Appendix

Table A1: Candidates, debate appearances, personality

Candidate (party)	Debates	#elections	#appearances	N	P	M	Dark core	#experts	Personality data collected in	Age candidate at the time of personality assessment
Althusmann, Bernd (CDU)	Lower Saxony 2017, 2022	2	2	2.25	1.25	1.00	1.50	3	2022	56
Baerbock, Annalena (B90/Grüne)	federal election 2021 (1st to 6th debate)	1	6	2.61	1.20	1.63	1.82	51	2021	41
Baldauf, Christian (CDU)	Rhineland-Palatinate 2021	1	1	2.00	1.00	1.25	1.33	11	2021	54
Dreyer, Malu (SPD)	Rhineland-Palatinate 2016, 2021	2	2	2.06	0.93	1.19	1.45	11	2021	60
Eisenmann, Susanne (CDU)	Baden-Württemberg 2021	1	1	2.50	2.75	1.50	2.28	8	2021	57
Fegebank, Katharina (B90/Grüne)	Hamburg 2020	1	1	2.50	0.75	1.13	1.54	11	2020	43
Günther, Daniel (CDU)	Schleswig-Holstein 2017, 2022 (1st and 2nd debate)	2	3	3.00	1.00	3.00	2.33	1	2022	49
Hans, Tobias (CDU)	Saarland 2022	1	1	3.00	2.00	3.00	2.67	1	2022	44
Kretschmann, Winfried (B90/Grüne)	Baden-Württemberg 2016, 2021	2	2	3.00	1.50	1.25	1.92	8	2021	73
Kuschaty, Thomas (SPD)	North Rhine-Westphalia 2022	1	1	2.67	1.00	2.00	1.89	7	2022	54

Candidate (party)	Debates	#elections	#appearances	N	P	M	Dark core	#experts	Personality data collected in	Age candidate at the time of personality assessment
Laschet, Armin (CDU)	federal election 2021 (1st to 6th debate)	1	6	2.68	1.86	1.77	2.10	51	2021	60
Merkel, Angela (CDU)	Federal election 2005, 2009, 2013, 2017	4	4	1.82	1.89	1.51	1.74	44	2017	63
Sack, Michael (CDU)	Mecklenburg Western-Pomerania, 2021	1	1	1.50	1.50	2.50	1.83	3	2021	48
Scholz, Olaf (SPD)	Hamburg 2011 (1st and 2nd debate), Hamburg 2015 (1st and 2nd debate), federal election 2021 (1st to 6th debate)	3	10	1.94	1.78	1.44	1.72	51	2021	63
Schulz, Martin (SPD)	Federal election 2017	1	1	2.29	1.63	1.46	1.80	44	2017	62
Schwesig, Manuela (SPD)	Mecklenburg Western-Pomerania, 2021	1	1	3.00	1.50	1.75	2.08	3	2021	47
Söder, Markus (CSU)	Bavaria 2018, 2023	2	2	3.83	3.00	3.33	3.39	17	2023	56
Tschentscher, Peter (SPD)	Hamburg 2020	1	1	2.33	1.57	1.30	1.70	11	2020	54

Candidate (party)	Debates	#elections	#appearances	N	P	M	Dark core	#experts	Personality data collected in	Age candidate at the time of personality assessment
Wüst, Hendrik (CDU)	North Rhine-Westphalia 2022	1	1	3.50	2.00	2.67	2.72	7	2022	47

Note: N: narcissism, P: psychopathy, M: Machiavellianism

Table A2: Measurement of the dark personality of candidates

The battery of questions used to measure the Dark Triad in our questionnaire is presented as follows: "Next, please indicate the extent to which you agree or disagree with the following statements, related to personality traits that may or may not apply to [candidate X]. In your opinion, [candidate X] might be someone who..."

- "…wants to be admired by others" (q1)
- "…shows a lack of remorse" (q2)
- "…might manipulate others to succeed" (q3)
- "…wants attention from others" (q4)
- "…tends to be callous or insensitive" (q5)
- "…tends to use flattery to succeed" (q6)

Response options for all items: 0="disagree strongly", 1="disagree somewhat", 2="neither disagree nor agree", 3="agree somewhat", 4="agree strongly".

The three "dark" personality traits exist as average values of pairs of statements, as follows: narcissism (q1, q4), psychopathy (q2, q5), and Machiavellianism (q3, q6).

Table A3: Effect of dark personality on candidates' strategy in German televised debates

	M1			M2		
	b	(S.E.)	β	b	(S.E.)	β
Adjusted R^2		0.01			0.47	
Dark personality	0.04	(0.04)	0.17	0.07*	(0.04)	0.28*
Incumbent				-0.19***	(0.03)	-0.85***
Gender				0.05†	(0.03)	0.23†
Ideology				0.02**	(0.01)	0.40**
Level of election				0.08*	(0.03)	0.35*
Attacks by opponent				0.24*	(0.12)	0.25*
Constant	0.07	(0.08)		-0.27**	(0.09)	
N		47			47	

Note: M1 and M2, column 1 and 2: unstandardized coefficients of an OLS regression (in parentheses: standard errors). M1 and M2, column 3: standardized coefficients of an OLS regression. Dependent variable is candidates' attacks, measured as the share of each behavior in all candidate statements (0-1). Significance levels: † p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Table A4: Variance inflation factor (VIF)

Dark personality	1.56
Incumbent	1.84
Gender	1.27
Ideology	1.25
Level of election	1.42
Attacks by opponent	1.32

Table A5: Effect of narcissism, psychopathy, and Machiavellianism on candidates' strategy in German televised debates

	M1			M2			M3		
	b	(S.E.)	β	b	(S.E.)	β	b	(S.E.)	β
Adjusted R^2	0.54			0.42			0.47		
Narcissism	0.08**	(0.02)	0.38**						
Psychopathy				-0.02	(0.03)	-0.08			
Machiavellianism							0.05*	(0.02)	0.29*
Incumbent	-0.20***	(0.03)	-0.86***	-0.17***	(0.03)	-0.73***	-0.19***	(0.03)	-0.85***
Gender	0.05†	(0.03)	0.19†	0.03	(0.03)	0.13	0.05†	(0.03)	0.23†
Ideology	0.02***	(0.00)	0.47***	0.03***	(0.01)	0.53***	0.02**	(0.01)	0.41**
Level of election	0.06*	(0.02)	0.28*	0.07*	(0.03)	0.31*	0.07*	(0.03)	0.33*
Attacks by opponent	0.29*	(0.11)	0.30*	0.17	(0.12)	0.18	0.26*	(0.12)	0.27*
Constant	-0.33***	(0.08)		-0.13	(0.09)		-0.22**	(0.08)	
N	47			47			47		

Note: All models are linear regressions (OLS). For all models, column 1 and 2: unstandardized coefficients of an OLS regression (in parentheses: standard errors), column 3: standardized coefficients of an OLS regression. Dependent variables are candidates' attacks measured as the share of each behavior in all candidate statements (0-1). Significance levels: † p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Table A6: Effect of dark personality on candidates' attack behavior in German televised debates (robustness checks)

	M1: number of experts > 2			M2: candidates nested in debates		M3:appearances nested in candidates	
	b	(S.E.)	β	b	(S.E.)	b	(S.E.)
Adjusted R^2	0.45			0.47		0.47	
Dark personality	0.07†	(0.04)	0.25†	0.07†	(0.04)	0.07†	(0.04)
Incumbent	-0.20***	(0.04)	-0.86***	-0.19***	(0.03)	-0.19***	(0.03)
Gender	0.06†	(0.03)	0.25†	0.05	(0.04)	0.05	(0.05)
Ideology	0.02**	(0.01)	0.39**	0.02**	(0.01)	0.02*	(0.01)
Level of election	0.07*	(0.03)	0.33*	0.08*	(0.03)	0.08†	(0.04)
Attacks by opponent	0.28*	(0.13)	0.30*	0.24*	(0.09)	0.24*	(0.10)
Constant	-0.26**	(0.09)		-0.27*	(0.10)	-0.37*	(0.11)
N (candidates)	43			47		47	
N (debates)				30		19	

Note: All models are linear regressions (OLS). Displayed are unstandardized regression coefficients (in parentheses: standard errors). Dependent variables are candidates' attacks measured as the share of each behavior in all candidate statements (0-1). M3, column 3: standardized coefficients of an OLS regression. M1: linear regression model (OLS) including only candidates for whom at least 3 experts have rated their personality traits. M2: linear regression model (OLS), where candidates are nested within debates (i.e., model with clustered standard errors). M3: linear regression model (OLS), where the multiple appearances are nested within candidates (i.e., model with clustered standard errors). Significance levels: † p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Table A7: Rotated factor loadings

Candidate wants to be admired by others (narcissism)	0.80
Candidate wants attention from others (narcissism)	0.82
Candidate shows a lack of remorse (psychopathy)	0.32
Candidate tends to be callous or insensitive (psychopathy)	0.46
Candidate might manipulate others to succeed (Machiavellianism)	0.71
Candidate tends to use flattery to succeed (Machiavellianism)	0.62

Note: Displayed are rotated factor loadings of a factor analysis based on varimax rotation, where one factor was forced as the solution.

Table A8: Effect of dark personality on candidates' attack behavior in German televised debates (robustness check)

	b	(S.E.)	β
Adjusted R^2	0.50		
Dark personality	0.04*	(0.01)	0.33*
Incumbent	-0.20***	(0.03)	-0.88***
Gender	0.05†	(0.03)	0.22†
Ideology	0.02**	(0.01)	0.42**
Level of election	0.07*	(0.03)	0.33*
Attacks by opponent	0.26*	(0.11)	0.28*
Constant	-0.13***	(0.07)	
N	47		

Note: Column 1 and 2: unstandardized coefficients of an OLS regression (in parentheses: standard errors), column 3: standardized coefficients of an OLS regression. Dependent variable is the candidates' attacks measured as the share of each behavior in all candidate statements (0-1). Measurement for dark personality includes factor scores of a factor analysis based on varimax rotation, where one factor was forced as the solution. Significance levels: † $p<0.1$, * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table A9: Effect of dark personality on candidates' attack behavior in German televised debates (robustness check)

	b	(S.E.)
Adjusted R^2	0.42	
Dark personality	0.09*	(0.04)
Incumbent	-0.20***	(0.04)
Gender	0.06†	(0.03)
Ideology	0.02**	(0.01)
Level of election	0.08*	(0.03)
Attacks by opponent	0.23†	(0.13)
Constant	-0.30**	(0.10)
N	47	

Note: Displayed are unstandardized coefficients of a robust regression (in parentheses: standard errors). Dependent variable is the candidates' attacks measured as the share of each behavior in all candidate statements (0-1). Significance levels: † p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Table A10: Effect of dark personality on candidates' strategy in German televised debates (robustness check)

	b	(S.E.)	β
Adjusted R^2		0.39	
Dark personality	0.07†	(0.04)	0.30†
Incumbent	-0.20***	(0.04)	-0.85***
Gender	0.05	(0.03)	0.21
Ideology	0.02*	(0.01)	0.37*
Level of election	0.08*	(0.03)	0.37*
Attacks by opponent	0.24	(0.15)	0.23
Constant	-0.27*	(0.10)	
N		41	

Note: Column 1 and 2: unstandardized coefficients of an OLS regression (in parentheses: standard errors), column 3: standardized coefficients of an OLS regression. Model including all candidate appearances except Angela Merkel (2005, 2009) and Olaf Scholz (2011, 2015). Dependent variable is candidates' attacks, measured as the share of each behavior in all candidate statements (0-1). Significance levels: † p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Table A11: Suppressor variables of the effect of candidates' dark personality on candidates' strategy in German televised debates

	M1			M2			M3			M4			M5		
	b	(S.E.)	β	b	(S.E.)	β	b	(S.E.)	β	b	(S.E.)	β	b	(S.E.)	β
Adjusted R^2	0.24			0.00			0.10			0.00			0.00		
Dark personality	0.09*	(0.04)	0.34*	0.04	(0.04)	0.17	0.00	(0.04)	0.01	0.04	(0.04)	0.16	0.04	(0.04)	0.16
Incumbent	-0.11***	(0.03)	-0.52***												
Gender				-0.00	(0.04)	-0.00									
Ideology							0.02*	(0.01)	0.37						
Level of election										0.00	(0.03)	0.01			
Attacks by opponent													-0.03	(0.14)	-0.03
Constant	0.03	(0.07)		0.07	(0.08)		-0.01	(0.08)		0.07	(0.08)		0.08	(0.08)	
N	47			47			47			47			47		

Note: Column 1 and 2: unstandardized coefficients of an OLS regression (in parentheses: standard errors), column 3: standardized coefficients of an OLS regression. Dependent variable is candidates' attacks, measured as the share of each behavior in all candidate statements (0-1).
Significance levels: † p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Table A12: Correlation matrix

	Attacks	Dark personality	Incumbent	Gender	Ideology	Level of election
Dark personality	0.17					
Incumbent	-0.41**	0.32*				
Gender	-0.04	-0.26†	0.05			
Ideology	0.38**	0.43**	0.22	-0.12		
Level of election	0.05	0.21	0.44**	-0.27†	0.13	
Attacks by opponent	-0.05	-0.10	0.38**	-0.03	0.09	0.08

N=47. Significance levels: † p<0.1, * p<0.05, ** p<0.01, *** p<0.001