

ONLINE SUPPLEMENTARY MATERIALS

Revisiting Cowgill's Modernization Theory: Perceived Social Status of Older People Across 58 Countries

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A. Sample characteristics by country and cultural zones

	Sample size (missing values removed)	Percent female	Percent missing	Mean age	Cultural Zone
Algeria	1103	.49	.08	37.5	Muslim
Argentina	948	.53	.08	43.2	Latin America
Armenia	1040	.66	.05	46.3	Post-communist
Australia	1012	.55	.31	50.8	New World
Azerbaijan	998	.50	.00	41.2	Muslim, Post-communist
Bahrain	959	.45	.20	39.1	Muslim
Belarus	1392	.55	.09	44.1	Post-communist
Brazil	1374	.61	.08	42.3	Latin America
Chile	916	.51	.08	44.2	Latin America
China	1752	.50	.24	43.4	South-East Asia
Colombia	1458	.50	.04	40.4	Latin America
Cyprus	918	.53	.08	42.6	Other Europe
Ecuador	1193	.51	.01	39.7	Latin America
Egypt	1492	.67	.02	40.5	Muslim
Estonia	1480	.55	.03	48.3	Post-communist
Georgia	1155	.54	.04	44.6	Post-communist
Germany	1921	.50	.06	49.5	Other Europe
Ghana	1537	.50	.01	31.0	Sub-Saharan Africa
India	1362	.38	.76	39.8	South-East Asia
Iraq	1167	.47	.03	36.5	Muslim
Japan	1682	.48	.31	51.1	South-East Asia
Jordan	1188	.50	.01	39.9	Muslim
Kazakhstan	1382	.61	.08	40.0	Muslim, Post-communist
Kuwait	1072	.34	.18	36.5	Muslim
Kyrgyzstan	1338	.51	.11	38.9	Muslim, Post-communist
Lebanon	1137	.51	.05	38.1	Muslim
Libya	1768	.48	.17	38.2	Muslim
Malaysia	1272	.49	.02	40.0	Muslim, South-East Asia
Mexico	1911	.50	.04	37.2	Latin America
Morocco	979	.49	.18	36.9	Muslim
Netherlands	1453	.51	.24	54.7	Other Europe
New Zealand	677	.58	.20	50.1	New World
Nigeria	1719	.49	.02	31.1	Sub-Saharan Africa
Pakistan	1185	.48	.01	34.4	Muslim
Palestine	952	.50	.05	36.4	Muslim
Peru	1156	.49	.04	39.2	Latin America
Philippines	1175	.50	.02	42.6	South-East Asia
Poland	865	.54	.10	47.7	Post-communist
Qatar	1031	.54	.03	37.8	Muslim
Romania	1357	.56	.10	48.2	Post-communist
Russia	2250	.55	.10	45.8	Post-communist
Rwanda	1382	.50	.09	33.8	Sub-Saharan Africa
Singapore	1738	.55	.12	41.9	South-East Asia
Slovenia	944	.58	.12	48.9	Other Europe
South Africa	3224	.50	.09	36.5	New World

	Sample size (missing values removed)	Percent female	Percent missing	Mean age	Cultural Zone
South Korea	1068	.50	.11	43.2	South-East Asia
Spain	1022	.50	.14	46.5	Other Europe
Sweden	1110	.52	.08	48.1	Other Europe
Thailand	1036	.47	.14	45.3	South-East Asia
Trinidad and Tobago	917	.53	.08	45.4	Latin America
Tunisia	1091	.46	.09	37.9	Muslim
Turkey	1550	.51	.03	38.4	Muslim
Ukraine	1402	.60	.07	46.9	Post-communist
United States	2133	.52	.04	49.1	New World
Uruguay	930	.53	.07	45.0	Latin America
Uzbekistan	1402	.60	.07	39.4	Muslim, Post-communist
Yemen	881	.50	.12	35.7	Muslim
Zimbabwe	1470	.54	.02	33.9	Sub-Saharan Africa
Total sample (58 countries)	76,026	.52	.14	41.7	

B. Robustness tests of the impact of share of people 65+

Table B. Robustness tests of the impact of share of people 65+ controlling for the other components of modernization index and two cultural zones

	B1	B2	B3	B4
Population aged 65 and more	-.30*** [-.37, -.22]	-.31*** [-.38, -.22]	-.26*** [-.36, -.13]	-.29*** [-.37, -.21]
Population aged 65 and more ²	.08** [.02, .15]	.08** [.02, .15]	.07 [-.001, .14]	.08** [.02, .15]
Log GDPpc		.02 [-.06, .09]		
Tertiary schooling			-.05 [-.14, .04]	
Urbanization				-.02 [-.09, .04]
Abs.deviance	197,531	197,531	197,530	197,531
N parameters	10	11	11	11
AIC	197,551	197,553	197,552	197,552
BIC	197,706	197,722	197,720	197,722
R ² (country-level)	.60	.59	.60	.59

Note. The model includes individual-level controls: perceived social status of people in their 40s, age, gender, education level, and income. AIC is Akaike information criterion, and BIC is Bayesian information criterion. * p < .05; ** p < .01; *** p < .001.

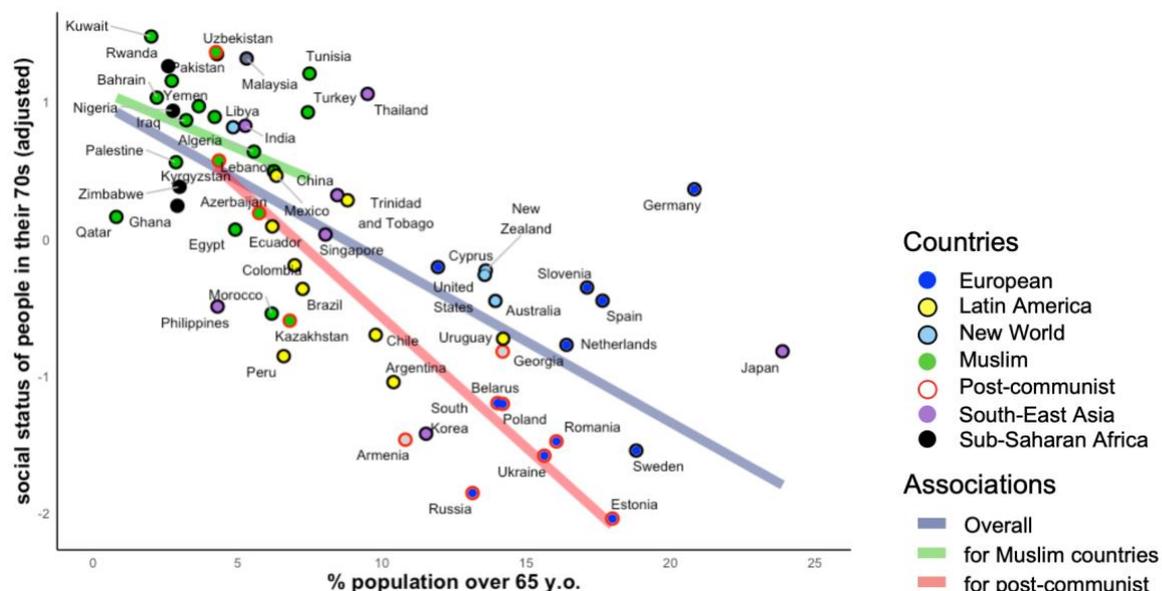


Figure B. Country means of perceived social status of people in their 70s and a share of population over 65.

C. Interactions between cultural zones and modernization pillars

Multilevel regressions accounting for Muslim and Postcommunist cultural zones and their interactions with components of the modernization index.

	C1	C2	C3	C4
Log GDPpc	-.04 [-.14, .06]			
× Muslim	.03 [-.10, .16]			
× Post-communist	-.17 [-.37, .03]			
Population 65+	-.12* [-.22, -.02]	-.14*** [-.21, -.06]	-.07 [-.16, .02]	-.08* [-.16, -.01]
× Muslim		-.03 [-.34, .29]		
× Post-communist		-.17* [-.35, -.01]		
Tertiary schooling			-.11** [-.19, -.03]	
× Muslim			.13 [.002, .28]	
× Post-communist			-.14 [-.29, -.001]	
Urbanization				-.12** [-.20, -.04]
× Muslim				.11 [-.01, .23]
× Post-communist				-.24 [-.50, -.01]
Muslim	.24** [.08, .40]	.16 [-.11, .44]	.26*** [.12, .41]	.26*** [.12, .40]
Postcommunist	-.33*** [-.48, -.17]	-.20* [-.37, -.04]	-.25*** [-.40, -.12]	-.41*** [-.58, -.25]
Abs.deviance	197,515	197,516	197,506	197,507
N parameters	14	13	14	14
AIC	197,543	197,542	197,534	197,535
BIC	197,749	197,732	197,741	197,741
R2 (country-level)	.67	.67	.72	.71

Note. The model includes individual-level controls: perceived social status of people in their 40s, age, gender, education level, and income. AIC is Akaike information criterion, and BIC is Bayesian information criterion.
* p < .05; ** p < .01; *** p < .001.

D. Robustness of the squared terms

Standardized fixed effects of the multilevel regressions that simultaneously included modernization indicators and the two cultural zones.

	D1	D3	D2	D4	D5
Modernization index	-.15*** [-.21, -.08]				
Modernization index ²	.01 [-.05, .06]				
Log GDPpc		-.09** [-.15, -.03]			
Log GDPpc ²		.04 [-.01, .08]			
Population aged 65 and more			-.20*** [-.28, -.10]		
Population aged 65 and more ²			.05 [-.02, .10]		
Tertiary schooling				-.14*** [-.20, -.09]	
Tertiary schooling ²				.01 [-.03, .07]	
Urbanization					-.11*** [-.18, -.05]
Urbanization ²					.04 [-.02, .09]
Muslim	.31*** [.17, .43]	.38*** [.26, .49]	.19* [.05, .34]	.30*** [.18, .43]	.39*** [.28, .50]
Postcommunist	-.35*** [-.49, -.22]	-.36*** [-.51, -.21]	-.24** [-.40, -.10]	-.32*** [-.46, -.19]	-.39*** [-.53, -.23]
Abs.deviance	197,514	197,524	197,518	197,516	197,518
N parameters	12	12	12	12	12
AIC	197,538	197,548	197,542	197,540	197,542
BIC	197,719	197,729	197,723	197,722	197,724
R ² (country-level)	.69	.63	.67	.68	.66

Note. The model includes individual-level controls: perceived social status of people in their 40s, age, gender, education level, and income. AIC is Akaike information criterion, and BIC is Bayesian information criterion.

* p < .05; ** p < .01; *** p < .001.

E. Alternative indicators and outliers

Table E1. Alternative indicator of economic development

	E1	E2	E3	E4
Population aged 65 and more		-.26***		-.25***
		[-.34, -.17]		[-.32, -.17]
GNI per capita, Atlas method (log)	-.12**	.02		
	[-.21, -.02]	[-.06, .10]		
GNI per capita, purchasing power parity (log)			-.10*	.02
			[-.18, -.01]	[-.06, .09]
Abs.deviance	197,569	197,538	197,572	197,538
N parameters	9	10	9	10
AIC	197,587	197,558	197,590	197,558
BIC	197,727	197,712	197,729	197,712
R ² (country-level)	.23	.55	.20	.55

Note. The model includes individual-level controls: perceived social status of people in their 40s, age, gender, education level, and income. AIC is Akaike information criterion, and BIC is Bayesian information criterion.
* p < .05; ** p < .01; *** p < .001.

Table E2. Alternative indicators of country education

	E6	E6a	E7	E7a	E8	E8a	E9	E9a
Population aged 65 and more		-.25*** [-.33, -.15]		-.24*** [-.30, -.17]		-.28*** [-.37, -.19]		-.21*** [-.31, -.11]
Government expenditure per student, secondary (% of GDP per capita)	-.002 [-.09, .09]	.03 [-.04, .10]						
Government expenditure on education, total (% of GDP)			.01 [-.08, .09]	.03 [-.04, .09]				
School enrollment, secondary (% net)					-.16*** [-.26, -.08]	-.02 [-.10, .05]		
School enrollment, tertiary (% gross)							-.21*** [-.28, -.14]	-.08 [-.17, .02]
Abs.deviance	143,697	143,670	178,328	178,295	163,950	163,920	186,504	186,489
N parameters	9	10	9	10	9	10	9	10
AIC	143,715	143,689	178,346	178,315	163,968	163,940	186,522	186,509
BIC	143,850	143,839	178,484	178,468	164,105	164,091	186,661	186,662
R ² (country-level)	.13	.52	.14	.54	.29	.61	.44	.57
N countries	44	44	53	53	49	49	55	55

Note. The model includes individual-level controls: perceived social status of people in their 40s, age, gender, education level, and income. AIC is Akaike information criterion, and BIC is Bayesian information criterion.

* p < .05; ** p < .01; *** p < .001.

Table E3. Share of employed among older adults

	E10	E11	E12	E13	E14	E15
Percent of employed adults aged 65+ in all the employed in working age (%)	.05 [-.05, .16]	-.02 [-.11, .09]	.04 [-.06, .16]	-.07 [-.16, .02]	-.03 [-.12, .07]	.03 [-.05, .10]
Modernization index		-.18*** [-.28, -.08]				
Log GDPpc			-.04 [-.15, .07]			
Population aged 65 and more				-.25*** [-.33, -.17]		
Tertiary schooling					-.19*** [-.29, -.10]	
Muslim						.42*** [.27, .58]
Postcommunist						-.39*** [-.60, -.20]
Abs.deviance	151,734	151,724	151,734	151,710	151,720	151,699
N parameters	9	10	10	10	10	11
AIC	151,752	151,744	151,754	151,730	151,740	151,721
BIC	151,887	151,892	151,902	151,880	151,889	151,881
R ² (country-level)	.17	.33	.16	.51	.39	.61

Note. N countries = 44. The model includes individual-level controls: perceived social status of people in their 40s, age, gender, education level, and income. AIC is Akaike information criterion, and BIC is Bayesian information criterion.

* p < .05; ** p < .01; *** p < .001.

Table E4. Government spending on pensions

	E16	E17	E18	E19	E20	E21
Public social protection expenditure on benefits as a percent of GDP by age (%)	-.16*** [-.25, -.07]	-.02 [-.12, .08]	-.12* [-.22, -.01]	.06 [-.07, .18]	-.05 [-.14, .04]	-.10** [-.17, -.02]
Modernization index		-.20*** [-.29, -.10]				
Log GDPpc			-.09 [-.20, .02]			
Population aged 65 and more				-.28*** [-.40, -.16]		
Tertiary schooling					-.19*** [-.26, -.11]	
Muslim						.40*** [.26, .56]
Postcommunist						-.33*** [-.50, -.16]
Abs.deviance	161,648	161,634	161,646	161,631	161,630	161,618
N parameters	9	10	10	10	10	11
AIC	161,666	161,654	161,666	161,650	161,649	161,640
BIC	161,803	161,805	161,816	161,801	161,801	161,803
R ² (country-level)	.33	.49	.36	.53	.54	.63

Note. N of countries = 48. The model includes individual-level controls: perceived social status of people in their 40s, age, gender, education level, and income. AIC is Akaike information criterion, and BIC is Bayesian information criterion.

* p < .05; ** p < .01; *** p < .001.

Table E5. Controlling for life expectancy

	E22	E23	E24	E25	E26	E27
Life expectancy at birth, both sexes	-.13** [-.23, -.05]	.10 [-.04, .22]	-.13 [-.25, -.01]	.02 [-.07, .10]	.02 [-.08, .12]	-.13*** [-.20, -.08]
Modernization index		-.28*** [-.41, -.15]				
Log GDPpc			-.01 [-.13, .11]			
Population aged 65 and more				-.26*** [-.34, -.17]		
Tertiary schooling					-.22*** [-.31, -.12]	
Muslim						.38*** [.26, .49]
Postcommunist						-.40*** [-.53, -.25]
Abs.deviance	197,568	197,552	197,568	197,538	197,550	197,519
N parameters	9	10	10	10	10	11
AIC	197,586	197,572	197,588	197,558	197,570	197,541
BIC	197,726	197,725	197,740	197,712	197,723	197,708
R ² (country-level)	.24	.42	.23	.54	.44	.67

Note. The model includes individual-level controls: perceived social status of people in their 40s, age, gender, education level, and income. AIC is Akaike information criterion, and BIC is Bayesian information criterion. B stands for Bayesian model.

* p < .05; ** p < .01; *** p < .001.

Table E6. Re-analysis with Slovenia categorized as Postcommunist country

	E28	E29	E30	E31	E32	E33
Non-Postcommunist Europe - reference group						
LatinAmerica	.02 [-.18, .23]					
NewWorld	.24 [-.03, .49]					
South-East Asia	.13 [-.07, .33]					
Sub-Saharan Africa	.14 [-.20, .47]					
Muslim	.37*** [.19, .56]	.30*** [.18, .42]	.37*** [.24, .48]	.18 [-.11, .47]	.33*** [.20, .46]	.34*** [.22, .45]
Postcommunist	-.26** [-.43, -.10]	-.29*** [-.42, -.16]	-.35*** [-.50, -.22]	-.19* [-.37, -.02]	-.26*** [-.40, -.12]	-.47*** [-.61, -.32]
Modernization index	-.14** [-.22, -.06]	-.16*** [-.22, -.09]				
× Muslim		.14 [-.01, .32]				
× Postcommunist		-.18* [-.37, -.005]				
Log GDPpc			-.12** [-.20, -.04]			
× Muslim			.11 [-.02, .23]			
× Post-communist			-.12 [-.32, .07]			
Population 65+				-.14*** [-.21, -.05]		
× Muslim				-.03 [-.35, .31]		
× Post-communist				-.11 [-.30, .06]		
Tertiary schooling					-.15*** [-.23, -.08]	
× Muslim					.14 [.01, .31]	
× Post-communist					-.08 [-.23, .07]	

Urbanization						-.17***
						[-.24, -.10]
× Muslim						.16**
						[.05, .28]
× Post-communist						-.28*
						[-.52, -.04]
Abs.deviance	197,512	197,511	197,526	197,521	197,515	197,511
N parameters	15	13	13	13	13	13
AIC	197,541	197,537	197,551	197,547	197,541	197,536
BIC	197,756	197,729	197,743	197,737	197,734	197,729
R ² (country-level)	.68	.70	.61	.64	.68	.70

Note. The model includes individual-level controls: perceived social status of people in their 40s, age, gender, education level, and income. AIC is Akaike information criterion, and BIC is Bayesian information criterion. B stands for Bayesian model.

* p < .05; ** p < .01; *** p < .001.

Table E7. Dropping outliers Germany and Japan

	E34	E35	E36	E37	E38	E39	E40	E41
Modernization index	-.21***						-.16***	
	[-.29, -.13]						[-.22, -.09]	
Modernization index ²	-.02							
	[-.09, .05]							
Log GDPpc		-.09*						
		[-.18, -.01]						
Log GDPpc ²		.07*						
		[.004, .14]						
Population aged 65 and more			-.27***					-.18***
			[-.34, -.19]					[-.27, -.09]
Population aged 65 and more ²			.02					.003
			[-.05, .07]					[-.06, .06]
Tertiary schooling				-.21***				
				[-.29, -.13]				
Tertiary schooling ²				.02				
				[-.05, .08]				
Urbanization					-.08			
					[-.17, .01]			
Urbanization ²					.10*			
					[.03, .18]			
Muslim						.40***	.30***	.18*
						[.27, .54]	[.19, .41]	[.03, .35]
Postcommunist						-.36***	-.29***	-.22**

							[-.51, -.18]	[-.41, -.15]	[-.36, -.06]
Modernization index								.16*	
× Muslim								[.02, .29]	
× Postcommunist								-.22**	
									[-.38, -.06]
Abs.deviance	187,532	187,547	187,506	187,530	187,546	187,516	187,483	187,494	
N parameters	10	10	10	10	10	10	13	12	
AIC	187,552	187,567	187,526	187,550	187,566	187,536	187,509	187,518	
BIC	187,706	187,720	187,681	187,703	187,719	187,687	187,701	187,699	
R ² (country-level)	.42	.24	.64	.45	.25	.57	.75	.70	

Note. Excludes Germany and Japan. The model includes individual-level controls: perceived social status of people in their 40s, age, gender, education level, and income. AIC is Akaike information criterion, and BIC is Bayesian information criterion.

* p < .05; ** p < .01; *** p < .001.