Online Supplementary Material

for

‘Discontent with what? Linking self-centered and society-centered discontent to populist party support’

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SUPPLEMENT A: Additional tables and figures

TABLE S1: Results of confirmatory factor analyses

	Items	Loading
PA (N = 1789)	The politicians in the German parliament need to follow the will of the people.	1.00 (fixed)
	The people, and not politicians, should make our most important policy decisions.	1.85***
	The political differences between the elite and the people are greater than the differences among the people.	1.12***
	I would rather be represented by a citizen than by a specialized politician.	1.74***
	Elected officials talk too much and take too little action.	1.20***
	What people call compromise in politics is really just selling out on one’s principles.	1.56***
SOC (N = 1930)	If we don’t act immediately, we will lose our culture.	1.00 (fixed)
	If we don’t act immediately, the economy will break down massively.	0.59***
	If we don’t act immediately, people won’t be safe on the street after nightfall.	0.95***
	If we don’t act immediately, income inequalities will increase even further.	0.25***
SELF (N = 1958)	In most ways, my life is close to my ideal.	1.00 (fixed)
	I am satisfied with my life.	0.94***
	If I could live my life over, I would change almost nothing.	0.88***
Socio-cultural issue position (N = 1909)	Immigrants should be obliged to adapt to German culture.	1.00 (fixed)
	Germany needs a yearly limit in numbers of incoming refugees.	1.27***
	Legal immigrants should have the same rights as German citizens.	0.65***

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

Note: Own calculations applying post-stratification weights.

Source: Own calculations.

TABLE S2: Three-way interaction model

	MODEL A1	
Populist attitudes (PA)	0.94***	[0.20]
Society-centered discontent (SOC)	1.40***	[0.21]
Self-centered discontent (SELF)	0.18	[0.20]
Interactions		
PA#SOC	2.08***	[0.27]
PA#SELF	0.18	[0.37]
SOC#SELF	0.09	[0.30]
PA#SOC#SELF	0.56	[0.49]
Controls		
External efficacy	0.01	[0.19]
Socio-cultural issue position	0.72***	[0.19]
Socio-economic issue position	0.48**	[0.15]
EU issues position	2.05***	[0.19]
Age group (base category: 18-24)		
Age 25-44	0.04	[0.30]
Age 45-64	-0.37	[0.29]
Age 65+	-0.95**	[0.30]
Educational level (base category: low)		
Medium	0.23	[0.22]
High	0.29	[0.25]
Gender (female)	-0.48**	[0.15]
Residential area (base category: urban)		
Suburban	0.11	[0.19]
Rural	0.18	[0.18]
Geographical region (East Germany)	0.65***	[0.17]
Religiosity	0.38*	[0.16]
Subjective status of living	0.16	[0.20]
Intercept	-0.42	[0.69]
adj. R^2	0.32	
N	1735	

Standard errors in brackets; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Own calculations.

TABLE S3: Party support and populist attitudes (correlation coefficients)

		Populist attitudes correlated with…	**N**
Online survey	*PTV AfD*	0.33***	1922
	PTV The Left	-0.00	1911
GLES 2017 post-election survey	*PTV AfD*	0.32***	2057
	PTV The Left	-0.07**	2037

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Note: Own calculations applying post-stratification weights.
Source: Own calculations.

TABLE S4: Models with alternative measure of society-centered discontent (SOC)

	MODEL A2		MODEL A3		MODEL A4	
Populist attitudes (PA)	0.57**	[0.19]	-2.35***	[0.47]	0.60**	[0.20]
Society-centered discontent (SOC)	1.01***	[0.20]	1.11***	[0.20]	1.03***	[0.20]
Self-centered discontent (SELF)	0.24	[0.20]	0.28	[0.19]	0.22	[0.19]
Interactions						
PA#SOC			1.57***	[0.25]		
PA#SELF					0.42	[0.30]
Controls						
Socio-cultural issue position	0.89***	[0.18]	0.92***	[0.18]	0.89***	[0.18]
Socio-economic issue position	0.51***	[0.15]	0.55***	[0.15]	0.51**	[0.15]
EU issues position	2.21***	[0.19]	2.14***	[0.19]	2.20***	[0.20]
External efficacy	0.13	[0.19]	0.02	[0.19]	0.13	[0.19]
Age group (base category: 18-24)						
Age 25-44	0.13	[0.31]	0.04	[0.31]	0.11	[0.31]
Age 45-64	-0.25	[0.30]	-0.35	[0.29]	-0.28	[0.30]
Age 65+	-0.86**	[0.31]	-0.93**	[0.30]	-0.89**	[0.31]
Educational level (base category: low)						
medium	0.14	[0.22]	0.21	[0.22]	0.15	[0.22]
high	0.27	[0.26]	0.26	[0.25]	0.28	[0.26]
Gender (female)	-0.51**	[0.15]	-0.50**	[0.15]	-0.52***	[0.15]
Residential area (base category: urban)						
Suburban	0.06	[0.19]	0.11	[0.19]	0.06	[0.19]
Rural	0.12	[0.19]	0.16	[0.19]	0.11	[0.19]
Geographical region (East Germany)	0.67***	[0.18]	0.65***	[0.17]	0.66***	[0.18]
Religiosity	0.40*	[0.16]	0.37*	[0.16]	0.39*	[0.16]
Subjective status of living	0.15	[0.20]	0.17	[0.20]	0.16	[0.20]
Intercept	-2.67***	[0.73]	-2.83***	[0.71]	-2.66***	[0.73]
adj. R^2	0.29		0.31		0.29	
N	1733		1733		1733	

Standard errors in brackets; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Own calculations.

TABLE S5: Models with alternative measure of self-centered discontent (SELF)

	Self-centered discontent = Economic situation					
	MODEL A5		MODEL A6		MODEL A7	
Populist attitudes (PA)	0.58**	[0.19]	0.93***	[0.20]	0.83	[0.53]
Society-centered discontent (SOC)	1.24***	[0.21]	1.38***	[0.21]	1.24***	[0.21]
Self-centered discontent (SELF)	-0.07	[0.16]	-0.07	[0.16]	-0.06	[0.16]
Interactions						
PA#SOC			2.03***	[0.26]		
PA#SELF (economic)					-0.15	[0.29]
Controls						
Socio-cultural issue position	0.67***	[0.19]	0.74***	[0.19]	0.67***	[0.19]
Socio-economic issue position	0.47**	[0.16]	0.52***	[0.15]	0.47**	[0.16]
EU issues position	2.17***	[0.20]	2.09***	[0.19]	2.16***	[0.20]
External efficacy	0.12	[0.19]	-0.00	[0.19]	0.11	[0.19]
Age group (base category: 18-24)						
Age 25-44	0.16	[0.32]	0.05	[0.31]	0.15	[0.32]
Age 45-64	-0.19	[0.31]	-0.32	[0.30]	-0.20	[0.31]
Age 65+	-0.81*	[0.32]	-0.89**	[0.31]	-0.82*	[0.32]
Educational level (base category: low)						
Medium	0.16	[0.22]	0.24	[0.22]	0.17	[0.22]
High	0.31	[0.26]	0.29	[0.25]	0.31	[0.26]
Female	-0.49**	[0.16]	-0.48**	[0.15]	-0.49**	[0.16]
Residential area (base category: urban)						
Suburban	0.05	[0.19]	0.10	[0.19]	0.05	[0.19]
Rural	0.13	[0.19]	0.17	[0.18]	0.12	[0.19]
East	0.65***	[0.17]	0.63***	[0.17]	0.65***	[0.17]
Religiosity	0.36*	[0.16]	0.36*	[0.16]	0.36*	[0.16]
Intercept	-0.15	[0.70]	-0.14	[0.68]	-0.14	[0.70]
adj. R^2	0.29		0.32		0.29	
N	1719		1719		1719	

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

Note: Own calculations applying post-stratification weights. 'Subjective status of living' is not included as a control as the indicator is already part of the variable representing the respondent's economic situation and grievances.
Source: Own calculations.

TABLE S6: Models with mean values instead of factor scores

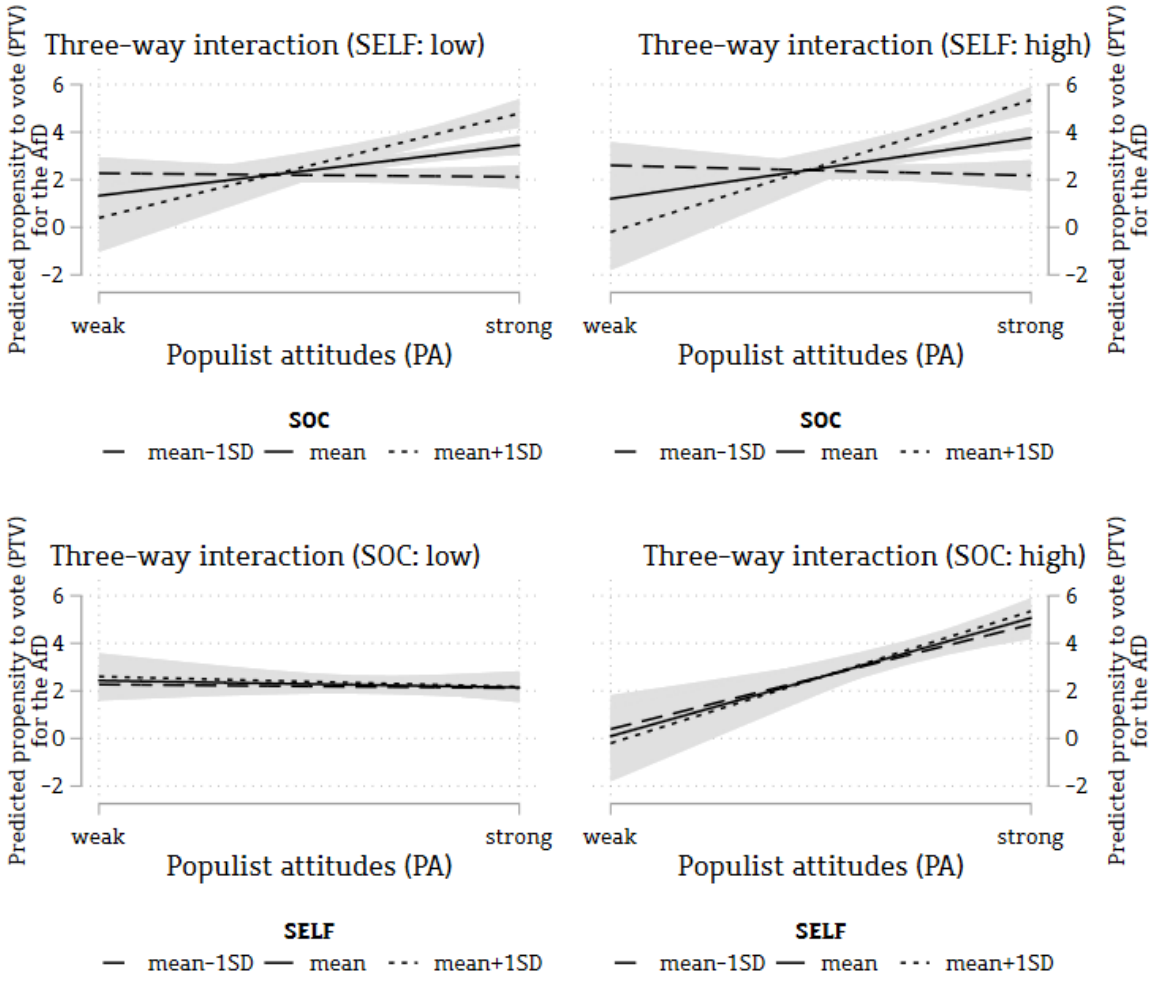
	MODEL A8		MODEL A9		MODEL A10	
Populist attitudes (PA)	0.57**	[0.21]	-2.28***	[0.48]	1.21*	[0.49]
Society-centered discontent (SOC)	0,99***	[0.22]	-2.68***	[0.61]	1.01***	[0.22]
Self-centered discontent (SELF)	-0.23	[0.20]	-0.24	[0.20]	0.85	[0.70]
Interactions						
PA#SOC			1.65***	[0.27]		
PA#SELF					-0.46	[0.31]
Controls						
Socio-cultural issue position	1.05***	[0.21]	1.06***	[0.21]	1.04***	[0.21]
Socio-economic issue position	0.58***	[0.16]	0.62***	[0.16]	0.57***	[0.16]
EU issues position	2.10***	[0.21]	2.03***	[0.20]	2.08***	[0.21]
External efficacy	0.14	[0.20]	0.02	[0.19]	0.13	[0.20]
Age group (base category: 18-24)						
Age 25-44	0.37	[0.33]	0.26	[0.33]	0.35	[0.33]
Age 45-64	-0.12	[0.32]	-0.23	[0.31]	-0.15	[0.32]
Age 65+	-0.68*	[0.33]	-0.78*	[0.32]	-0.70*	[0.33]
Educational level (base category: low)						
Medium	0.18	[0.23]	0.25	[0.23]	0.19	[0.23]
High	0.30	[0.27]	0.28	[0.26]	0.30	[0.27]
Gender (female)	-0.46**	[0.16]	-0.44**	[0.16]	-0.48**	[0.16]
Residential area (base category: urban)						
Suburban	0.03	[0.20]	0.08	[0.20]	0.03	[0.20]
Rural	0.10	[0.20]	0.15	[0.20]	0.10	[0.20]
Geographical region (East Germany)	0.66***	[0.18]	0.64***	[0.18]	0.65***	[0.18]
Religiosity	0.35*	[0.17]	0.32	[0.17]	0.35*	[0.17]
Subjective status of living	0.08	[0.21]	0.10	[0.20]	0.08	[0.21]
Intercept	-5.27***	[0.72]	1.09	[1.14]	-6.74***	[1.15]
adj. R^2	0.30		0.32		0.30	
N	1588		1588		1588	

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

Note: Own calculations applying post-stratification weights.

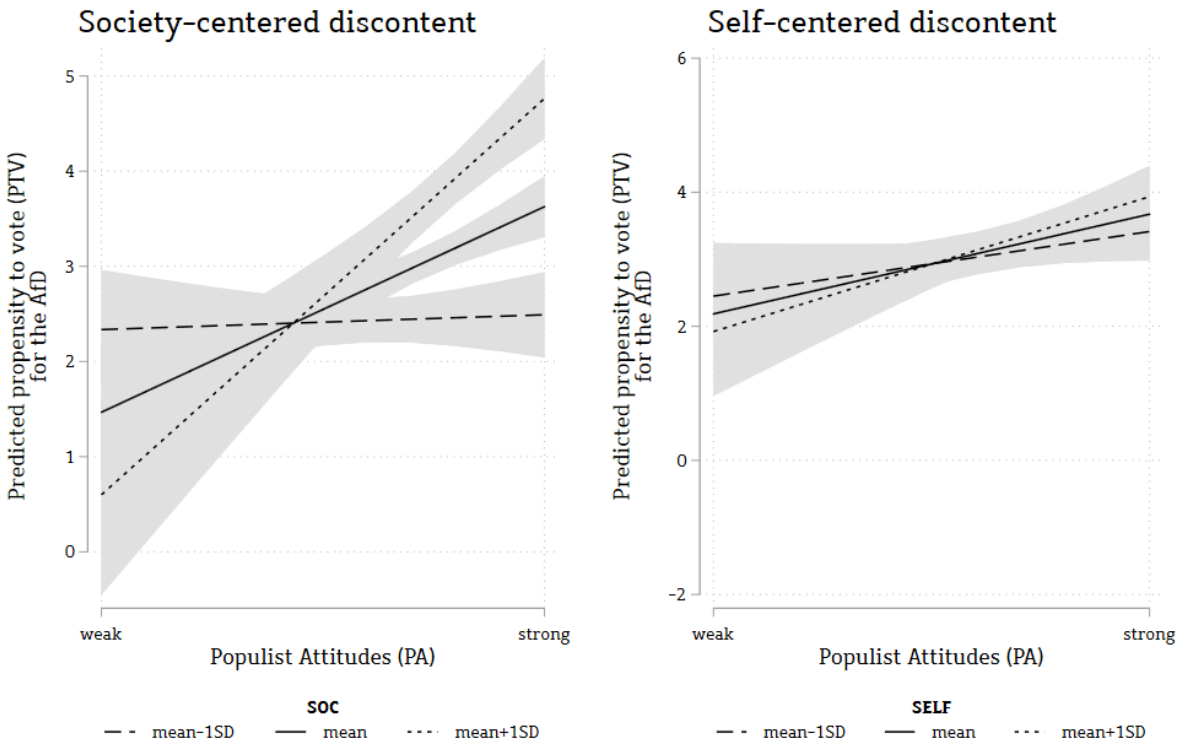
Source: Own calculations.

FIGURE S1: Predicted PTV for the AfD with three-way interactions



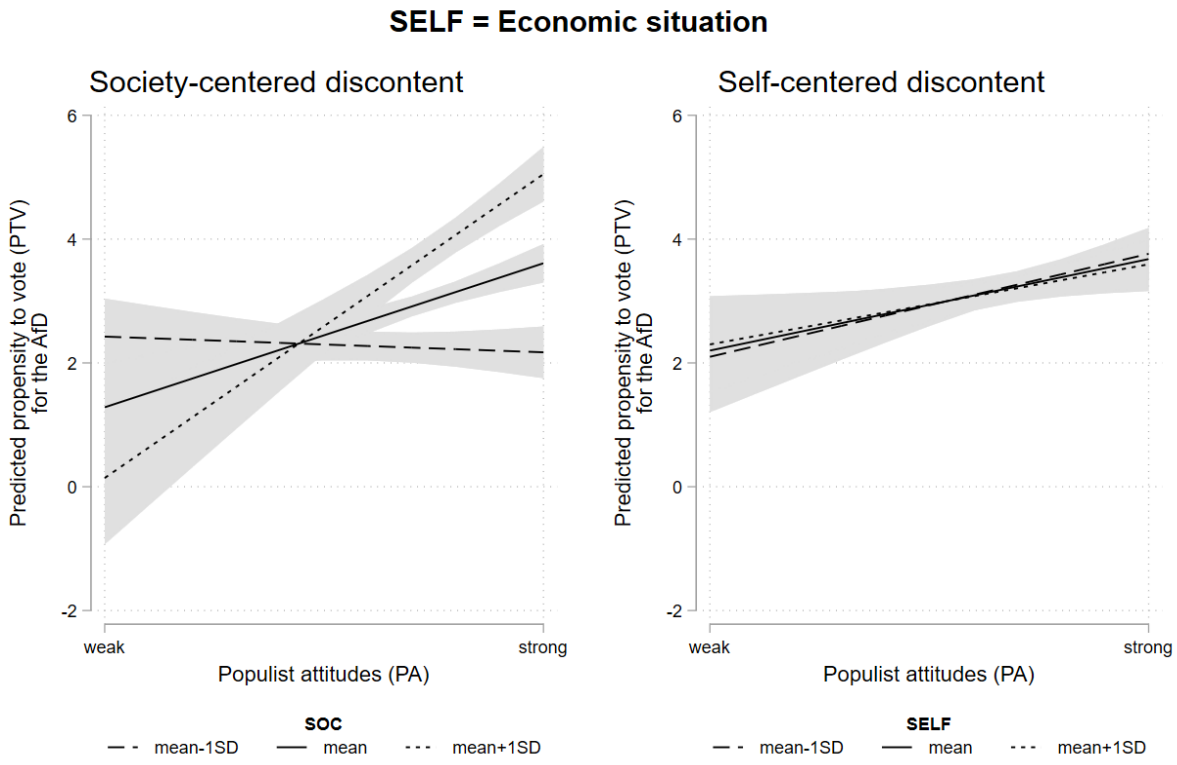
Shaded areas represent the 95% confidence intervals. Graphs are based on Model A1 in Table S2
Source: Own calculations.

FIGURE S2: Predicted PTV for the AfD with alternative measure of SOC



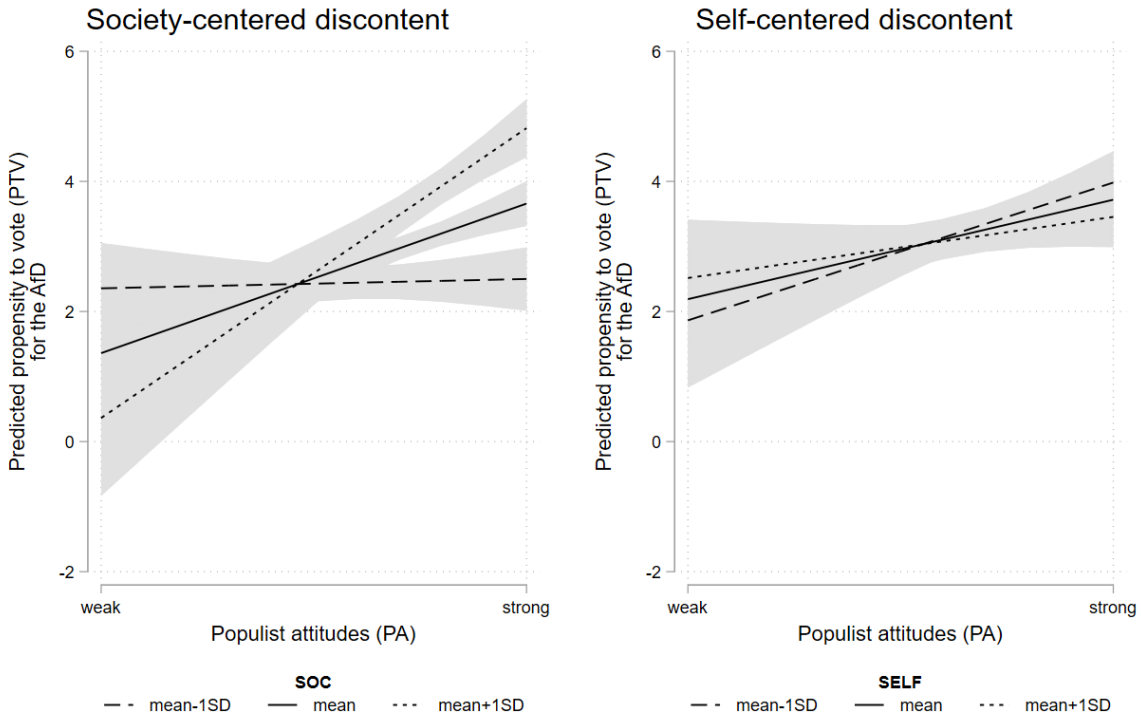
Shaded areas represent the 95% confidence intervals. Left graph is based on Model A4 in Table S4 and right graph is based on Model A5 in Table S4.
Source: Own calculations.

FIGURE S3: Predicted PTV for the AfD with alternative measure of SELF



Shaded areas represent the 95% confidence intervals. Left graph is based on Model A6 in Table S5 and right graph is based on Model A7 in Table S5.
Source: Own calculations.

FIGURE S4: Predicted PTV for the AfD with alternative measurement of constructs



Shaded areas represent the 95% confidence intervals. Left graph is based on Model A9 in Table S6 and right graph is based on Model A10 in Table S6.
Source: Own calculations.

SUPPLEMENT B: Items used to measure society-centered discontent (SOC)

If we don't act immediately…

… *we will lose our culture.*

… *the economy will regress dramatically.*

… *people won't be safe on the streets after nightfall.*

… *income inequalities will increase even further.*

... international corporations will do what they want.

... we won't be safe from terror attacks anywhere.

... we will be affected by big natural disasters.

... there will no longer be any societal cohesion.

... there will be a Third World War.

... very many people will lose their jobs.

... hardly anyone will receive a good school education or job training.

... the quality of the infrastructure will suffer dramatically.

... important decisions will mostly be made by the EU or other countries.

... Christian values and the church will no longer play a role.

... there will be great poverty among the elderly.

Note: Wording represents our translation of the original German questionnaire. All items are measured on a seven-point scale (1 = totally disagree – 7 = totally agree). Italic items are used to measure SOC in the regression model presented in the main text.

SUPPLEMENT C: Additional analysis using vote choice as the dependent variable

Vote choice and propensity to vote, albeit being strongly correlated, measure different things and their conceptualization and coding follows different logics. In the main text, we provide several arguments supporting our choice using PTVs. Nevertheless, this section presents similar analysis but relying on logistic regression models and vote choice for the AfD in the 2017 federal election as the dependent variable.

Even though there is a strong correlation between the PTV score and the binary vote choice measure (p = 0.74), as Table S7 shows, results differ significantly from the OLS models using PTVs as the dependent variable.

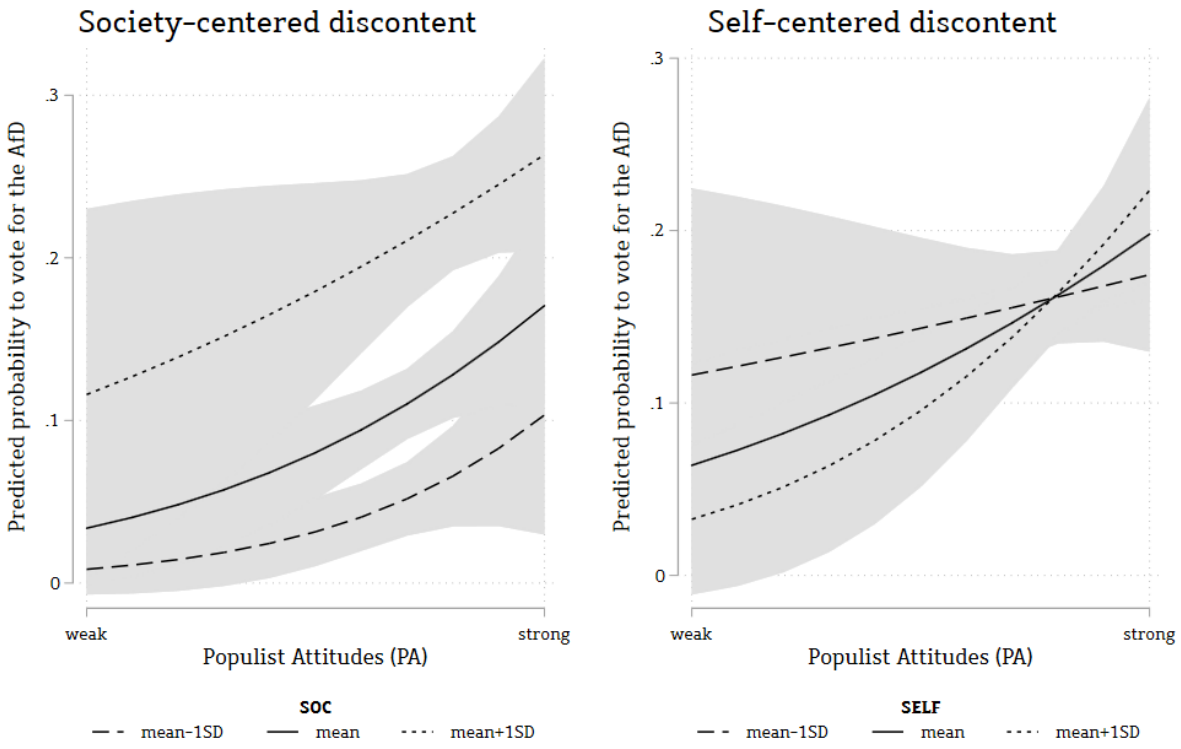
TABLE S7: Logit model predicting vote choice for the AfD

	(1) MODEL C1		(2) MODEL C2		(3) MODEL C3	
Populist attitudes (PA)	0.63*	[0.29]	0.79*	[0.32]	0.67*	[0.28]
Society-centered discontent (SOC)	1.70***	[0.31]	1.78***	[0.31]	1.74***	[0.31]
Self-centered discontent (SELF)	0.08	[0.19]	0.07	[0.19]	-0.15	[0.23]
Interactions						
PA#SOC			-0.61	[0.56]		
PA#SELF					0.81*	[0.40]
Controls						
Socio-cultural issue position	1.11**	[0.35]	1.10**	[0.35]	1.08**	[0.35]
Socio-economic issue position	0.28	[0.17]	0.28	[0.17]	0.26	[0.17]
EU issues position	1.50***	[0.18]	1.50***	[0.18]	1.49***	[0.18]
External efficacy	-0.16	[0.17]	-0.16	[0.17]	-0.16	[0.17]
Age group (base category: 18-24)						
Age 25-44	0.19	[0.41]	0.20	[0.41]	0.18	[0.41]
Age 45-64	0.05	[0.39]	0.06	[0.40]	0.03	[0.40]
Age 65+	-0.22	[0.41]	-0.21	[0.41]	-0.24	[0.41]
Educational level (base category: low)						
Medium	-0.04	[0.22]	-0.05	[0.22]	-0.05	[0.22]
High	0.27	[0.27]	0.27	[0.27]	0.25	[0.27]
Gender (female)	-0.32	[0.17]	-0.32	[0.17]	-0.34*	[0.17]
Residential area (base category: urban)						
Suburban	-0.09	[0.21]	-0.09	[0.21]	-0.09	[0.21]
Rural	0.02	[0.20]	0.01	[0.20]	0.02	[0.20]
Geographical region (East Germany)	0.38*	[0.17]	0.38*	[0.17]	0.38*	[0.17]
Religiosity	-0.03	[0.18]	-0.03	[0.18]	-0.04	[0.18]
Subjective status of living	0.14	[0.21]	0.14	[0.21]	0.18	[0.22]
Intercept	-4.42***	[0.75]	-4.41***	[0.75]	-4.42***	[0.76]
R^2	0.30		0.30		0.30	
N	1629		1629		1629	

Standard errors in brackets; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Own calculations.

For example, socio-economic issue positions do no longer play a role and there is also no significant negative effect of being 65 years or older. More importantly, however, we find that the interaction effect of society-centered discontent and populist attitudes is negative and insignificant (Model C2) – in contrast to Model 2 in the main text. At the same time, and again in complete contrast to the PTV model in the main text, we not only get a negative main effect of self-centered discontent but also a significant interaction effect. Similar to the main manuscript, this can be portrayed graphically in Figure S5.

FIGURE S5: Predicted probability to vote for the AfD (vote choice)



Shaded areas represent the 95% confidence intervals. Left graph is based on Model C2 in Table S7 and right graph is based on Model C3 in Table S7.
Source: Own calculations.

On the left-hand side, first of all, we see that the confidence intervals do not fully overlap if populist attitudes are reasonably strong. Moreover, as expected, higher levels of discontent are associated with higher probability to vote for the AfD. At the same time, the three slopes are quite similar as already indicated by the insignificant interaction term. The last point very much contradicts our findings using

PTVs as the dependent variable as well as our third hypothesis.

Looking to the predicted probabilities based on Model C3 (right-hand plot), we indeed find very different slopes. Especially, the effect of populist attitudes increases if self-centered discontent is high. However, the plot also shows that predicted probabilities are not distinct. It is also quite surprising that high levels of self-centered discontent only result in higher probabilities to vote for the AfD than low levels of self-centered discontent if populist attitudes are very strong.

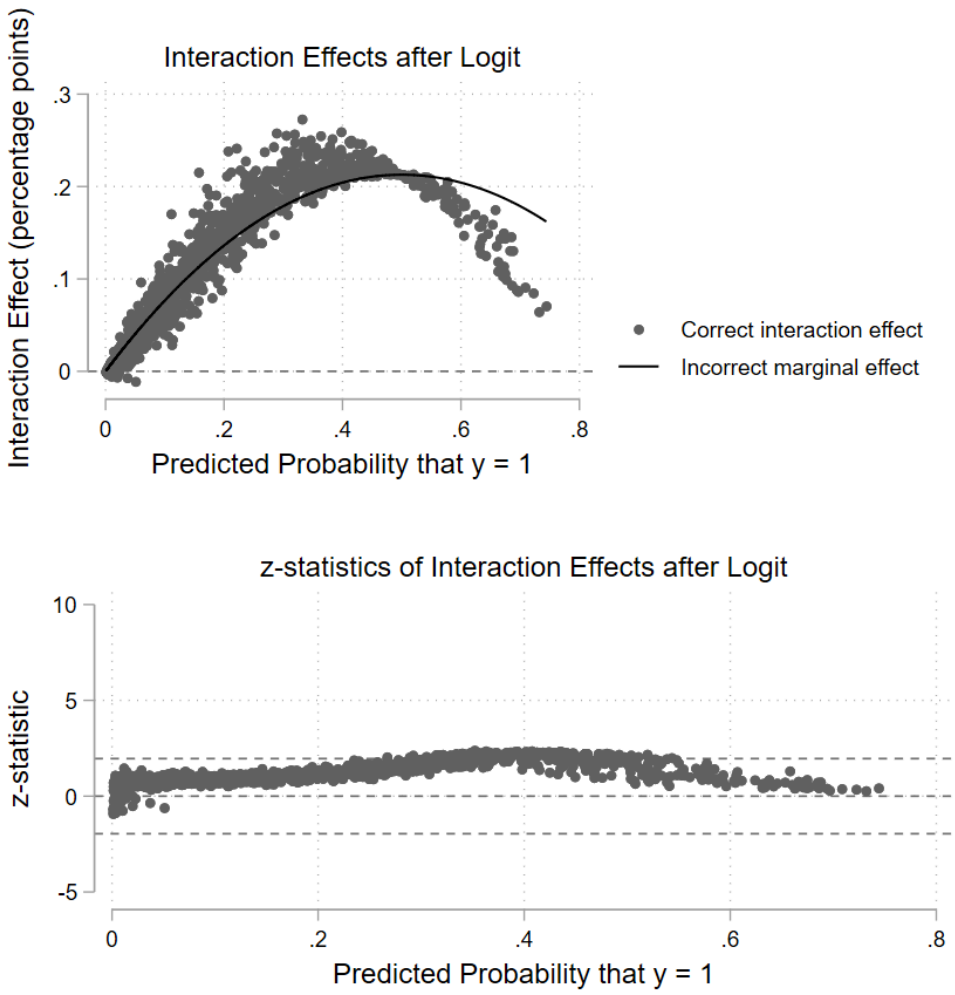
Despite that comparing linear and non-linear model results is not straight forward – especially when it comes to interaction effects (see, e.g., Ai and Norton 2003; Greene 2010). As the models hold a large set of covariates, the fact that estimated effects including interaction effects depend on the empirical values of all other predictors included in the model seems especially problematic as this is not the case in the same way in linear models. Hence, it seems worthwhile to take a closer look at the interaction of self-centered discontent and populist attitudes which contradict the findings presented in the main text. We apply the method developed by Ai and Norton (2003) to our model.[1] The results are most easily interpreted in graphical terms (Figure S6).

The upper plot shows that correct and incorrect marginal effects do correspond quite closely. The estimated interaction effects based on the normal approach slightly underestimate the effect size if predicted probabilities are below 0.5 and somewhat overestimate the effect at higher levels of predicted probabilities. In simple terms, this means that overall the interaction effect is estimated correctly in terms of effect size. The lower plot, however, points to an incorrect interpretation of the interaction effect as being significant. The plot shows that only very few dots lie outside the area indicating insignificance on the 5% level. Moreover, we find that significant effects are restricted to predicted probabilities between 0.3 and 0.5. This sheds serious doubts on the conclusions based on Model S3 and Figure S1 as there seems to be no consistent significant interaction effect. It has to be noted that we do not find a consistent significant effect for the

[1] We use the Stata command ‚inteff' (Norton et al. 2004). Please, note that this estimation approach does not allow the usage of post-stratification weights.

interaction of society-centered discontent and populist attitudes predicting vote choice either (results not presented).

FIGURE S6: Interaction of self-centered discontent and populist attitudes (Ai and Norton approach)



Estimation is based on the same model as estimated as Model C3.

In sum, our findings investigating the role of discontent for populist party preferences do not translate to the realm of party choice. Potential reasons for these rather unexpected but also inconclusive findings are plentiful. For example, it might be the case that discontent is more powerful in changing preferences than in changing vote choice as the latter is determined by factors which should, at least theoretically, not affect

PTVs. In addition, vote choice is a retrospective measure while populist attitudes and discontent reflect what respondents think and felt when participating in the survey. At the same time, our vote-choice-models exclude non-voters, which might have affected the results as non-voting and populist attitudes are strongly correlated. Hence, this might cause severe selection problems for the estimation. Nevertheless, delving deeper into the supposedly different meaning of discontent for party preferences and vote choice seems to be an interesting and important avenue for future research.

REFERENCES

Ai C and Norton EC (2003) Interaction terms in logit and probit models. *Economics Letters* 80(1): 123–129.

Greene W (2010) Testing hypotheses about interaction terms in nonlinear models. *Economics Letters* 107(2): 291–296.

Norton EC, Wang H and Ai C (2004) Computing interaction effects and standard errors in logit and probit models. *Stata Journal* 4(2): 154–167.

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