

# The Psychological and Socio-political Consequences of Infectious Diseases

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## Supplementary Materials

*Table S1.* Authoritarianism score according to country, Z-scored and weighted by participant sample characteristics (age and gender). Ordinal reliability indices for the authoritarianism measure are provided:  $\alpha$ =Cronbach's alpha;  $\Omega_{total}$ =McDonald's omega total estimate; GLB=estimated greatest least bound based upon communalities; Guttman's  $\lambda_4$ =maximum split half reliability. Non-ordinal Cronbach's alpha,  $\alpha_c$ , is also provided, however given the categorical nature of the data, this should be interpreted with caution.

Country	N	Authoritarianism Score	Ordinal Reliability Indices				$\alpha_c$
			$\alpha$	$\Omega_{total}$	GLB	Guttman's $\lambda_4$	
Argentina	241	1.027	0.672	0.751	0.673	0.751	0.452
Australia	3680	0.769	0.683	0.791	0.820	0.790	0.436
Austria	180	0.646	0.532	0.616	0.609	0.605	0.306
Belgium	342	0.868	0.591	0.689	0.606	0.688	0.355
Brazil	1212	1.346	0.602	0.693	0.695	0.692	0.420
Canada	9394	0.833	0.677	0.763	0.786	0.762	0.432
Chile	205	0.879	0.613	0.732	0.656	0.667	0.388
China	262	0.683	0.589	0.822	0.797	0.818	0.377
Colombia	193	1.122	0.767	0.834	0.790	0.807	0.543
Czech Republic	181	0.971	0.717	0.819	0.813	0.812	0.504
Denmark	332	0.511	0.557	0.679	0.598	0.643	0.347
Finland	334	0.679	0.546	0.599	0.608	0.599	0.356
France	1117	1.035	0.592	0.684	0.607	0.680	0.398
Germany	1409	0.626	0.692	0.789	0.821	0.789	0.444
Greece	215	0.609	0.618	0.789	0.804	0.789	0.423
Hong Kong	214	0.961	0.679	0.843	0.833	0.841	0.487
Hungary	158	0.773	0.756	0.838	0.841	0.837	0.542
India	1296	1.001	0.716	0.755	0.755	0.754	0.530
Indonesia	1942	1.393	0.541	0.588	0.583	0.577	0.384

<b>Ireland</b>	616	0.752	0.622	0.653	0.649	0.648	0.393
<b>Israel</b>	302	0.836	0.584	0.626	0.589	0.625	0.360
<b>Italy</b>	983	1.332	0.556	0.640	0.641	0.639	0.384
<b>Japan</b>	434	0.619	0.720	0.781	0.724	0.778	0.499
<b>Malaysia</b>	946	1.433	0.654	0.697	0.702	0.696	0.486
<b>Mexico</b>	812	0.932	0.634	0.735	0.749	0.735	0.414
<b>Netherlands</b>	659	0.742	0.707	0.813	0.836	0.813	0.481
<b>New Zealand</b>	886	0.693	0.738	0.824	0.822	0.822	0.490
<b>Norway</b>	439	0.512	0.720	0.779	0.722	0.778	0.460
<b>Pakistan</b>	129	1.418	0.866	0.933	0.936	0.933	0.702
<b>Peru</b>	118	1.229	0.632	0.764	0.796	0.762	0.440
<b>Philippines</b>	8285	1.531	0.665	0.756	0.769	0.756	0.491
<b>Poland</b>	343	0.731	0.697	0.771	0.775	0.771	0.489
<b>Portugal</b>	466	1.008	0.682	0.783	0.798	0.783	0.497
<b>Romania</b>	181	0.744	0.628	0.761	0.685	0.757	0.437
<b>Russia</b>	304	0.743	0.733	0.823	0.831	0.823	0.546
<b>Singapore</b>	2457	1.124	0.620	0.763	0.793	0.759	0.415
<b>South Africa</b>	592	0.957	0.657	0.784	0.812	0.784	0.443
<b>South Korea</b>	160	0.873	0.495	0.487	0.519	0.607	0.300
<b>Spain</b>	591	1.023	0.651	0.777	0.658	0.777	0.437
<b>Sri Lanka</b>	217	1.091	0.711	0.815	0.734	0.811	0.529
<b>Sweden</b>	548	0.621	0.623	0.668	0.624	0.668	0.362
<b>Switzerland</b>	223	0.651	0.680	0.464	0.705	0.698	0.436
<b>Thailand</b>	542	1.325	0.612	0.700	0.732	0.700	0.449
<b>Turkey</b>	332	0.748	0.638	0.733	0.733	0.731	0.421
<b>United Arab Emi</b>	168	1.522	0.770	0.882	0.880	0.882	0.592
<b>United Kingdom</b>	7293	0.703	0.711	0.777	0.790	0.777	0.478
<b>United States</b>	206308	0.895	0.705	0.785	0.798	0.785	0.478

Table S2. Authoritarianism score according to USA state, Z-scored and weighted by sample characteristics (age and gender).

<b>USA State</b>	<b>N</b>	<b>Authoritarianism Score</b>
<b>Alabama</b>	1382	1.479145
<b>Arizona</b>	2144	-0.09467
<b>Arkansas</b>	939	1.104042
<b>California</b>	16340	-0.90818
<b>Colorado</b>	3363	-1.03049
<b>Connecticut</b>	1702	-0.2596
<b>Delaware</b>	328	0.41427
<b>Florida</b>	6122	0.756126
<b>Georgia</b>	3974	0.505063
<b>Idaho</b>	609	0.66788
<b>Illinois</b>	7551	-0.57645
<b>Indiana</b>	3179	-0.03027
<b>Iowa</b>	1423	0.098201
<b>Kansas</b>	1565	-0.1128
<b>Kentucky</b>	1690	0.946266
<b>Louisiana</b>	1328	0.878672
<b>Maine</b>	923	-0.88847

<b>Maryland</b>	3714	-0.95093
<b>Massachusetts</b>	6331	-1.59658
<b>Michigan</b>	4884	-0.42842
<b>Minnesota</b>	3508	-1.21013
<b>Mississippi</b>	561	2.86576
<b>Missouri</b>	3119	0.382925
<b>Montana</b>	382	-0.90694
<b>Nebraska</b>	910	-0.00913
<b>Nevada</b>	897	1.001668
<b>New Hampshire</b>	827	-0.12752
<b>New Jersey</b>	3598	0.015138
<b>New Mexico</b>	701	-0.30747
<b>New York</b>	11247	-1.19351
<b>North Carolina</b>	3939	-0.11207
<b>North Dakota</b>	286	0.851614
<b>Ohio</b>	5719	0.01402
<b>Oklahoma</b>	1373	1.351633
<b>Oregon</b>	3004	-1.98967
<b>Pennsylvania</b>	6298	-0.34638
<b>Rhode Island</b>	531	-1.11067
<b>South Carolina</b>	1483	1.129077
<b>South Dakota</b>	222	-0.18107
<b>Tennessee</b>	2821	0.46537
<b>Texas</b>	9215	0.10545
<b>Utah</b>	1957	0.982358
<b>Vermont</b>	434	-1.57808
<b>Virginia</b>	5152	-0.43587
<b>Washington</b>	5711	-1.77458
<b>West Virginia</b>	596	0.430905
<b>Wisconsin</b>	2896	-0.30237
<b>Wyoming</b>	273	2.016721

Table S3: Predicting authoritarianism from pathogen prevalence in USA metropolitan regions

Parameter	Beta	SE	CI low	CI high	t	DF error	p
<b>(Intercept)</b>	3.9E-17	0.076	-0.150	0.150	5.2E-16	106	1
<b>Pathogen Prevalence</b>	0.345	0.114	0.119	0.571	3.026	106	0.003
<b>Religiosity</b>	0.254	0.089	0.078	0.430	2.860	106	0.005
<b>Industrial Composition</b>	-0.050	0.085	-0.219	0.118	-0.592	106	0.555
<b>Ethnic Composition</b>	0.124	0.126	-0.126	0.374	0.986	106	0.327
<b>Educational Attainment</b>	-0.348	0.090	-0.527	-0.170	-3.869	106	0.000
<b>Economic Climate</b>	0.093	0.097	-0.100	0.286	0.959	106	0.340

Table S4: Predicting authoritarianism from pathogen prevalence in USA states

Parameter	Beta	SE	CI low	CI high	t	DF error	p
<b>(Intercept)</b>	5.9E-17	0.112	-0.225	0.225	5.3E-16	41	1
<b>Pathogen Prevalence</b>	0.596	0.270	0.050	1.142	2.204	41	0.033
<b>Religiosity</b>	0.344	0.139	0.064	0.625	2.477	41	0.017
<b>Industrial Composition</b>	-0.293	0.139	-0.574	-0.011	-2.100	41	0.042

<b>Ethnic Composition</b>	0.505	0.288	-0.076	1.085	1.755	41	0.087
<b>Educational Attainment</b>	-0.406	0.145	-0.699	-0.114	-2.803	41	0.008
<b>Economic Climate</b>	-0.020	0.190	-0.405	0.364	-0.106	41	0.916

Table S5: Predicting authoritarianism from pathogen prevalence across nations

Parameter	Beta	SE	CI low	CI high	t	DF	p
<b>(Intercept)</b>	-5.7E-17	0.114	-0.230	0.230	-5.0E-16	39	1
<b>Historical Pathogen Prevalence</b>	0.790	0.229	0.328	1.253	3.456	39	0.001
<b>Wealth Inequality</b>	0.111	0.153	-0.199	0.420	0.722	39	0.475
<b>Life Expectancy Residuals</b>	-0.015	0.161	-0.342	0.311	-0.095	39	0.924
<b>Religiosity</b>	0.115	0.131	-0.150	0.380	0.880	39	0.384
<b>Economic Climate</b>	-0.109	0.123	-0.359	0.140	-0.884	39	0.382
<b>Educational Attainment Residuals</b>	-0.393	0.236	-0.870	0.085	-1.663	39	0.104

### Mediation analysis without socioeconomic covariates

#### U.S. Metropolitan Regions

Mediation between U.S. metropolitan regional-level pathogen prevalence, conservative voting behavior, and authoritarian attitudes, without regional socioeconomic covariates. The DV (Y) was Regional Conservative Votes. The IV (X) was pathogen prevalence. The mediating variable= authoritarian attitudes (weighted for sample age and gender). The effect of pathogen prevalence on authoritarian attitudes (a) was significant=0.41, S.E.= 0.07, t= 5.68, df= 164,  $p= 5.93 \times 10^{-8}$ , as was the effect of authoritarian attitudes on conservative voting behavior (b) = 0.51, S.E.= 0.08, t= 6.74, df= 164,  $p= 2.51 \times 10^{-10}$ . The mediation analysis overall was significant,  $R = 0.47$ ,  $R^2 = 0.22$ ,  $F(2,153) = 22.85$ , p-value:  $2.13 \times 10^{-12}$ . Total effect (c) of pathogen prevalence on Regional Conservative Votes= -0.05, S.E.= 0.08, t= -0.62 df= 164, with  $p= 0.54$ . Direct effect (c') of pathogen prevalence on regional conservative votes removing authoritarian attitudes = -0.25, S.E. = 0.08, t= -3.36, df= 163, with  $p = 0.00096$ . Indirect effect (ab) of pathogen prevalence on regional conservative votes through authoritarian attitudes = 0.21. Mean bootstrapped indirect effect = 0.21, with S.E. = 0.07, Lower CI = 0.08, Upper CI = 0.36.

## U.S. States

Mediation between U.S. state-level pathogen prevalence, conservative voting behavior, and authoritarian attitudes, without regional socioeconomic covariates. The DV (Y) was State Conservative Votes. The IV (X) was pathogen prevalence. The mediating variable = authoritarian attitudes (weighed for state-level age and gender). The effect of pathogen prevalence on authoritarian attitudes (a) was significant=0.42, S.E.= 0.14,  $t = 2.93$ ,  $df = 47$ ,  $p = 0.00525$ , as was the effect of authoritarian attitudes on conservative voting behavior (b) = 0.83, S.E.= 0.10,  $t = 8.22$ ,  $df = 47$ ,  $p = 1.20 \times 10^{10}$ . The mediation analysis overall was significant,  $R = 0.77$ ,  $R^2 = 0.59$ ,  $F(2,46) = 33.13$ ,  $p\text{-value} = 1.23 \times 10^9$ . Total effect (c) of pathogen prevalence on conservative voting behavior = 0.04, S.E. = 0.16,  $t = 0.24$ ,  $df = 47$ , with  $p = 0.81$ . Direct effect (c') of pathogen prevalence on conservative voting behavior removing authoritarian attitudes = -0.32, S.E. = 0.11,  $t = -2.85$ ,  $df = 46$ , with  $p = 0.0065$ . Indirect effect (ab) of pathogen prevalence on conservative voting behavior through authoritarian attitudes = 0.35, mean bootstrapped indirect effect = 0.34, with S.E. = 0.16, Lower CI = 0.03, Upper CI = 0.65.

Mediation between U.S. state-level pathogen prevalence, vertical legal restrictions, and authoritarian attitudes, without regional socioeconomic covariates. The DV (Y) was vertical legal restrictions. The IV (X) was pathogen prevalence. The mediating variable = authoritarian attitudes (weighed for state-level age and gender). The effect of pathogen prevalence on authoritarian attitudes (a) was significant=0.42, S.E.= 0.14,  $t = 2.93$ ,  $df = 47$ ,  $p = 0.00525$ , as was the effect of authoritarian attitudes on vertical legal restrictions (b) = 0.59, S.E.= 0.12,  $t = 4.90$ ,  $df = 47$ ,  $p = 1.17 \times 10^5$ . The mediation analysis overall was significant,  $R = 0.65$ ,  $R^2 = 0.42$ ,  $F(2,46) = 16.8$ ,  $p\text{-value} = 1.65 \times 10^7$ . Total effect (c) of pathogen prevalence on vertical legal restrictions = 0.38, S.E. = 0.15,  $t = 2.61$ ,  $df = 47$ , with  $p = 0.012$ . Direct effect (c') of pathogen prevalence on vertical legal restrictions removing authoritarian attitudes = 0.13, S.E. = 0.13,  $t = 1.01$ ,  $df = 46$ , with  $p = 0.32$ . Indirect effect (ab) of pathogen prevalence on vertical legal

restrictions through authoritarian attitudes = 0.25, mean bootstrapped indirect effect = 0.25, with S.E. = 0.12, Lower CI = 0.02, Upper CI = 0.52.

### Cross-cultural

Mediation between historical pathogen prevalence, undemocratic governance, and authoritarian attitudes, without regional socioeconomic covariates. The DV (Y) was undemocratic governance. The IV (X) was historical pathogen prevalence. The mediating variable = authoritarian attitudes (weighed for country-level age and gender). The effect of historical pathogen prevalence on authoritarian attitudes (a) was significant=0.545, S.E.=0.125,  $t=4.356$ ,  $p=7.58 \times 10^{-5}$ , as was the effect of authoritarian attitudes on undemocratic governance (b)=0.428, S.E.=0.190,  $t=-2.251$ ,  $p=0.0298$ . The mediation overall was significant,  $R = 0.47$ ,  $R^2 = 0.22$ ,  $F(2,44) = 6.22$ ,  $p=0.00129$ . The total effect (c) of pathogen prevalence on undemocratic governance = -0.35, S.E. = 0.14,  $t = -2.49$ ,  $df=45$ , with  $p=0.016$ . Direct effect (c') of pathogen prevalence on undemocratic governance removing authoritarian attitudes = -0.14, S.E. = 0.16,  $t = -0.91$ ,  $df=44$ , with  $p=0.37$ . Indirect effect (ab) of pathogen prevalence on undemocratic governance through authoritarian attitudes = -0.2, mean bootstrapped indirect effect = -0.21, with S.E. = 0.1, Lower CI = -0.42, Upper CI = -0.05.