Appendix

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Addressing Migrant Inequality in Youth Political Engagement: The Role of Parental Influences

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Section 1. Item Response Theory analysis

We carried out a Hybrid Item Response Theory (IRT) analysis on the following three items: level of political interest (1-4 scale), party closeness (0=close to no party; 1=close to a party), left-right awareness (0=not self-placed on the left-right scale; 1=self-placed on the same scale). In particular, we relied on a Hybrid IRT analysis combining a 2-parameter logistic (2PL) model for binary variables (left-right awareness and party closeness), and a graded response model (GRM) for an ordinal variable (political interest). The following table shows the output of the Hybrid IRT model.

Table A1. Results of the Hybrid IRT model.

Number of observations = 2,756. Log likelihood = -5895.1717						
	Coefficient	Std. err.	z	P>z	[95% conf. interval]	
2PL						
Left-right awareness						
Discrim.	2.40277	0.2562381	9.38	0.000	1.900552	2.904987
Diff.	-.4614795	.0347113	-13.29	0.000	-.5295123	-.3934467
Party closeness						
Discrim.	2.989685	0.4166033	7.18	0.000	2.173158	3.806213
Diff.	1.173683	0.0542415	21.64	0.000	1.067372	1.279995
GRM						
Political interest						
Discrim.	1.399152	0.0891749	15.69	0.000	1.224372	1.573931
Diff.						
>=1	-1.11044	0.0599859			-1.22801	-0.9928696
>=2	0.6215503	0.044882			0.5335832	0.7095174
=3	2.471559	0.1202894			2.235797	2.707322

Both binary variables strongly measure the latent trait, with party closeness being slightly more discriminative. Left-right awareness is easier for individuals, while party closeness is more challenging. The ordinal variable political interest has a moderate discrimination value. The thresholds indicate that higher trait levels are required to select higher response categories, with a significant gap between categories. To conclude, the results confirm that these variables are related to the latent trait but also highlight differences in how each item contributes (e.g., discrimination and difficulty levels).

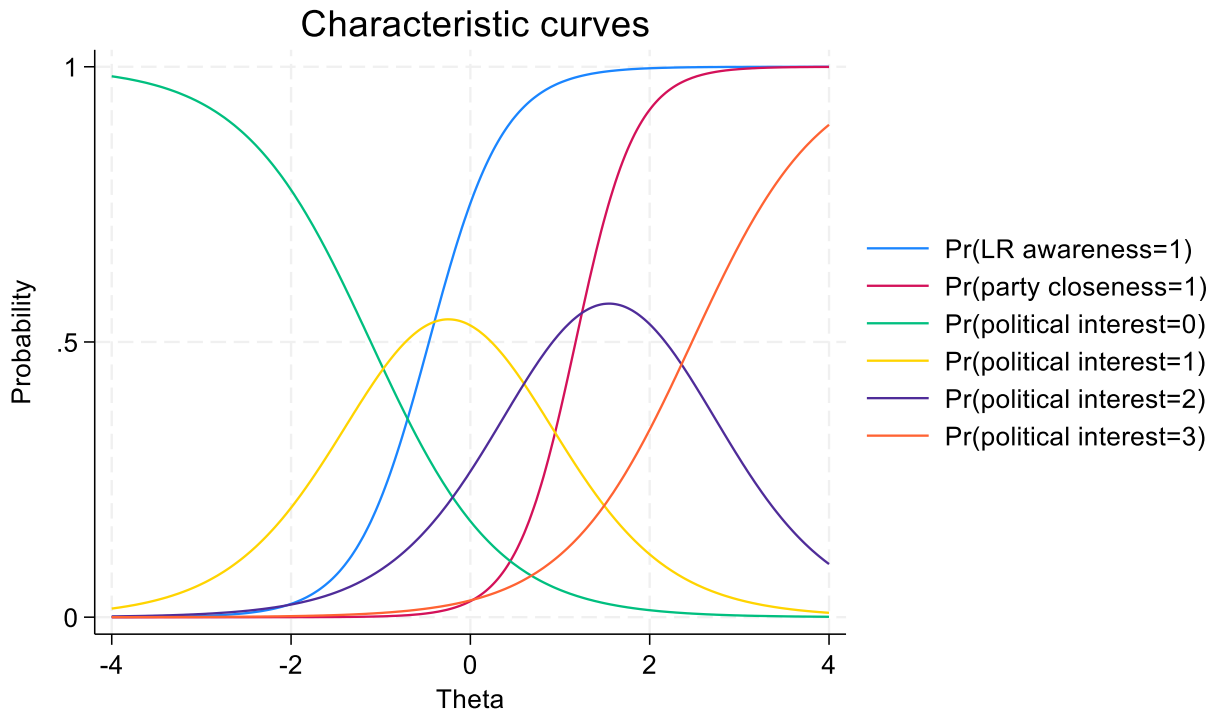

Figure A1. Item Characteristic Curves.

Item Characteristic Curves (ICCs) describe how the probability of endorsing an item (or selecting a particular category for ordinal items) changes as a function of the latent trait (θ\theta).

Examples of ICC Interpretation:

Binary Item Example (e.g., left-right awareness):

- High Discrimination (a=2.40a = 2.40): A steep S-shaped curve means individuals with slightly higher latent traits are much more likely to answer the item.
- Difficulty (b=−0.46b = -0.46): The curve's midpoint is at θ=−0.46\theta = -0.46, indicating it's relatively easy to answer (people with lower latent traits are likely to place themselves on the left-right dimension).

Ordinal Item Example (e.g., political interest):

- Discrimination (a=1.40a = 1.40): The curves for each category are moderately steep, indicating a moderate ability to differentiate respondents.
- Thresholds (b1=−1.11,b2=0.62,b3=2.47b_1 = -1.11, b_2 = 0.62, b_3 = 2.47): The curves overlap, and each peak corresponds to a particular category:
    - At θ=−1.11\theta = -1.11: Respondents begin transitioning to category 1 ("not very interested") or higher.
    - At θ=0.62\theta = 0.62: Respondents begin transitioning to category 2 ("quite interested") or higher.

- At θ=2.47\theta = 2.47: Respondents are likely in category 3 ("very interested").

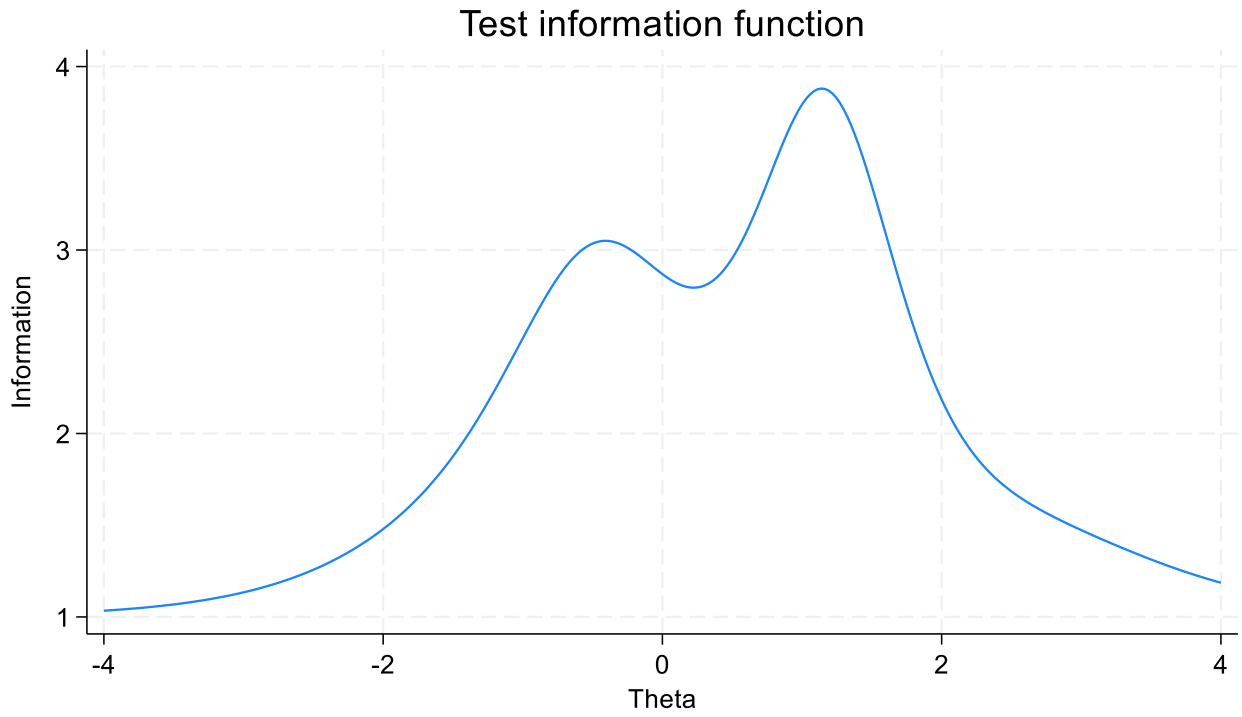

Figure A2. Chart of the Test Information Function.

The Test Information Function (TIF) graph shows how much information the set of items provides about the latent trait (θ\theta) at different levels. Peak of the TIF: The TIF is highest at the θ\theta levels where the items provide the most information (i.e., are most discriminating). Width of the TIF**:** A broader TIF indicates the test provides good measurement precision across a wider range of latent traits.

Examples of TIF Interpretation:

Binary Items (left-right awareness and party closeness): The TIF is likely peaked near θ=−0.46\theta = -0.46 and θ=1.17\theta = 1.17 (the difficulty levels of the items), meaning these items are most informative at those latent trait levels. The steep discrimination parameters for these items (a=2.40a = 2.40 and a=2.99a = 2.99) contribute to high information.

Ordinal Item (political interest): The TIF may show moderate information spread across a broader range of θ\theta due to the thresholds (b1=−1.11,b2=0.62,b3=2.47b_1 = -1.11, b_2 = 0.62, b_3 = 2.47). It is less peaked than binary items due to the lower discrimination parameter (a=1.40a = 1.40).

Section 2. Factor analysis

We carried out a factor analysis with both a principal factor method (Table A2) and a principal-component factor method with an orthogonal "oblimin" (0.5) rotation (Table A3) on the aforementioned three items: level of political interest, party closeness, left-right awareness. For this purpose, the political interest variable item have been rescaled between 0 and 1 through a Min-Max normalization.

Table A2. Results of the factor analysis with a principal factor method.

Factor analysis/correlation		Number of observations = 2,536		
Method: principal factors		Retained factors = 1		
Rotation: (unrotated)		Number of params = 3		
Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	0.83134	0.95662	1.6485	1.6485
Factor2	-0.12528	0.07649	-0.2484	1.4001
Factor3	-0.20177	.	-0.4001	1.0000
LR test: independent vs. saturated: chi2(3) = 764.23 Prob>chi2 = 0.0000				
Factor loadings (pattern matrix) and unique variances:				
Variable	Factor1	Uniqueness		
left-right awareness	0.5237	0.7258		
party closeness	0.4868	0.7631		
political interest	0.5659	0.6798		

Table A2 shows that the first eigenvalue is significantly larger than the rest; hence, the variables are likely unidimensional.

Table A3. Results of the principal-component factor analysis with an orthogonal "oblimin" (0.5) rotation.

Factor analysis/correlation		Number of observations = 2,536		
Method: principal-component factors		Retained factors =1		
Rotation: orthogonal oblimin (Kaiser on)		Number of params = 3		
Factor	Variance	Difference	Proportion	Cumulative
Factor1	1.66092	.	0.5536	0.5536
LR test: independent vs. saturated: chi2(3) = 764.23 Prob>chi2 = 0.0000				
Rotated factor loadings (pattern matrix) and unique variances:				
Variable	Factor1	Uniqueness		
political interest	0.7792	0.3928		
left-right awareness	0.7417	0.4499		
party closeness	0.7097	0.4964		

Results in Table A3 show that three items (political interest, party closeness and left-right awareness) clustered within a factor component (see also Figure A3). For items clustering within the factor, factor loadings were high (between 0.71 and 0.78).

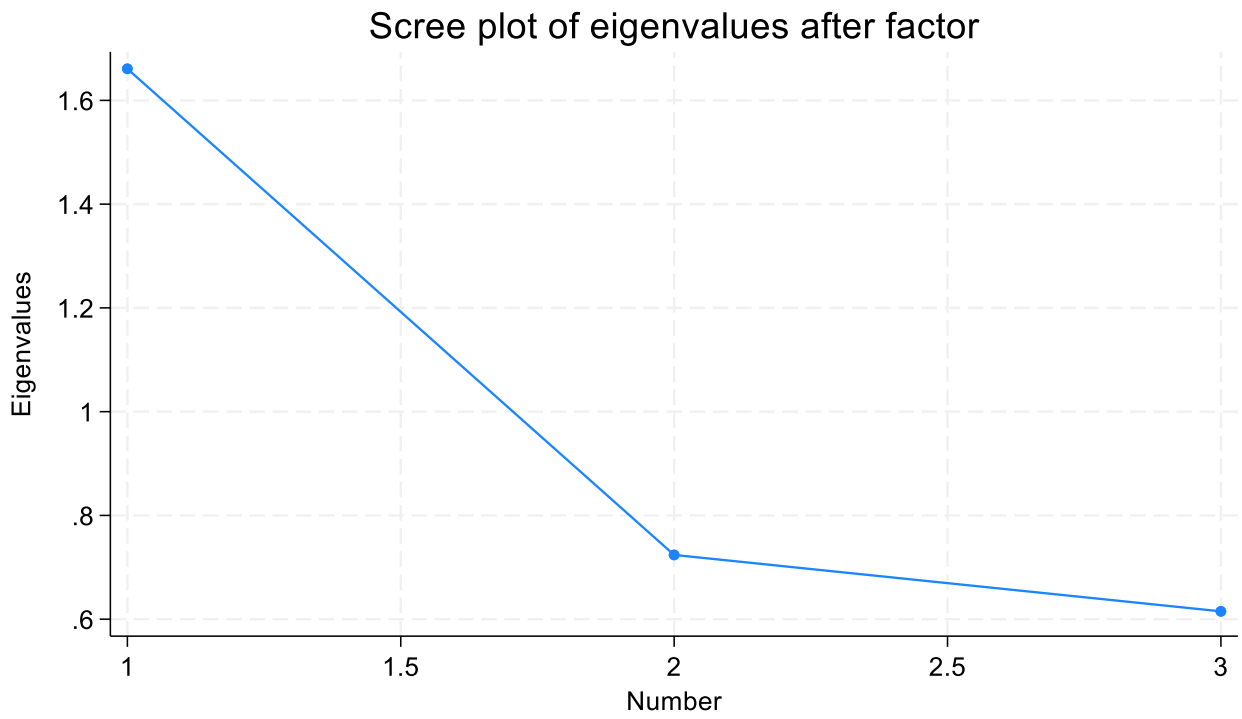

Figure A3. Scree plot of eigenvalues.

Section 3. Null model with only random intercepts at school and municipal level

LR test vs. linear model: chi2(2) = 41.77 Prob > chi2 = 0.0000

The multilevel structure is appropriate.

Table A4. Residual intraclass correlation of the null model.

Level	ICC	Std. err.	[95% conf. interval]
municipality	0.0116159	0.0149899	0.0009086 0.131848
school | municipality	0.0440522	0.0121513	0.0255093 0 .0750363

Likelihood-ratio test

Assumption: null model B (only school level) nested within null model A (school and municipal level)

LR chi2(1) = 0.66; Prob > chi2 = 0.4170.

Note: The reported degrees of freedom assume the null hypothesis is not on the boundary of the parameter space. If this is not true, then the reported test is conservative.

No significant improvement in model fit by including the municipality-level random effect.

Section 4. Individual resources model with random intercepts at school and municipal level, with robust standard errors

Wald chi2(10) = 196.12

Log pseudolikelihood = -158.38122 Prob > chi2 = 0.0000

Table A5. Residual intraclass correlation of the individual resources model.

Level	ICC	Robust Std. err.	[95% conf. interval]
municipality	0 .0212163	0.0180019	0.003948 0.10598
school | municipality	0.0485573	0.0129779	0.0285867 0.0813115

The ICC for schools within municipalities is 4.86%, meaning that about 4.86% of the total variance in the outcome is attributable to differences between schools (within the same municipality). The standard error (0.0130) for the school ICC indicates a reasonable precision for this estimate. About 2.1% of the total residual variance is attributable to differences between municipalities. This indicates that municipalities account for a small portion of the total variability. A relatively high SE (0.018) compared to the ICC suggests that the estimate is uncertain, potentially due to a small sample size or high variability between municipalities. The confidence intervals indicate that the estimates for municipality-level variance are less precise compared to those for school-level variance.

Section 5. Additional charts and models

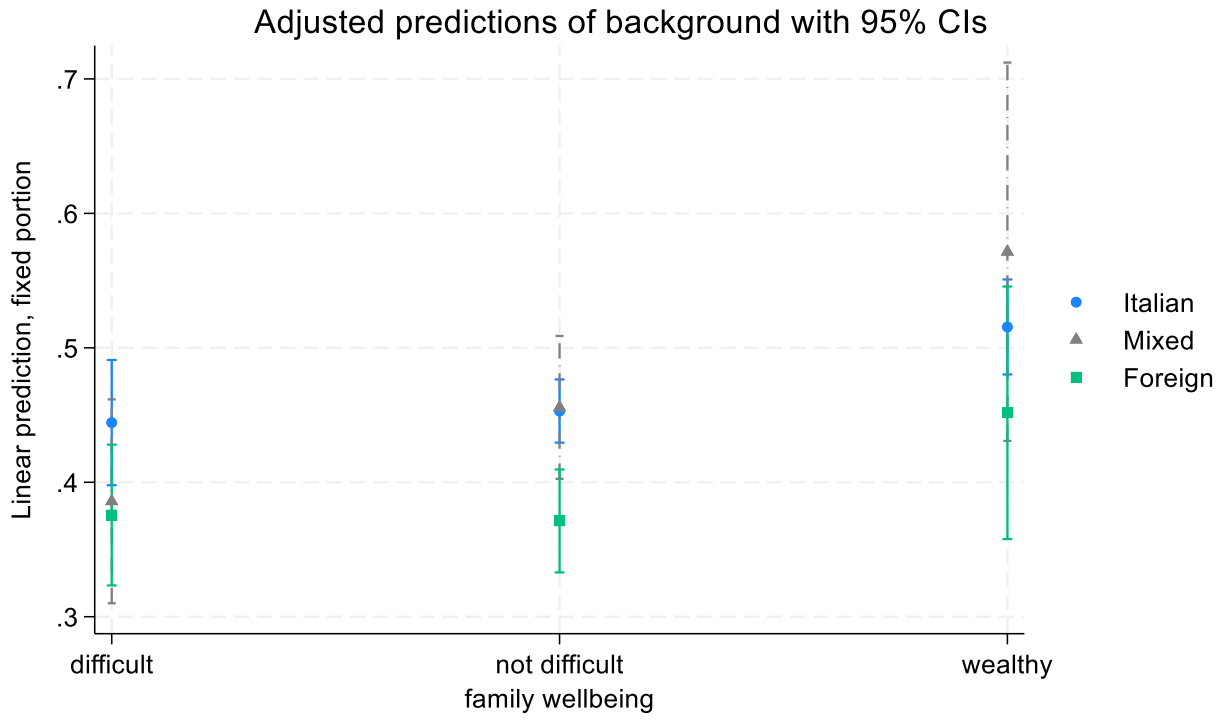

Figure A4. Adjusted predictions of student political engagement based on migratory background and parents' education (results from Model B in Table 2 in the manuscript).

Table A6. Predictive models of political engagement: interactions between parental political socialisation and background.

	Political Engagement Index	
Fixed effects:		
Political discussion at home	0.262	***
	(0.041)	
Parent-child similarity (reference: different)		
partially/totally similar	0.089	***
	(0.025)	
DK	-0.155	***
	(0.027)	
Parent-child similarity * political discussion at home:		
partially/totally similar * political discussion	-0.097	
	(0.057)	
DK * political discussion	-0.033	
	(0.066)	
Background (reference: Italian)		
mixed	0.011	
	(0.079)	
foreign	0.021	
	(0.054)	
Background * political discussion at home:		
mixed * political discussion	-0.093	
	(0.198)	
foreign * political discussion	-0.161	
	(0.128)	
Parent-child similarity * background:		
partially/totally similar * mixed	-0.018	
	(0.082)	
partially/totally similar *foreign	-0.107	
	(0.061)	
DK * mixed	0.065	
	(0.080)	
DK * foreign	-0.019	
	(0.058)	
Parent-child similarity * background * political discussion at home:		
partially/totally similar * mixed * political discussion	0.096	
	(0.212)	
partially/totally similar * foreign * political discussion	0.211	
	(0.163)	
DK * mixed * political discussion	-0.156	
	(0.231)	
DK * foreign * political discussion	0.269	
	(0.168)	
Classroom political involvement	0.252	***
	(0.022)	
Gender (female)	-0.093	***
	(0.010)	
Family wellbeing (reference: difficult situation)		
not difficult	0.003	
	(0.017)	
wealthy	0.059	**
	(0.021)	
DK	-0.029	
	(0.021)	
Parents' education (reference: low)		
medium	0.010	
	(0.013)	

	Political Engagement Index	
high	0.011	
	(0.012)	
Type of school (reference: lyceum)		
technical	-0.009	
	(0.010)	
vocational	0.012	
	(0.015)	
Turnout 2022	0.008	
	(0.030)	
Right-Left margin	-0.016	
	(0.021)	
Intercept	0.319	***
	(0.035)	
Random effects:		
Municipality: SD (intercept)	0.000	
	(0.000)	
School: SD (intercept)	0.000	
	(0.000)	
SD (residual)	0.223	
	(0.003)	
Number of observations	2182	
AIC	-289.63	
BIC	-107.61	
Log pseudolikelihood	176.81	

Note: Robust standard errors in parentheses. Significant at *** p<.001, ** p<.01, * p<.05

Table A7. Models with controls for religion and parents' birth country political regime.

	Model with religion		Model with religion and interactions		Model with regime		Model with regime and interactions	
Fixed effects:								
Political discussion at home	0.201	***	0.188	***	0.200	***	0.263	***
	(0.019)		(0.051)		(0.019)		(0.040)	
Parent-child similarity (reference: different)								
partially/totally similar	0.053	***	0.068	*	0.053	***	0.093	***
	(0.014)		(0.029)		(0.014)		(0.025)	
DK	-0.163	***	-0.174	***	-0.162	***	-0.146	***
	(0.017)		(0.031)		(0.017)		(0.027)	
Background (reference: Italian)								
mixed	0.005		0.004		0.031		0.034	
	(0.018)		(0.017)		(0.027)		(0.027)	
foreign	-0.032		-0.028		-0.042		-0.054	
	(0.019)		(0.019)		(0.053)		(0.046)	
Religion (reference: atheists)								
Christians	0.004		-0.023					
	(0.009)		(0.043)					
Muslims	0.011		-0.018					
	(0.040)		(0.063)					
other	0.010		0.036					

	Model with religion	Model with religion and interactions	Model with regime	Model with regime and interactions	
	(0.035)	(0.130)			
Parents' birth country regime (reference: Western democracies)					
Eastern European democracies			-0.023	0.085	
			(0.060)	(0.090)	
non-Western/European democracies			0.019	0.092	
			(0.089)	(0.222)	
Western + other democracies			-0.074	-0.228	
			(0.038)	(0.164)	
mixed regimes			-0.012	0.125	*
			(0.045)	(0.055)	
electoral/closed autocracies			0.036	0.077	
			(0.052)	(0.087)	
Parent-child sim. * pol. disc. home:					
partially/totally similar * pol. disc.		-0.013		-0.096	
		(0.065)		(0.052)	
DK * pol. disc.		0.090		-0.041	
		(0.088)		(0.067)	
Religion * pol. disc. home:					
Christians * pol. disc.		0.112			
		(0.081)			
Muslims * pol. disc.		0.144			
		(0.208)			
other * pol. disc.		0.068			
		(0.301)			
Parent-child sim. * religion:					
partially/totally similar * Christians		0.020			
		(0.045)			
partially/totally similar * Muslims		0.007			
		(0.076)			
partially/totally similar * other		-0.152			
		(0.146)			
DK * Christians		0.042			
		(0.044)			
DK * Muslims		0.063			
		(0.082)			
DK * other		0.083			
		(0.147)			
Parent-child sim. * religion * pol. disc.:					
partially/totally sim. * Christians * pol. disc.		-0.116			
		(0.093)			

	Model with religion	Model with religion and interactions	Model with regime	Model with regime and interactions
partially/totally sim. * Muslims * pol. disc.		-0.298		
		(0.226)		
partially/totally sim. * other * pol. disc.		0.163		
		(0.349)		
DK * Christians * pol. disc.		-0.215 *		
		(0.092)		
DK * Muslims * pol. disc.		-0.050		
		(0.293)		
DK * other * pol. disc.		-1.128		
		(0.700)		
regime * pol. disc.				
home:				
Eastern European democracies * pol. dis.				-0.312
				(0.163)
non-Western/European democracies * pol. dis.				-0.262
				(0.269)
Western + other democracies * pol. dis.				0.086
				(0.244)
mixed regimes * pol. dis.				-0.114
				(0.211)
electoral/closed autocracies * pol. dis.				0.077
				(0.150)
Parent-child sim. * regime:				
partially/totally similar * Eastern European democracies				-0.169 *
				(0.085)
partially/totally similar * non-Western/European democracies				-0.217
				(0.192)
partially/totally similar * Western + other democracies				0.204
				(0.183)
partially/totally similar * mixed regimes				-0.215 *
				(0.084)
partially/totally similar * electoral/closed autocracies				-0.078
				(0.075)

	Model with religion	Model with religion and interactions	Model with regime	Model with regime and interactions	
DK * Eastern European democracies				-0.070	
				(0.087)	
DK * non-Western/European democracies				-0.044	
				(0.186)	
DK * Western + other democracies				0.235	
				(0.166)	
DK * mixed regimes				-0.116	
				(0.072)	
DK * electoral/closed autocracies				-0.003	
				(0.063)	
Parent-child sim. * regime * pol. disc.:					
partially/totally sim. * Eastern Europe. democracies * pol. dis.				0.431	
				(0.303)	
partially/totally similar * non-Western/European democracies * pol. dis.				1.359	*
				(0.545)	
partially/totally similar * Western + other democracies * pol. dis.				-0.250	
				(0.340)	
partially/totally similar * mixed regimes * pol. dis.				0.230	
				(0.266)	
partially/totally similar * electoral/closed autocracies * pol. dis.				-0.138	
				(0.186)	
DK * Eastern Europe. democracies * pol. dis.				0.431	
				(0.248)	
DK * non-Western/European democracies * pol. dis.				0.368	
				(0.323)	
DK * Western + other democracies * pol. dis.				-0.517	
				(0.324)	
DK * mixed regimes * pol. dis.				0.042	
				(0.892)	
DK * electoral/closed autocracies * pol. dis.				0.070	
				(0.186)	

	Model with religion		Model with religion and interactions		Model with regime		Model with regime and interactions	
Classroom political involvement	0.251	***	0.252	***	0.251	***	0.249	***
	(0.023)		(0.023)		(0.022)		(0.022)	
Gender (female)	-0.093	***	-0.093	***	-0.092	***	-0.094	***
	(0.010)		(0.010)		(0.010)		(0.010)	
Parents' education (reference: low)								
medium	0.010		0.010		0.011		0.011	
	(0.013)		(0.013)		(0.013)		(0.013)	
high	0.011		0.012		0.011		0.011	
	(0.013)		(0.013)		(0.012)		(0.012)	
Family wellbeing (reference: difficult)								
not difficult	0.002		0.004		0.002		0.003	
	(0.017)		(0.017)		(0.017)		(0.018)	
wealthy	0.058	**	0.058	**	0.059	**	0.059	**
	(0.021)		(0.021)		(0.021)		(0.021)	
DK	-0.029		-0.028		-0.030		-0.030	
	(0.020)		(0.021)		(0.020)		(0.021)	
Type of school (reference: lyceum)								
technical	-0.010		-0.009		-0.009		-0.010	
	(0.010)		(0.010)		(0.010)		(0.011)	
vocational	0.009		0.011		0.008		0.010	
	(0.015)		(0.015)		(0.015)		(0.015)	
Turnout 2022	0.007		0.007		0.010		0.005	
	(0.031)		(0.031)		(0.031)		(0.031)	
Right-Left margin	-0.017		-0.015		-0.017		-0.014	
	(0.022)		(0.022)		(0.022)		(0.022)	
Intercept	0.343	***	0.336	***	0.342	***	0.318	***
	(0.034)		(0.038)		(0.033)		(0.038)	
Random effects:								
Municipality: SD (intercept)	0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.001)	
School: SD (intercept)	0.000		0.000		0.000		0.000	
	(0.000)		(0.000)		(0.000)		(0.000)	
SD (residual)	0.224		0.223		0.224		0.222	
	(0.003)		(0.003)		(0.003)		(0.003)	
Number of observations	2179		2179		2182		2182	
AIC	-289.30		-271.97		-293.19		-270.44	
BIC	-158.50		-44.51		-150.99		25.33	
Log pseudolikelihood	167.65		175.99		171.59		187.22	

Note: Robust standard errors in parentheses. Significant at *** p<.001, ** p<.01, * p<.05.

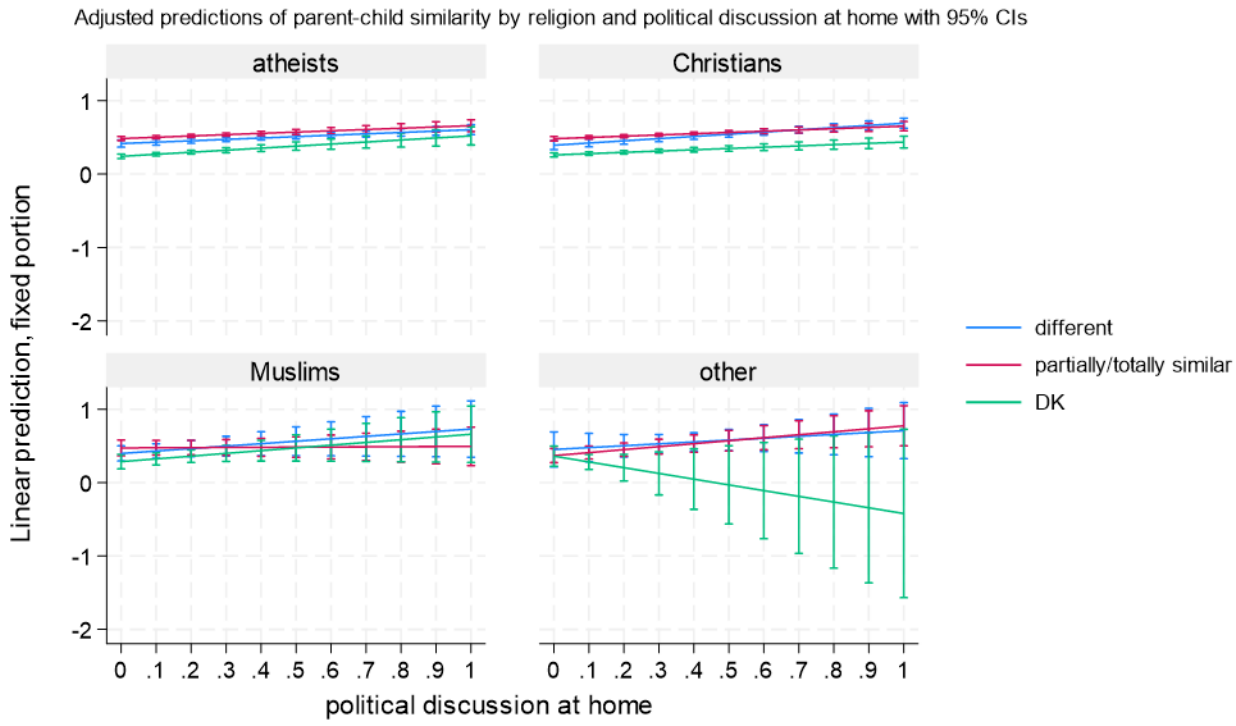

Figure A5. Political engagement: adjusted predictions of difference/similarity to parents' political opinions by religion and frequency of political discussion at home.

Section 6. Original items and descriptive statistics

Table A8. Original wording of items from the questionnaire

Gender	You are: 1. Male 2. Female 3. Other
Non conventional political participation	In the last 12 months, have you ... Participated in a demonstration/protest march? 1. Multiple times 2. Once or twice at most 3. Never happened
Political interest	Let's talk about politics now. In general, how interested are you in politics? 1. Very much 2. Quite a bit 3. A little 4. Not at all
Left-right self-placement	Many people use the terms 'left' and 'right' when talking about politics. Below is a row of boxes ranging from left to right. Thinking about your political opinions, in which box would you place yourself? 0 1 2 3 4 5 6 7 8 9 10 (Left) (Right) 888. I don't know 998. I do not place myself anywhere

<table>
<tr><td>Party closeness</td><td>Do you consider yourself close to a particular political party?
1. Yes
2. No
888. I don’t know</td></tr>
<tr><td>Difference/similarity with parents’ political opinions</td><td>In general, are your political opinions similar to those of your parents?
1. Yes, they are similar to both of them
2. They are similar only to my father's
3. They are similar only to my mother's
4. No, I have different political opinions from theirs
888. I don’t know</td></tr>
<tr><td>Political discussions at home</td><td>In your home, are there arguments/discussions about political issues? Use a scale from 0 to 10, where 0 means it never happens and 10 means it happens very often.<table><tr><td>0</td><td>1 2 3 4 5 6 7 8 9</td><td>10</td></tr><tr><td>There are NEVER arguments/discussions about political issues</td><td></td><td>We VERY OFTEN have arguments/discussions about political issues</td></tr></table></td></tr>
<tr><td>Father’s origin</td><td>In which country was your father born?
CAWI: Dropdown menu (with Italy listed first, followed by the main countries of origin for foreigners in Italy; or an easy search by typing the initials of the country)</td></tr>
<tr><td>Mother’s origin</td><td>In which country was your mother born?
CAWI: Dropdown menu (with Italy listed first, followed by the main countries of origin for foreigners in Italy; or an easy search by typing the initials of the country)</td></tr>
<tr><td>Father’s educational level</td><td>What is your father’s highest level of education? What is the last school he completed (e.g., a certificate, diploma, high school graduation)?

1. None
2. Elementary school diploma
3. Middle school diploma
4. High school diploma (e.g., liceo, technical or vocational institute)
5. Bachelor's degree
6. Postgraduate degree
888. I don’t know</td></tr>
<tr><td>Mother’s educational level</td><td>What is your mother’s highest level of education? What is the last school she completed (e.g., a certificate, diploma, high school graduation)?

1. None
2. Elementary school diploma
3. Middle school diploma</td></tr>
</table>

	4. High school diploma (e.g., liceo, technical or vocational institute) 5. Bachelor's degree 6. Postgraduate degree 888. I don't know
Family wellbeing	Considering all available income, is it easy or difficult for your family to make ends meet each month? 1. Very difficult 2. Difficult 3. Easy 4. Very easy 888. I don't know

Table A9. Overview of political engagement, parental political socialisation and main conditioning/control variables by migratory background.

	Italian	Mixed	Foreign
Political engagement (mean)	0.462	0.440	0.367
Political engagement (SD)	0.273	0.278	0.249
N	*1,974*	*190*	*363*
Political discussion at home (mean)	0.257	0.256	0.179
Political discussion at home (SD)	0.266	0.276	0.245
N	*2,134*	*208*	*400*
Classroom political involvement (mean)	0.497	0.475	0.411
Classroom political involvement (SD)	0.222	0.235	0.223
N	*2,135*	*208*	*401*
Parent-child political similarity:			
different opinions (%)	18.0	15.4	19.1
partially/totally similar opinions (%)	51.8	50.0	31.0
DK (%)	30.3	34.7	49.9
Total (%)	100	100	100
N	*2,153*	*205*	*383*
Gender: male (%)	48.1	49.6	49.2
Gender: female (%)	52.0	50.4	50.8
Total (%)	100	100	100
N	*2,141*	*202*	*382*
Parents' education: low (%)	40.1	36.6	52.1
Parents' education: medium (%)	30.9	31.5	22.7
Parents' education: high (%)	29.0	31.9	25.2
Total (%)	100	100	100
N	*1,902*	*163*	*303*
Family wellbeing: difficult (%)	12.9	27.4	28.8
Family wellbeing: not difficult (%)	60.3	52.4	45.1
Family wellbeing: wealthy (%)	16.8	10.7	8.7
Family wellbeing: DK (%)	9.9	9.4	17.4
Total (%)	100	100	100
N	*2,154*	*205*	*383*

	Italian	Mixed	Foreign
School type: lyceum (%)	50.5	42.8	34.0
School type: technical (%)	36.2	37.2	41.0
School type: vocational (%)	13.3	20.0	25.0
Total (%)	100	100	100
N	*2,156*	*205*	*383*

Note: Data have been weighted to reproduce the population distribution by type of high school and province of residence.

The final sample shows some discrepancies compared to the expected distribution of students by school type and province. Specifically, 55.8% of the sample attends a technical institute (compared to 37.6% in the general population), 27.5% attends a lyceum (compared to 47.6%), and 16.9% attends a vocational institute (compared to 15.4%). These discrepancies are mainly due to certain schools, particularly lyceums, only offering one fifth-year class instead of the expected two or three. Additionally, two provinces are underrepresented, such as Milan (19,7% vs. 30,3%) and Monza Brianza (4.7 vs 11,1%).