✓	✓	
Age control	✓	✓	✓	✓	✓	✓
Regional control		✓			✓	
Household FE			✓			✓
Observations	1502	1502	892	1502	1502	892
R-squared adjusted	0.25	0.25	0.50	0.11	0.14	0.65

Notes: Standard errors, clustered at the household level, are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Income control: Actual percentile in distribution. Age controls: Age and age squared. Local income & distribution controls: Local median income (in deciles) and P90/P50 ratio (in deciles). The dependent variables "populism score" and "income satisfaction" are standardised. We use the complete sample in columns (1), (2), (4), and (5). We restrict the sample to households with two adults in columns (3) and (6) in order to employ household FE.

small and positive, but far from statistical significance at any conventional level. Conditional on our controls, men do not hold more populist beliefs per se, but they do so when underestimating their status.

One might be worried that these gender differences originate in either unobserved household characteristics or in the varying abilities to provide a correct estimate of the own position in the income distribution. Column (6) in Table 3 aims to rule out the first of these concerns by adding household fixed effects. This leads to dropping a considerable amount of observations as not all households contain at least two adult members of different gender. Of the remaining 446 couples, not all exhibit a considerable difference and include pessimists, limiting the statistical power of the exercise. While the effect of misperception for females vanishes altogether, the interaction coefficient remains positive.[17] The second concern—different abilities to estimate the household's position correctly—can be ruled out by consulting summary statistics. The misperception by women is about 5.6 percentiles on average (sd: 25.4) and almost identical to the misperceptions by men (mean: 5.7 percentiles; sd: 24.7). Hence, the belief formation about the own position in the distribution cannot be at the heart of the observed gender differences.

Taken together the results in Table 3 suggest that misperception is associated with higher income dissatisfaction irrespective of gender, but that only the male half of our sample

[17]Indeed, likely caused by the small sample size, the difference is only significant at high levels of misperception. See Appendix C.2 for the corresponding margin plots.

translates misperception to right-wing populism. The externalisation of failure by men and lacking ability to control prejudice provide plausible explanations for this pattern. Even if the source of their dissatisfaction is an incorrect belief, it would result in blaming others. Women, on the other hand, feel the same dissatisfaction, but they do not channel it into populist attitudes to the same degree.

5 Conclusion

This paper sheds new light on the income-populism nexus by exploring the role of income misperception. Based on a representative sample of German households, we find that individuals with pessimistic beliefs about their own income position have more right-wing populist attitudes. We mitigate endogeneity concerns by exploiting an IV strategy. We provide evidence on income dissatisfaction as a plausible channel. While both genders predict their relative income position equally well and both are similarly dissatisfied when misperceiving it, they appear to differ in the way they channel this dissatisfaction: Men are more likely to translate dissatisfaction resulting from income misperception into populist attitudes than women.

Our findings show that misperception strongly matters for populist attitudes, also in comparison to the objective income position. This implies the existence of a potentially cheap and effective avenue for policymakers that seek to curb the rise of populism: They could improve citizens' information about the households' respective relative income position. Yet, caution is required when designing corresponding policies. Otherwise, unintended consequences could occur. For example, the radical Norwegian approach towards transparency—one could query the income of every citizen online—decreased happiness among the poor (Perez-Truglia 2020). Alternative approaches include the communication of the income percentile on tax returns and disseminating information on percentile thresholds through the media. However, future research should explore two questions before implementing such policies to make them most effective. First, can we gather more direct evidence on the underlying reasons for the gender differences in translating income dissatisfaction into populist attitudes? Second, is it possible to design these policies in a gender-specific way? This knowledge, in turn, could be used to implement targeted policies that help to reduce misperception and thereby also populism.

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Online Appendix

A Survey

A.1 Measuring Perception

Households had reported the actual net income earlier in the survey. They were given the exact definition of household net income then. To ensure consistency, we reiterated the definition of net household income before the subjects answered our question on their position in the distribution.

- Zum Haushaltsnettoeinkommen, das der Haushaltsvorstand bereits früher angegeben hat, gehören die Lohneinkommen aller Haushaltsmitglieder nach Abzug von Steuern und Sozialabgaben. Darüber hinaus zählen zum Haushaltsnettoeinkommen ebenfalls regelmäßige Zahlungen wie Renten, Wohngeld, Kindergeld, BAföG, Unterhaltszahlungen.
  (The household head has reported net household income earlier. It encapsulates the wage incomes of all household members after paying taxes and social security and all regular payments, including rents and pensions, rental assistance payments, child benefits, education stipends, and alimony.)

We asked all participants the following question:

- Was schätzen Sie: Wie hoch war der Anteil der Haushalte in Deutschland in 2018, die ein niedrigeres Haushaltsnettoeinkommen als Ihr Haushalt hatten? _____ Prozent
  (What do you estimate: What percentage of households in Germany in 2018 had a lower net household income than your household? _____ percent)

A.2 Measuring Populism

We asked all participants to respond to the following statements on a five-point Lickert scale, rangering from stongly disagree to fully agree. The English translation from Schulz et al. (2018) is in parantheses.

1. "anti-elitism attitudes"

   - Die Abgeordneten im Parlament verlieren ziemlich schnell den Kontakt mit dem Volk.
     (MPs in Parliament very quickly lose touch with ordinary people.)

   - Die Unterschiede zwischen dem Volk und der sogenannten Elite sind viel grösser als die Unterschiede innerhalb des Volkes.
     (The differences between ordinary people and the ruling elite are much greater than the differences between ordinary people.)

   - Leute wie ich haben keinen Einfluss darauf, was die Regierung macht.
     (People like me have no influence on what the government does.)

   - Politiker reden zu viel und handeln zu wenig.
     (Politicians talk too much and take too little action.)

2. "preference for popular sovereignty"

- Das Volk sollte bei den wichtigsten politischen Sachfragen mittels Volksabstimmungen das letzte Wort haben.
  (The people should have the final say on the most important political issues by voting on them directly in referendums.)

- Das Volk sollte bei allen wichtigen Entscheidungen gefragt werden.
  (The people should be asked whenever important decisions are taken.)

- Das Volk und nicht die Politiker sollten die wichtigsten politischen Entscheidungen treffen.
  (The people, not the politicians, should make our most important policy decisions.)

- Die Politiker im Parlament müssen dem Willen des Volkes folgen.
  (The politicians in Parliament need to follow the will of the people.)

3. "belief in the homogeneity and virtuousness of the people"

- Die einfachen Leute ziehen alle an einem Strang.
  (Ordinary people all pull together.)

- Einfache Leute verbindet ein guter und ehrlicher Charakter.
  (Ordinary people are of good and honest character.)

- Die einfachen Leute teilen gemeinsame Werte und Interessen.
  (Ordinary people share the same values and interests.)

- Auch wenn die Deutschen sehr verschieden sind, denken alle ähnlich, wenn es darauf ankommt.
  (Although the Germans are very different from each other, when it comes down to it they all think the same.)

B   Instrumental Variable

For the construction of our instrumental variable, we have to estimate an income concept that is in line with the regional tax data. Thereby, we are able to calculate for each household their position in the local and national income distribution. We do so by calculating the *Gesamtbetrag der Einkünfte* (the income concept in German tax statistics). This income concept is based on different income sources and three deductions. We document the different parts below.

1. **Sum of income**

   - Einkünfte aus Land- und Forstwirtschaft: part of gross income
   - Einkünfte aus Gewerbebetrieb: part of gross income
   - Einkünfte aus selbständiger Arbeit: part of gross income
   - Einkünfte aus nichtselbständiger Arbeit: part of gross income
   - Einkünfte aus Kapitalvermögen: part of income from assets (except housing)
   - Einkünfte aus Vermietung und Verpachtung: gross income from housing (minus repair costs)
   - Einkünfte aus wiederkehrenden Bezügen: gross income from pensions
   - Einkünfte aus steuerpflichtigen privaten Veräußerungsgeschäften (Spekulationsgeschäften): part of income from assets (except housing)

2. **Deductions**

   - Deduction for single parents
   - Deduction for elderly people (older than 64, depending on start of pension)
   - Deduction for farmers and foresters (depending on income thresholds and marital status)

Based on the rich data in the SOEP-IS, the calculation of this income is straightforward. We are confident that our calculation is reliable as our results from the SOEP-IS closely mirror the distribution from the administrative tax data in Figure B.1

Figure B.1: Comparison tax income, SOEP-IS and tax data
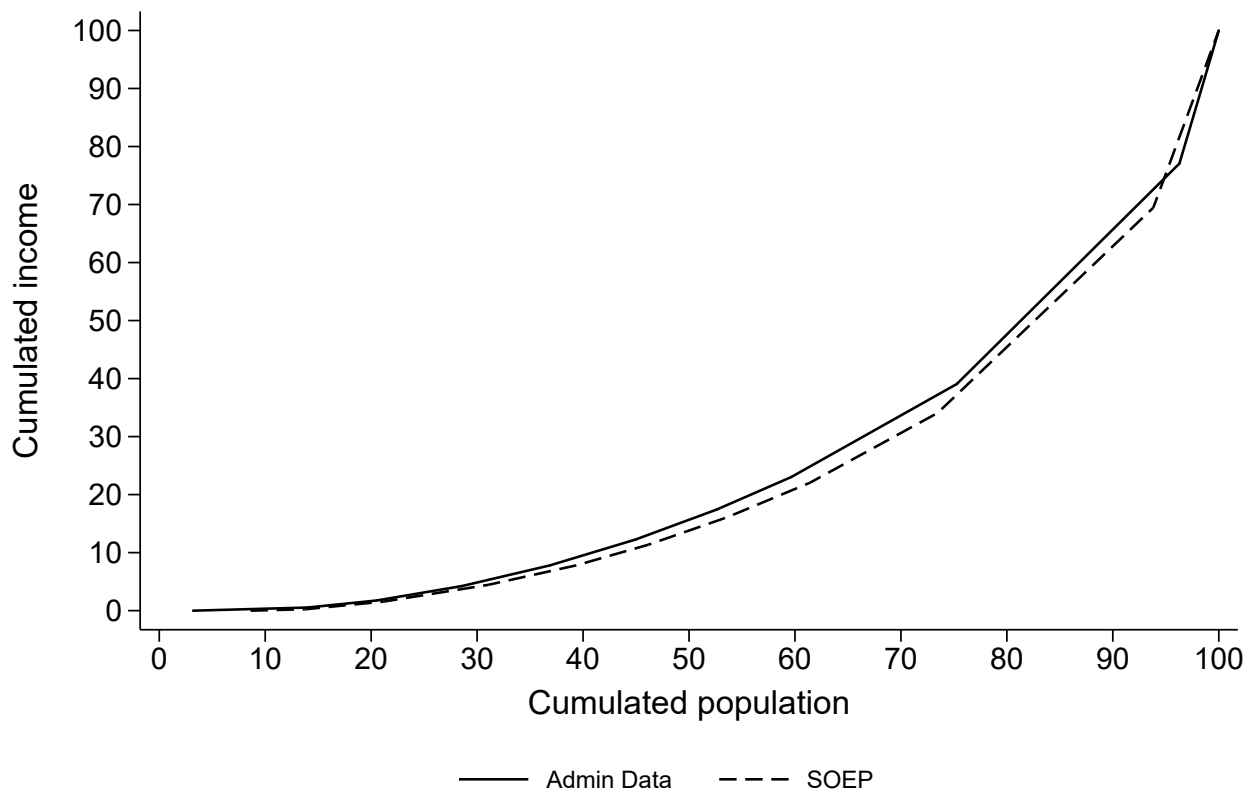
# C Additional Tables and Figures

Figure C.1: Actual position and re-ranking of perception
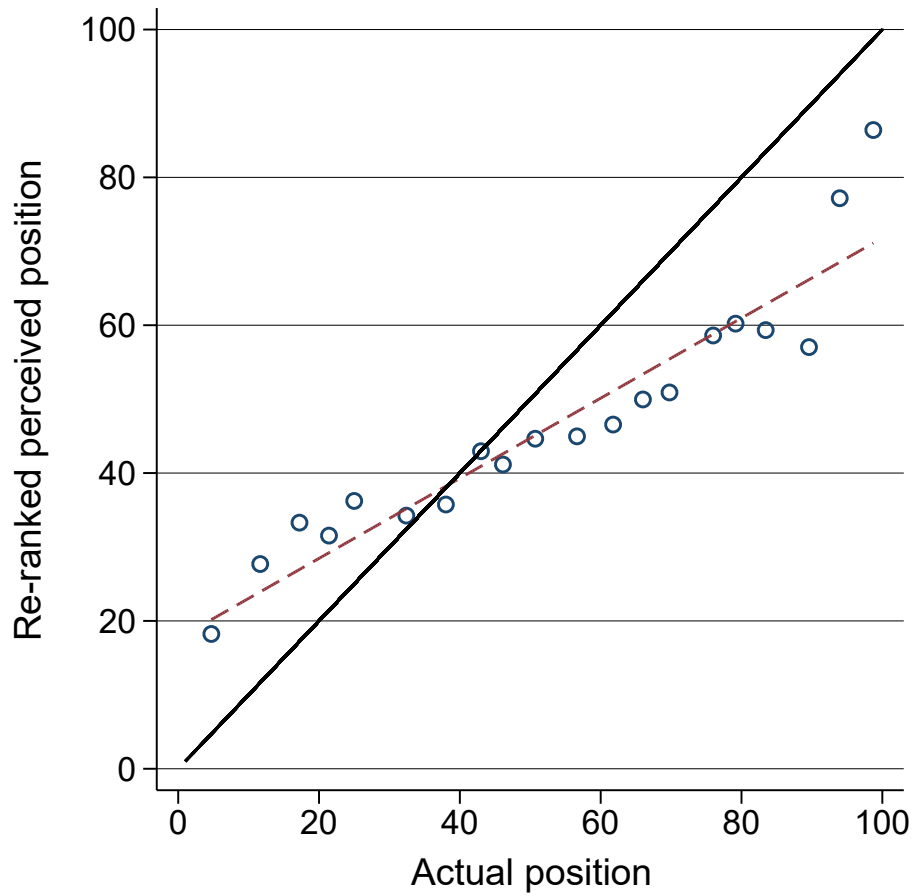
Notes: Own calculation based on SOEP-IS. We re-rank both actual and reported position, such that they are uniformly distributed from 1 to 100 in our sample, and plot the average and median perceived position by actual position following Hvidberg et al. (2021). The figure is based on binned scatterplots. Each dot represents 75 observations.

Figure C.2: Gender differences for varying levels of misperception

a) Excluding household FE
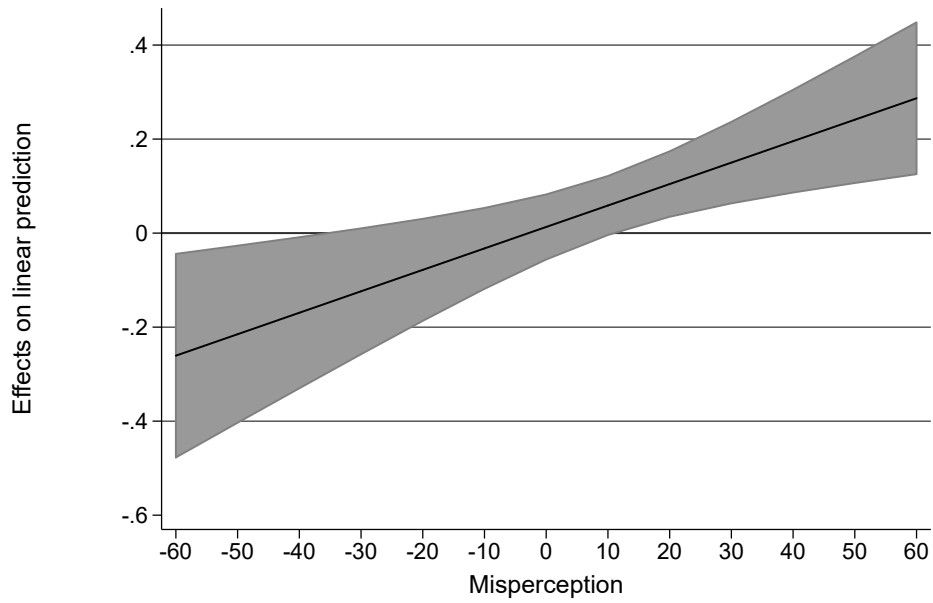
b) Including household FE
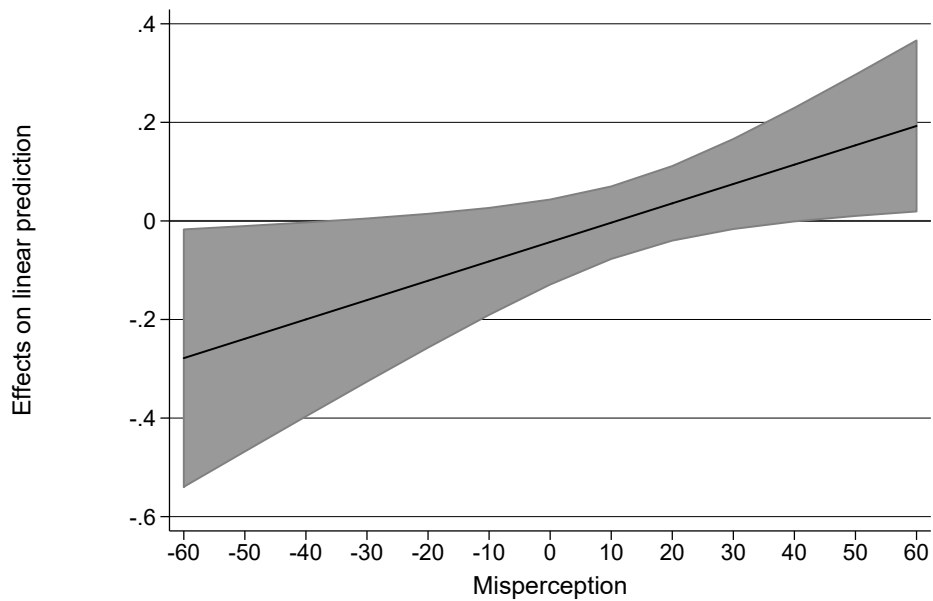
Notes: Own calculation based on SOEP-IS. The graphs show the marginal effect for the gender difference for different levels of misperception and its significance indicated by the confidence intervals shown in grey (at the 90% level). The specification for Figure C.2a corresponds to column (2) in Table 3. The specification for Figure C.2b to column (3) in Table 3.

Table C.1: Misperception and AfD attachment, OLS

Dep. var.: AfD preference (Dummy)	(1)	(2)
Misperception (in pp)	0.001**	0.001*
	(0.001)	(0.001)
Actual percentile in distribution	-0.003***	-0.002***
	(0.001)	(0.001)
Age	0.008**	0.008**
	(0.004)	(0.004)
Age squared	-0.000***	-0.000***
	(0.000)	(0.000)
Local median income (deciles)		-0.010**
		(0.004)
P90/P50 ratio (deciles)		-0.005
		(0.004)
Mean dep. var.	0.09	0.09
SD dep. var.	0.28	0.28
Observations	800	800
R-squared adjusted	0.04	0.05

Notes: Naturally, the sample is restricted to those that lean towards a political party. This is the case for 800 (out 1502) individuals. The SOEP does not include an election poll for everybody but asks participants if they generally lean towards a party and if yes, which one. Standard errors, clustered at the household level, are in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.