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STATS II REPLICATION

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Ideological Extremism or Far-Right Attitudes? The Role of Ideology for COVID-19
Scepticism - Anne Küppers & Marion Reiser, 2022

STATISTICAL ANALYSIS II

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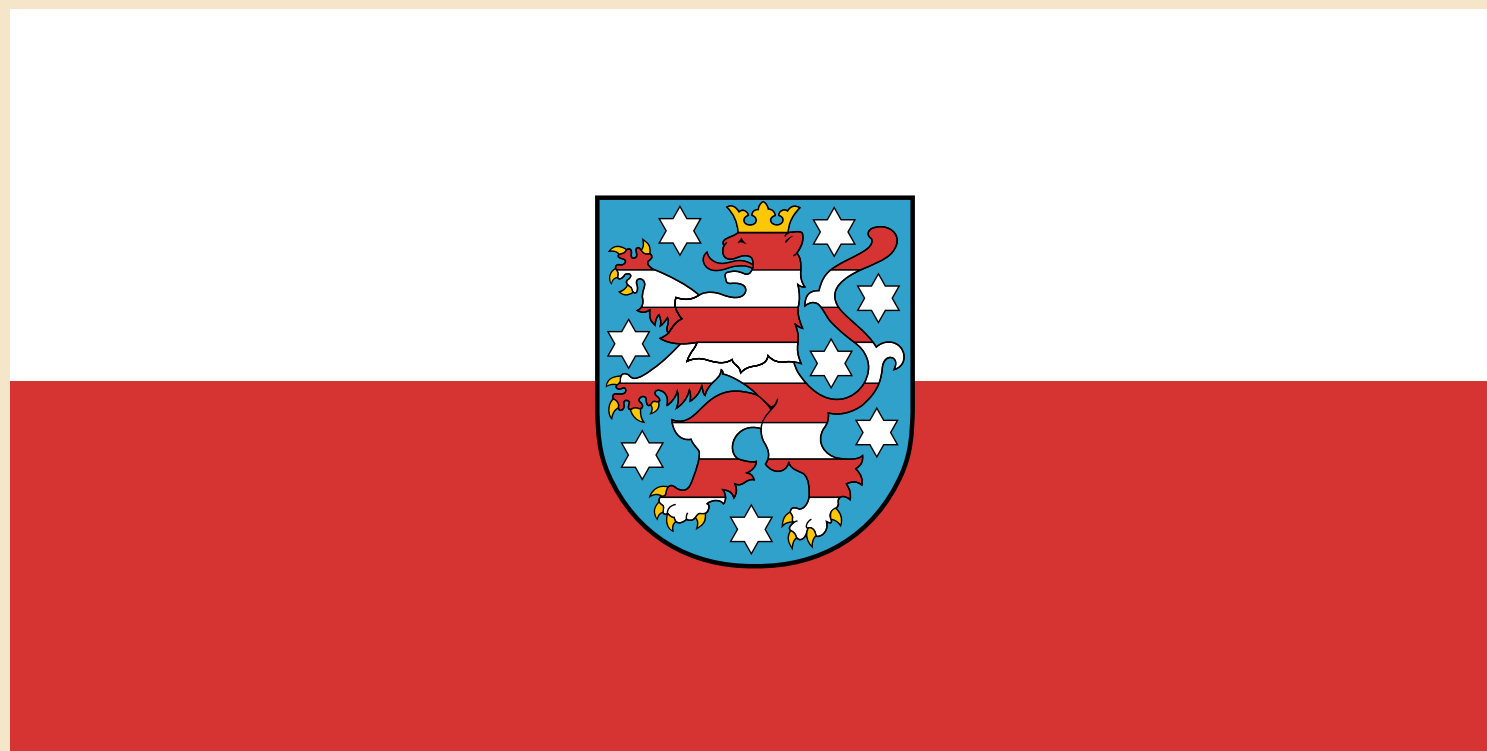
STATISTICAL ANALYSIS II

INTRODUCTION

Existing studies suggest that ideology has an important role in developing sceptical positions, but the link between ideology and scepticism is somewhat sketchy with regards to Covid-19.

Anti-lockdown protests have attracted participants from both the far-left and far-right of the political spectrum. But studies have also suggested close ties between Covid scepticism and the far-right. So are far-right attitudes or extremism in general more useful in explaining Covid scepticism?

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QUESTION

Anne Küppers & Marion Reiser, 2022

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EXTREMISM? OR ONLY FAR-RIGHT EXTREMISM

Associated with Covid-19 scepticism

Focusing exclusively on impact sceptics (scepticism in the severity of the virus on the body), Küppers and Reiser ask if Covid-scepticism is more closely associated with far-right views, or with bipartisan ideological extremism.

In statistics terms, is the association between ideology and scepticism in this case linear or curvilinear?

STATISTICAL ANALYSIS II

PRIOR LITERATURE

GENERAL EXTREMISM

Some studies show a curvilinear association already. Left and right extremism often share a distrust in institutions, low tolerance, & relatively simplistic perceptions of the social world.

Existing research also suggest people with a low risk perception of Covid are more sceptic, and are less likely to trust experts, traditional media and the government

EXTREME FAR-RIGHT ALONE

In Europe, Covid-denial linked to very far-right parties, as opposed to moderate conservatism in US.

Covid-sceptic views associated with broadly far-right attitudes - including Social Darwinism and Anti-Semitism gained prominence during the pandemic.

HYPOTHESES

HYPOTHESIS I

The more individuals share far-right attitudes, the more likely they are to endorse COVID-19 scepticism

HYPOTHESIS II

The more individuals locate themselves on the fringes of the political spectrum (i.e: share far-right **OR** far-left attitudes), the more likely they are to endorse COVID-19 scepticism

METHODOLOGY

DATASET

Open-access, yearly representative survey conducted in Thuringia, a region selected for its representation of both ends of political spectrum (stronghold for both AfD and the Left party).

DEPENDENT

Dummy for Covid scepticism based off a scaled question “the virus is actually no worse than the flu” on 4 point scale:

- mostly/fully disagree = 0
- mostly/fully agree = 1

CONTROLS

- Sociodemographics
- Affectedness by Virus
- Risk perception - health + wealth
- Pandemic conspiracy belief
- Institutional trust in: federal government and the RKI

EXPLANATORY VARIABLES

FAR RIGHT ATTITUDES

- 10 items comprising Anti-Semitism, racism, Social Darwinism, support for a right-wing dictatorship, & downplaying Nazi crimes
- Combined into a mean scale

IDEOLOGICAL EXTREMISM

- The squared distance from the mean of the left-right scale from 1-7
- Absolute distance from the mean of the self-placement scale, and general ideology

PARTY IDENTIFICATION

- AfD and the Left party are used as either extremes
- No party ID is used as the reference category

REPLICATED
MODELS

Logistic regression models
(odds ratios, standard
errors).

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Dependent variable: dummy COVID-19 scepticism ('the virus is actually not worse than the flu')				
	core8_gr			
	Model(1)Far-right ideology	Model(2)Ideological extremism	Model(3)PartyID	Model(4)Full model
Far-right attitudes	2.780*** (0.519)			2.703*** (0.582)
Ideological extremism		1.123** (0.060)		1.159** (0.071)
AfD			1.487 (0.700)	0.634 (0.324)
CDU			1.593* (0.439)	1.640 (0.531)
FDP			1.324 (0.928)	1.460 (1.069)
Greens			0.235** (0.163)	0.467 (0.334)
Left			0.742 (0.207)	0.518* (0.178)
other			3.326*** (1.467)	2.707** (1.371)
SPD			0.717 (0.341)	0.957 (0.481)
age	0.997 (0.006)	1.010* (0.006)	1.008 (0.006)	1.003 (0.007)
Sex (Female)	1.018 (0.194)	0.767 (0.146)	1.053 (0.200)	0.957 (0.210)
Education(A-levels or higher)	0.949 (0.220)	0.818 (0.187)	0.894 (0.204)	1.203 (0.305)
Political interest	0.782*** (0.074)	0.572*** (0.058)	0.700*** (0.065)	0.656*** (0.075)
Affectedness by Covid-19(no)	1.358 (0.442)	1.490 (0.467)	1.892* (0.630)	1.299 (0.455)
Affectedness by Covid-19 (no, but riskgroup)	0.795 (0.325)	0.772 (0.311)	0.958 (0.389)	0.654 (0.300)
Risk perception (health)(high risk)	0.546*** (0.126)	0.583** (0.137)	0.492*** (0.111)	0.471*** (0.124)
Risk perception (econ. sit)(high risk)	0.803 (0.209)	0.963 (0.246)	0.764 (0.196)	0.932 (0.267)
Conspiracy belief	2.166*** (0.460)	2.163*** (0.449)	2.531*** (0.518)	1.531* (0.369)
Trust federal government (low)	1.764** (0.484)	2.951*** (0.770)	2.936*** (0.789)	2.526*** (0.796)
Trust federal government (medium)	1.436 (0.336)	1.970*** (0.450)	1.953*** (0.437)	1.558 (0.421)
Trust Robert Koch Institute (low)	7.825*** (2.926)	9.962*** (3.956)	6.187*** (2.434)	10.215*** (4.541)
Trust Robert Koch Institute (medium)	2.302*** (0.520)	2.920*** (0.674)	2.045*** (0.473)	3.223*** (0.853)
Constant	0.073*** (0.045)	0.465 (0.239)	0.253*** (0.135)	0.076*** (0.051)
Observations	819	808	783	719
Log Likelihood	-326.104	-325.443	-342.578	-261.476
Akaike Inf. Crit.	682.208	680.886	727.157	568.953
Note:			*p<0.1; **p<0.05; ***p<0.01	

Table 1: Logistic regression models (odds ratios, 95% confidence intervals).

REPLICATED
MODELS

Logistic regression model
1 (odds ratios, standard
errors).
Far-right attitudes as a
predictor of CS (dummy).

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	Dependent variable: dummy
	Model(1)Far-right ideology
Far-right attitudes	2.780*** (0.519)
Ideological extremism	
AfD	
CDU	
FDP	
Greens	
Left	
other	
SPD	
age	0.997 (0.006)
Sex (Female)	1.018 (0.194)
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Trust Robert Koch Institute (low)	7.825*** (2.926)
Trust Robert Koch Institute (medium)	2.302*** (0.520)
Constant	0.073*** (0.045)
Observations	819
Log Likelihood	−326.104
Akaike Inf. Crit.	682.208
Note:	

REPLICATED
MODELS

Logistic regression model
2 (odds ratios, standard
errors).

Ideological extremism as a
predictor of CS (dummy).

	ummy COVID-19 scepticism ('the viru
	core8_gr
	Model(2)Ideological extremism
Far-right attitudes	
Ideological extremism	1.123** (0.060)
AfD	
CDU	
FDP	
Greens	
Left	
other	
SPD	
age	1.010* (0.006)
Sex (Female)	0.767 (0.146)
Education(A-levels or higher)	0.818 (0.187)
Political interest	0.572*** (0.058)
Affectedness by Covid-19(no)	1.490 (0.467)
Affectedness by Covid-19 (no, but riskgroup)	0.772 (0.311)
Risk perception (health)(high risk)	0.583** (0.137)
Risk perception (econ. sit)(high risk)	0.963 (0.246)
Conspiracy belief	2.163*** (0.449)
Trust federal government (low)	2.951*** (0.770)
Trust federal government (medium)	1.970*** (0.450)
Trust Robert Koch Institute (low)	9.962*** (3.956)
Trust Robert Koch Institute (medium)	2.920*** (0.674)
Constant	0.465 (0.239)
Observations	808
Log Likelihood	−325.443
Akaike Inf. Crit.	680.886
Note:	

REPLICATED
MODELS

Logistic regression model
3 (odds ratios, standard
errors).
Party identification as a
predictor of CS (dummy).

	<i>'the virus is actually not worse than the flu'</i>		
	r		
	mism	Model(3)	PartyID
Far-right attitudes			2
Ideological extremism			
AfD		1.487	(0.700)
CDU		1.593*	(0.439)
FDP		1.324	(0.928)
Greens		0.235**	(0.163)
Left		0.742	(0.207)
other		3.326***	(1.467)
SPD		0.717	(0.341)
age		1.008	(0.006)
Sex (Female)		1.053	(0.200)
Education(A-levels or higher)		0.894	(0.204)
Political interest		0.700***	(0.065)
Affectedness by Covid-19(no)		1.892*	(0.630)
Affectedness by Covid-19 (no, but riskgroup)		0.958	(0.389)
Risk perception (health)(high risk)		0.492***	(0.111)
Risk perception (econ. sit)(high risk)		0.764	(0.196)
Conspiracy belief		2.531***	(0.518)
Trust federal government (low)		2.936***	(0.789)
Trust federal government (medium)		1.953***	(0.437)
Trust Robert Koch Institute (low)		6.187***	(2.434)
Trust Robert Koch Institute (medium)		2.045***	(0.473)
Constant		0.253***	(0.135)
Observations		783	
Log Likelihood		-342.578	
Akaike Inf. Crit.		727.157	
<i>Note:</i> *p<0.1; **p<0.05; ***p<0.01			

REPLICATED
MODELS

Logistic regression full
model 1 (odds ratios,
standard errors).

		<i>not worse than the flu'</i>
	rtyID	Model(4)Full model
Far-right attitudes		2.703*** (0.582)
Ideological extremism		1.159** (0.071)
AfD	00)	0.634 (0.324)
CDU	139)	1.640 (0.531)
FDP	28)	1.460 (1.069)
Greens	163)	0.467 (0.334)
Left	07)	0.518* (0.178)
other	467)	2.707** (1.371)
SPD	41)	0.957 (0.481)
age	06)	1.003 (0.007)
Sex (Female)	00)	0.957 (0.210)
Education(A-levels or higher)	04)	1.203 (0.305)
Political interest	065)	0.656*** (0.075)
Affectedness by Covid-19(no)	130)	1.299 (0.455)
Affectedness by Covid-19 (no, but riskgroup)	89)	0.654 (0.300)
Risk perception (health)(high risk)	111)	0.471*** (0.124)
Risk perception (econ. sit)(high risk)	96)	0.932 (0.267)
Conspiracy belief	518)	1.531* (0.369)
Trust federal government (low)	789)	2.526*** (0.796)
Trust federal government (medium)	437)	1.558 (0.421)
Trust Robert Koch Institute (low)	434)	10.215*** (4.541)
Trust Robert Koch Institute (medium)	473)	3.223*** (0.853)
Constant	135)	0.076*** (0.051)
Observations		719
Log Likelihood	8	-261.476
Akaike Inf. Crit.	.	568.953
Note:		*p<0.1; **p<0.05; ***p<0.01

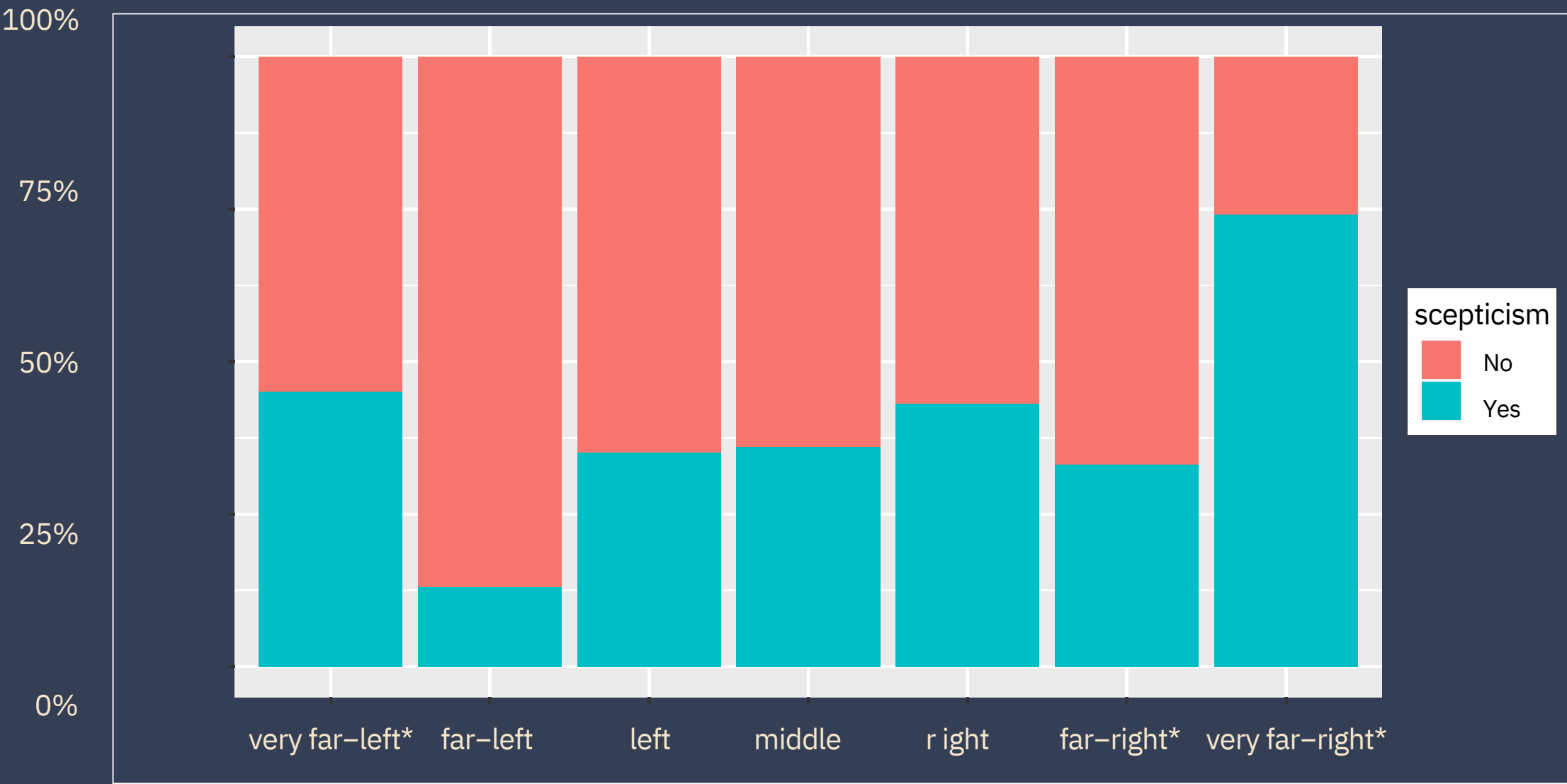
Table 1: Logistic regression models (odds ratios, 95% confidence intervals).

REPLICATED
PLOTS

Distribution of COVID-19 sceptics along
the left-right dimension.

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Self-placement on left-right dimension



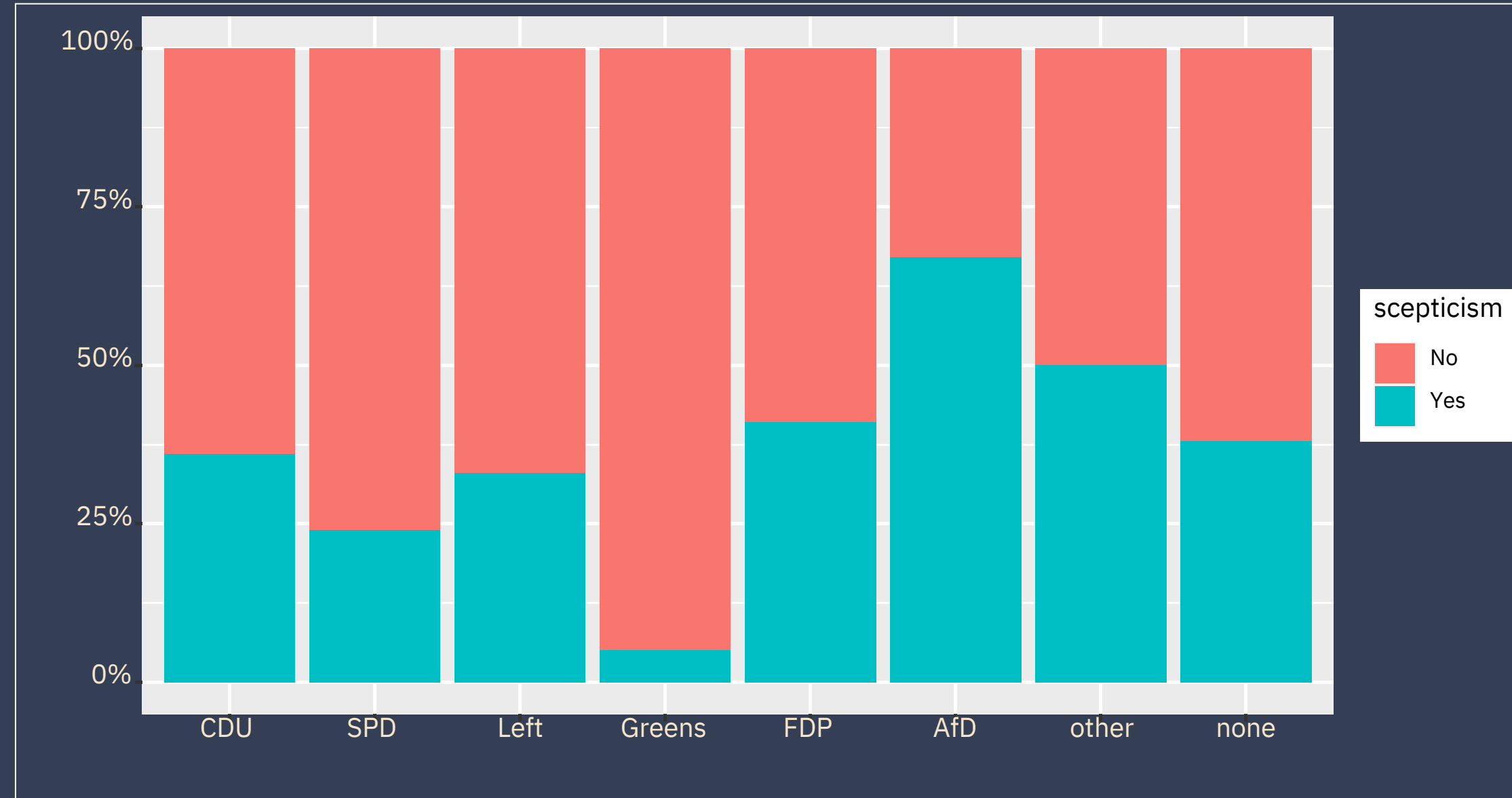
Authors' note: * The numbers on the very far-right and very far-left margins of the left-right self-placement scale need to be interpreted with caution as the number of cases is very small.

REPLICATED PLOTS

Distribution of COVID-19 sceptics
according to party identification.

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Party identification



CRITIQUE

The paper only includes explanatory variables additively, so there could be some interactive effects the models miss out on.

What does implementing interaction terms for age and sex across the first 2 models tell us about how attitudes and extremism might vary by these characteristics?

ADD INTERACTION TERMS

Age & Sex

INTERACTIVE MODEL

Interesting result when
log odds of CS are
regressed on **ideological
extremism, age and
control variables**
(odds ratios here).

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	(1)	(2)
Ideological Extremism	1.123** (0.060)	0.577*** (0.095)
Age	1.010* (0.006)	0.991 (0.007)
Sex(female)	0.767 (0.146)	0.823 (0.160)
Education(A-levels or higher)	0.818 (0.187)	0.825 (0.192)
Political Interest	0.572*** (0.058)	0.583*** (0.060)
Affectedness by Covid-19 (no)	1.490 (0.467)	1.526 (0.490)
Affectedness by Covid-19 (no, but riskgroup)	0.772 (0.311)	0.833 (0.339)
Risk perception (health)(high risk)	0.583** (0.137)	0.540** (0.130)
Risk perception (econ. sit)(high risk)	0.963 (0.246)	0.975 (0.252)
Conspiracy belief	2.163*** (0.449)	2.155*** (0.452)
Trust in federal government (low)	2.951*** (0.770)	3.585*** (0.976)
Trust in federal government (medium)	1.970*** (0.450)	2.107*** (0.491)
Trust in Robert Koch Institute (low)	9.962*** (3.956)	9.402*** (3.766)
Trust in Robert Koch Institute (medium)	2.920*** (0.674)	2.942*** (0.690)
Ideological Extremism:Age		1.012*** (0.003)
Constant	0.465 (0.239)	1.086 (0.604)
Observations	808	808
Log Likelihood	−325.443	−315.060
Akaike Inf. Crit.	680.886	662.119
Note:	*p<0.1; **p<0.05; ***p<0.01	

NOTICE:

AGE & EXTREMISM

CHANGE IN COEFFICIENTS

The original values of the coefficients for Ideological Extremism, and for Age, half and loses significance, respectively, in the second model. The interaction term itself is statistically significant at $\alpha = 0.01$.

SIGNIFICANT INTERACTION TERM

The interaction term is 1.012, and is statistically significant at $\alpha = 0.01$, warranting further investigation. Our ability to interpret the effect of age and extremism would be helped by recoding age into levels, giving us different age groups.

INTERACTIVE MODEL

Interesting result when
log odds of CS are
regressed on **ideological
extremism, age and
control variables**
(odds ratios here).
3rd model: age as factor

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Table 4:

	<i>Dependent variable:</i>		
	core8_gr		
	(1)	(2)	(3)
Ideological extremism	1.123** (0.060)	0.577*** (0.095)	0.773** (0.087)
alter	1.010* (0.006)	0.991 (0.007)	
altercut(42.3,66.7]			0.433*** (0.127)
altercut(66.7,91.1]			0.604 (0.191)
sexfemale	0.767 (0.146)	0.823 (0.160)	0.827 (0.163)
bildung_grA-levels or higher	0.818 (0.187)	0.825 (0.192)	0.735 (0.173)
V06	0.572*** (0.058)	0.583*** (0.060)	0.609*** (0.062)
COR_Bno	1.490 (0.467)	1.526 (0.490)	1.471 (0.475)
COR_Bno_riskgroup	0.772 (0.311)	0.833 (0.339)	0.777 (0.318)
corg6_grbig threat	0.583** (0.137)	0.540** (0.130)	0.558** (0.136)
corg7_grbig threat	0.963 (0.246)	0.975 (0.252)	0.949 (0.252)
core5_gragree	2.163*** (0.449)	2.155*** (0.452)	2.039*** (0.433)
v09a_grlow	2.951*** (0.770)	3.585*** (0.976)	3.816*** (1.060)
v09a_grmedium	1.970*** (0.450)	2.107*** (0.491)	2.049*** (0.480)
v09r_grlow	9.962*** (3.956)	9.402*** (3.766)	10.532*** (4.288)
v09r_grmedium	2.920*** (0.674)	2.942*** (0.690)	3.302*** (0.801)
extrem.sq:alter		1.012*** (0.003)	
extrem.sq:altercut(42.3,66.7]			1.490*** (0.224)
extrem.sq:altercut(66.7,91.1]			1.875*** (0.262)
Constant	0.465 (0.239)	1.086 (0.604)	0.997 (0.483)
Observations	808	808	808
Log Likelihood	−325.443	−315.060	−312.040
Akaike Inf. Crit.	680.886	662.119	660.081

Note:

*p<0.1; **p<0.05; ***p<0.01

NOTICE:

AGE & EXTREMISM

AN ASSOCIATION BETWEEN SCEPTICISM, AGING & EXTREMISM?

Our extension of the original study suggests that for citizens of Thuringia, being in one of the older age categories and being on an extreme end of the ideological spectrum, in either direction, is associated with increased odds of displaying Covid-19 scepticism. For extremists in the second age group (42.3 -> 66.7), they have 1.490 times the odds of having Covid-sceptic views as compared to extremists of the youngest category, while the eldest extremists have 1.875 times the odds.

CONCLUSION

Küppers & Reiser present a convincing argument for the minute examination of the multi-faceted contributing political and ideological factors to individual Covid-scepticism.

Their original results provide support for the first of their two hypotheses, namely, that the log odds of far-right attitudes are linearly associated with Covid-19 scepticism.

Changes in the models upon addition of interaction terms, suggest a potential link between age, extremism and covid-scepticism

**IDEOLOGICAL EXTREMISM OR FAR-RIGHT ATTITUDES? THE ROLE OF IDEOLOGY FOR COVID-19 SCEPTICISM -
ANNE KÜPPERS & MARION REISER, 2022**