# Supplementary material for "Cultural differences in strength of conformity explained through pathogen stress: A statistical test using hierarchical Bayesian estimation"

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## Supplementary Figures

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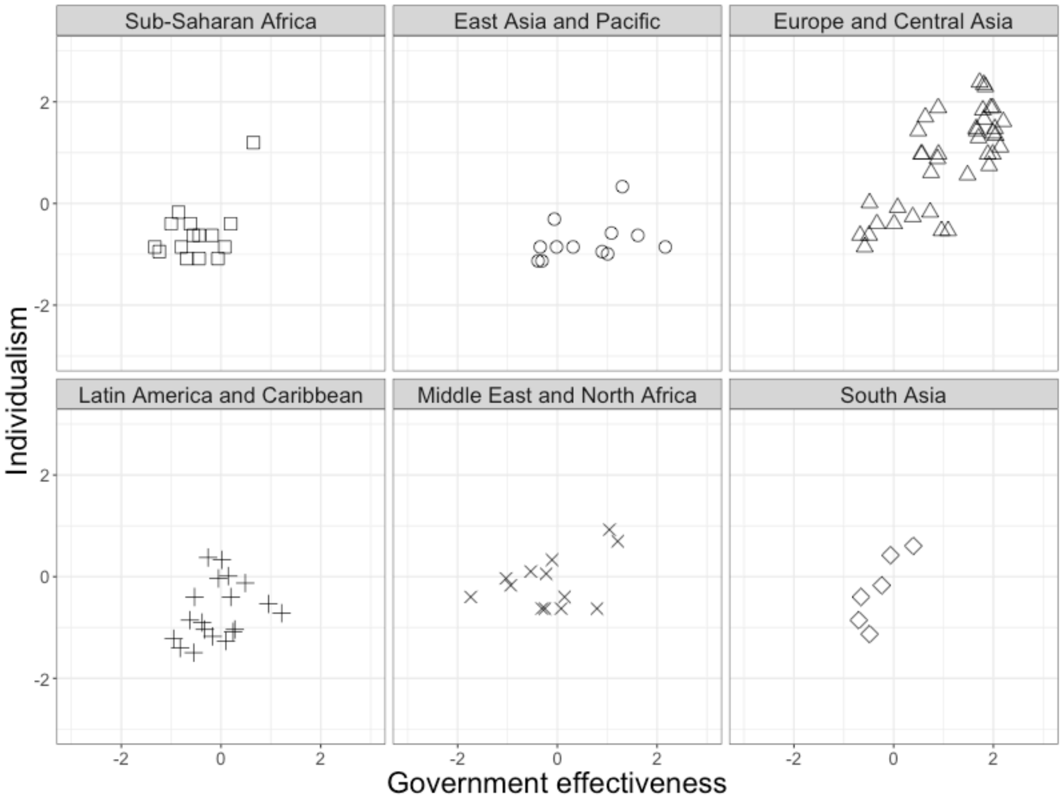
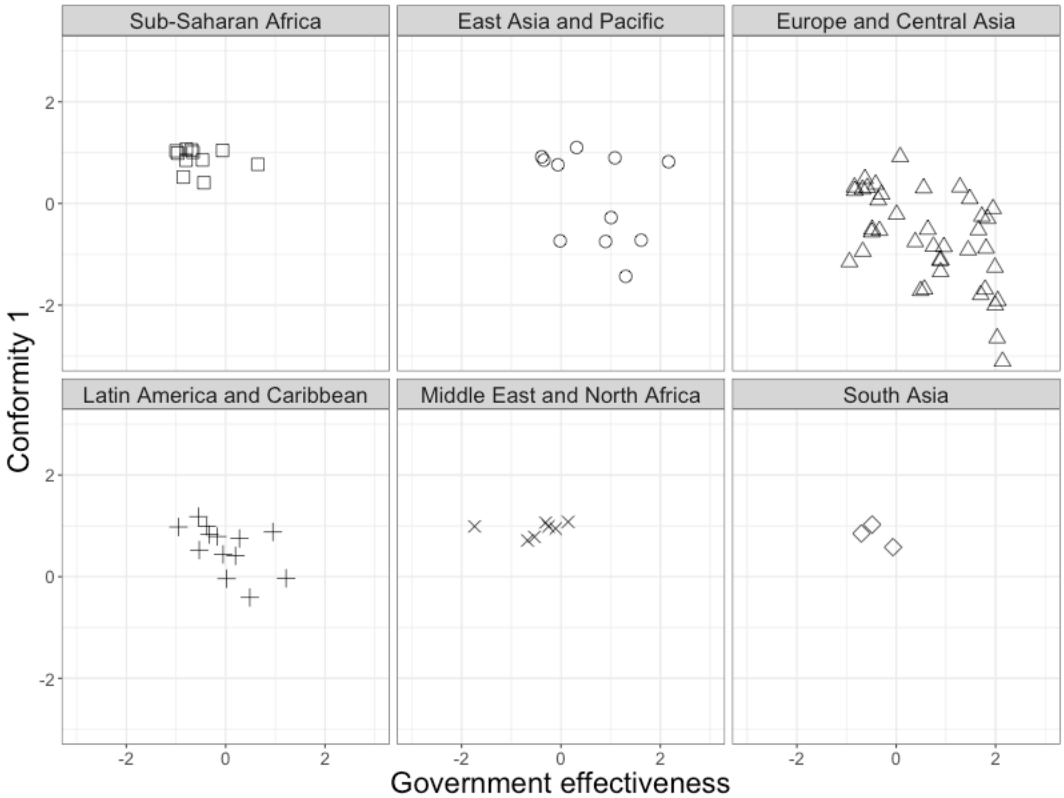
## Supplementary Method

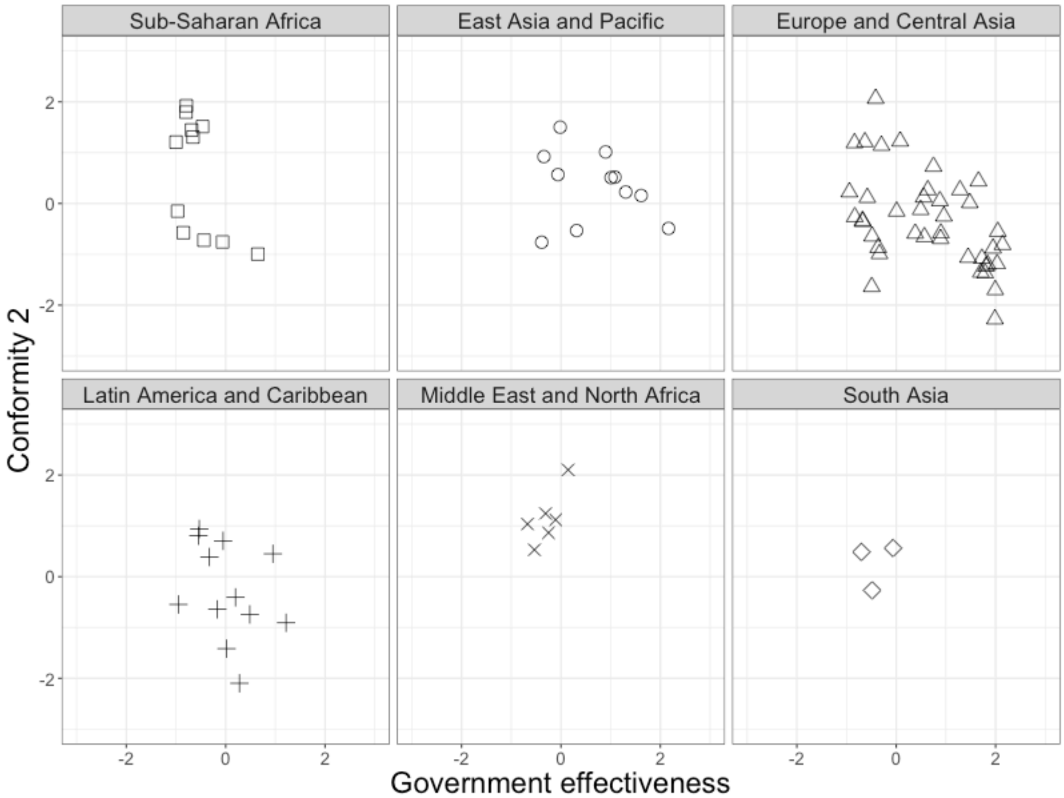
Bayesian estimation of zero-order correlation coefficients



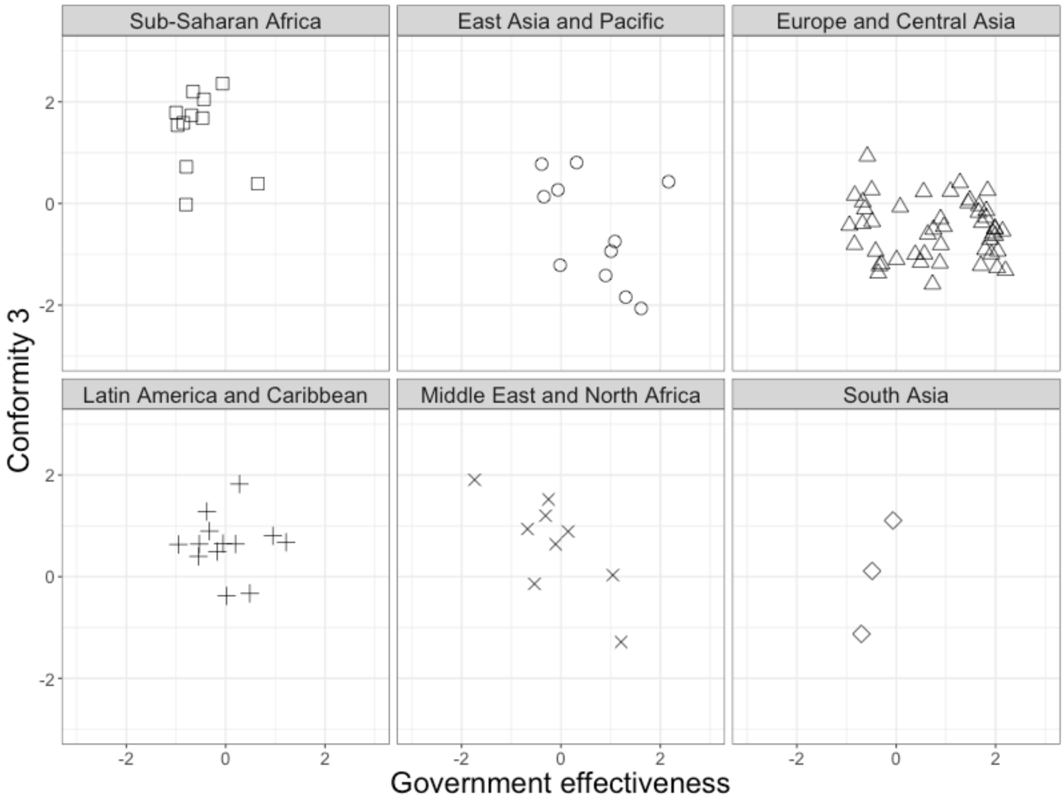

Supplementary Figure S1: Scatter plots displaying the correlation between regional level of government effectiveness and the indexes of *Individualism* by global region. Each point represents a country or region.



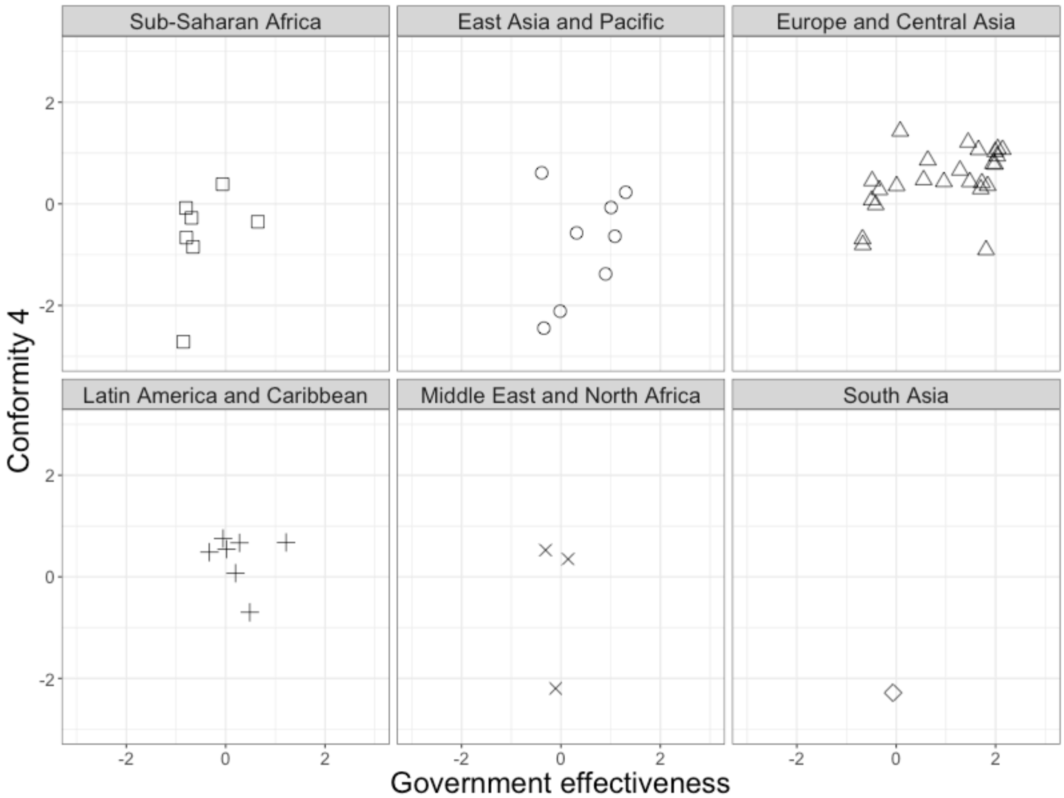

Supplementary Figure S2: Scatter plots displaying the correlation between regional level of government effectiveness and the indexes of *Conformity 1* by global region. Each point represents a country or region.



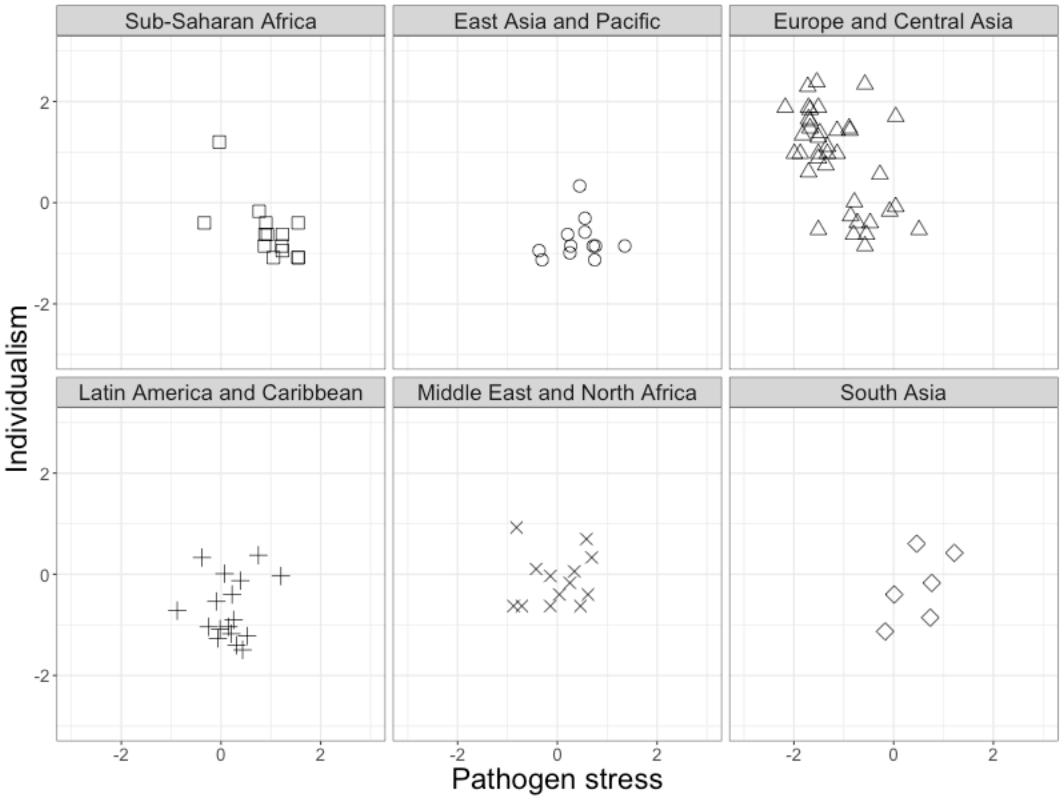

Supplementary Figure S3: Scatter plots displaying the correlation between regional level of government effectiveness and the indexes of *Conformity 2* by global region. Each point represents a country or region.



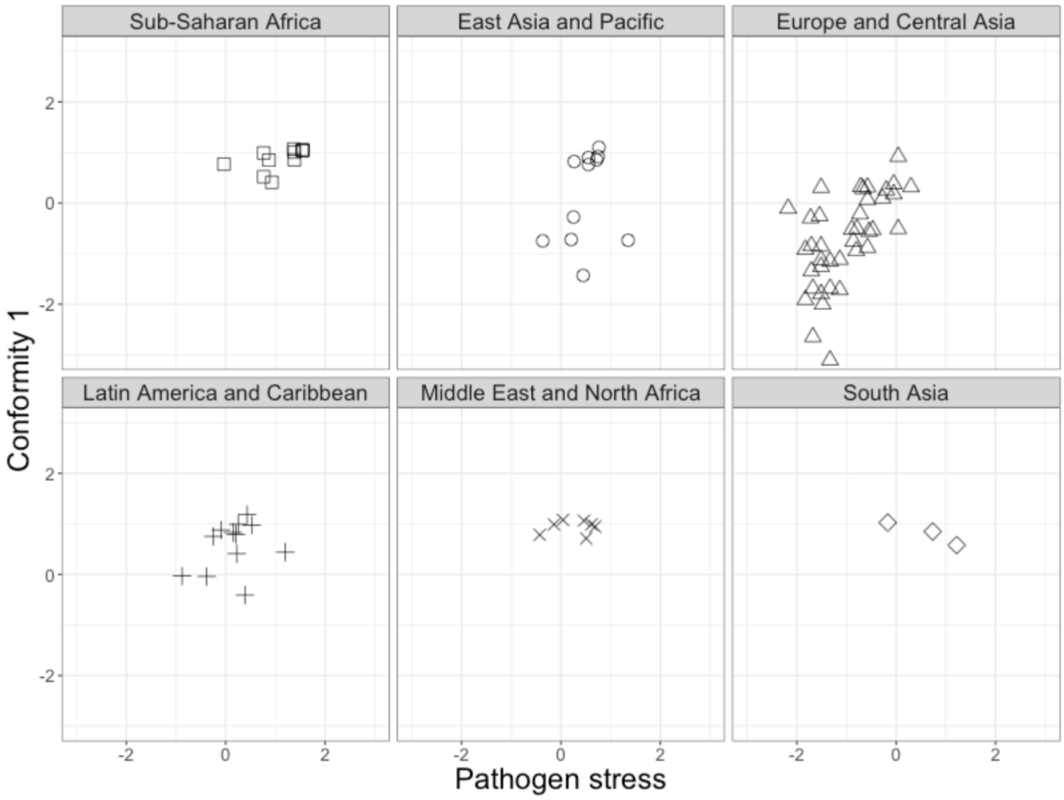

Supplementary Figure S4: Scatter plots displaying the correlation between regional level of government effectiveness and the indexes of *Conformity 3* by global region. Each point represents a country or region.



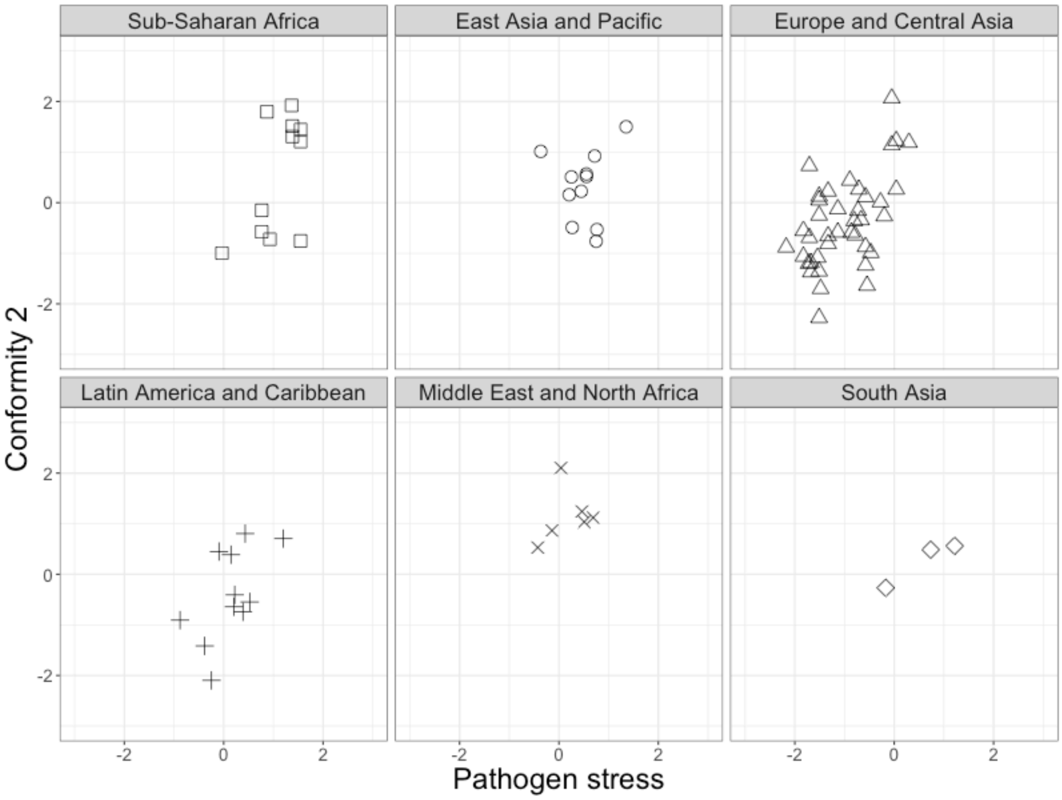

Supplementary Figure S5: Scatter plots displaying the correlation between regional level of government effectiveness and the indexes of *Conformity 4* by global region. Each point represents a country or region.



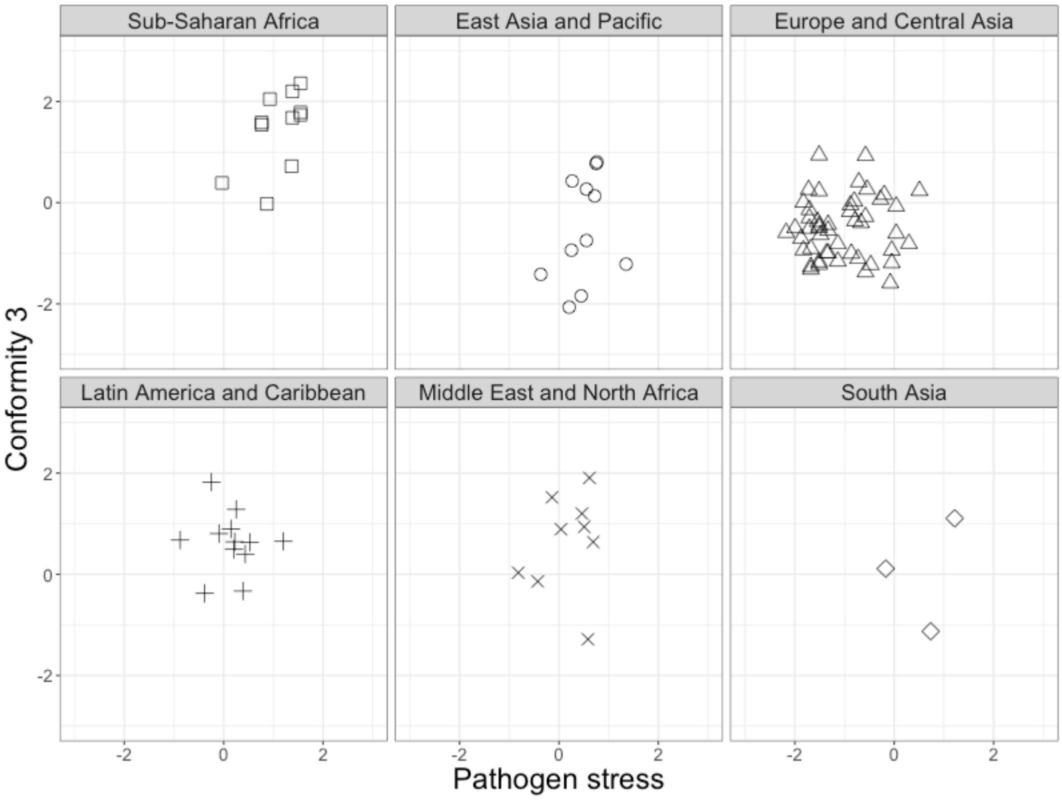

Supplementary Figure S6: Scatter plots displaying the correlation between regional level of pathogen stress and the index of *Individualism* by each global region. Each point represents a country or region.



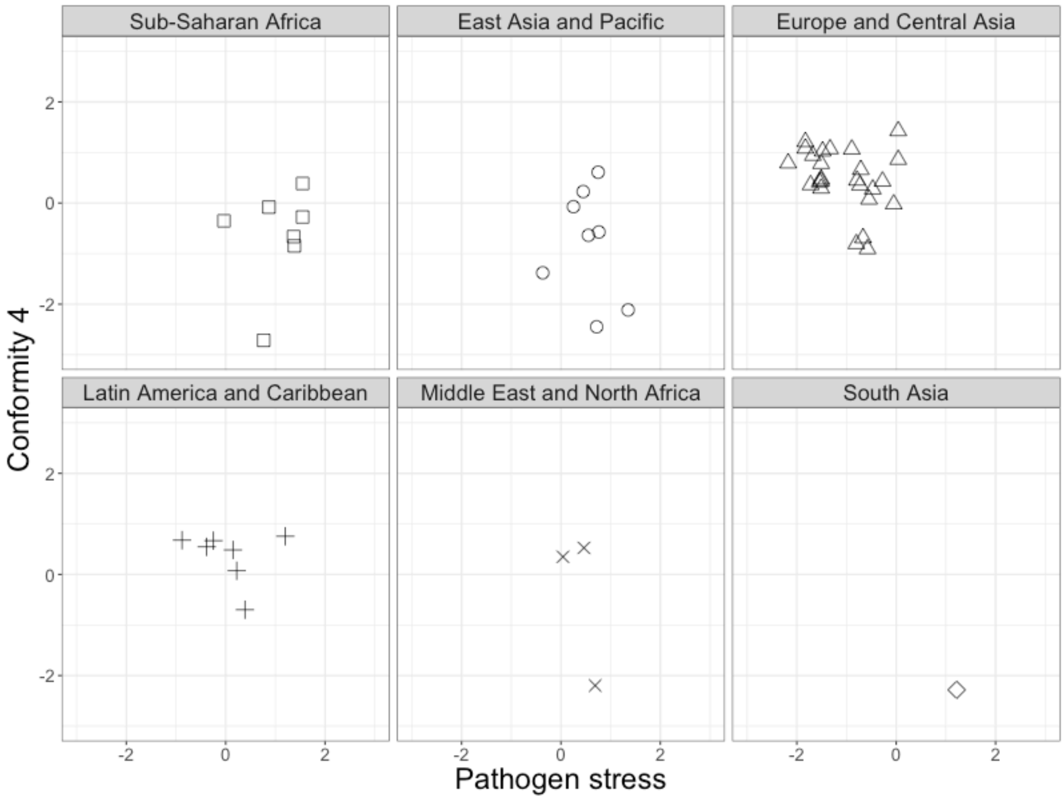

Supplementary Figure S7: Scatter plots displaying the correlation between regional level of pathogen stress and the index of *Conformity 1* by each global region. Each point represents a country or region.



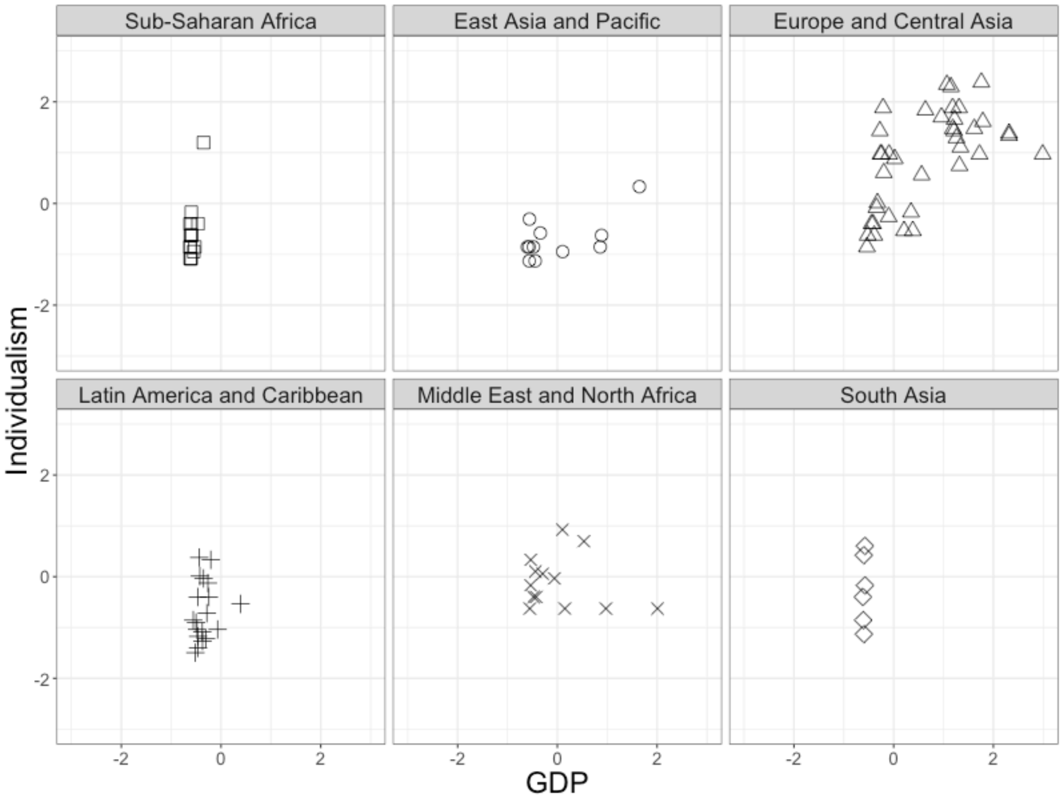

Supplementary Figure S8: Scatter plots displaying the correlation between regional level of pathogen stress and the index of *Conformity 2* by global region. Each point represents a country or region.



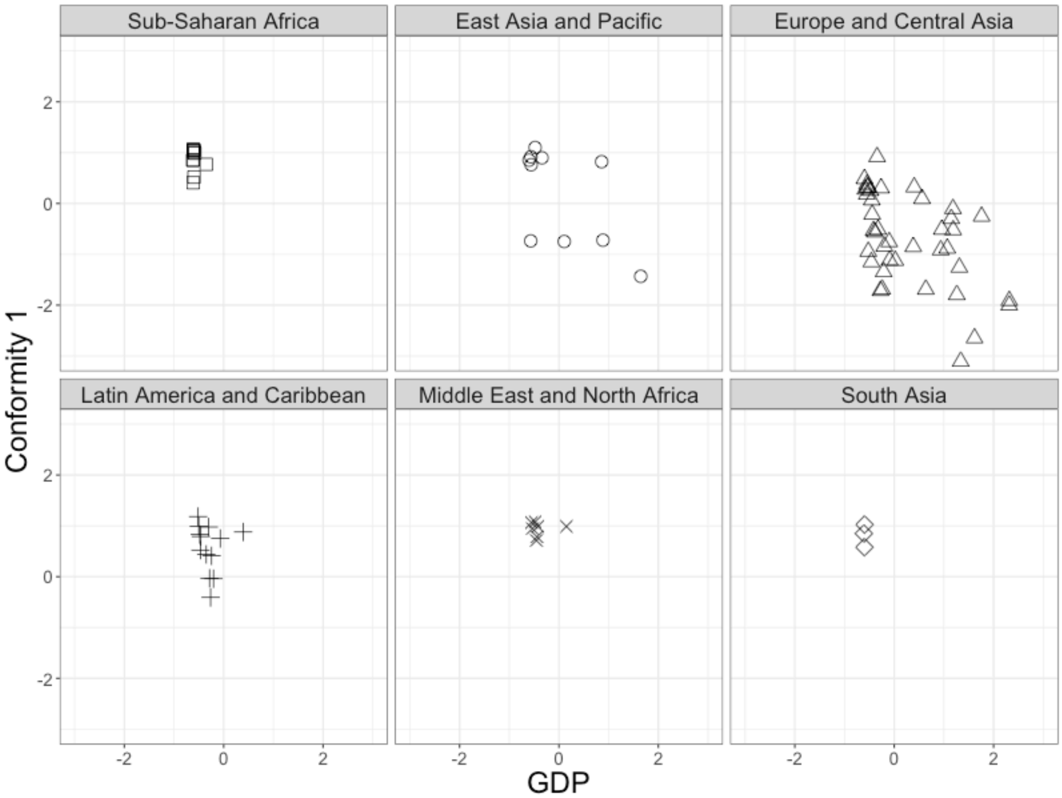

Supplementary Figure S9: Scatter plots displaying the correlation between regional level of pathogen stress and the index of *Conformity 3* by global region. Each point represents a country or region.



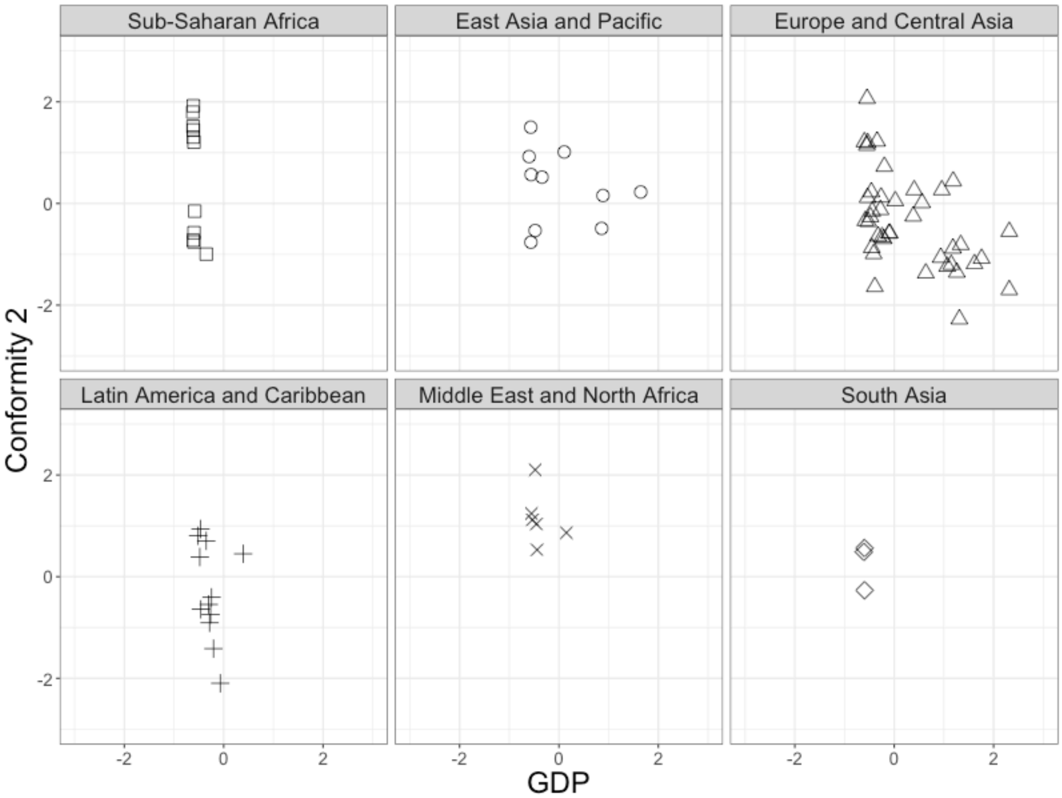

Supplementary Figure S10: Scatter plots displaying a correlation between regional level of pathogen stress and the index of *Conformity 4* by global region. Each point represents a country or region.



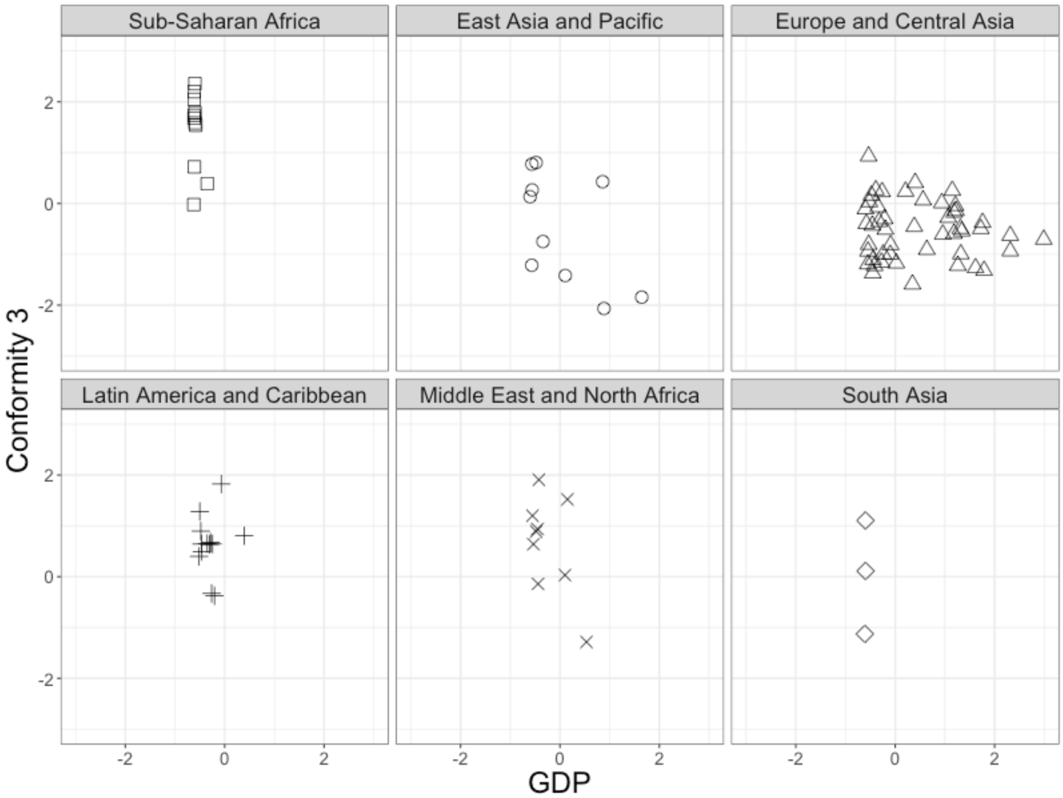

Supplementary Figure S11: Scatter plots displaying the correlation between regional level of GDP per capita and the index of *Individualism* by global region. Each point represents a country or region.



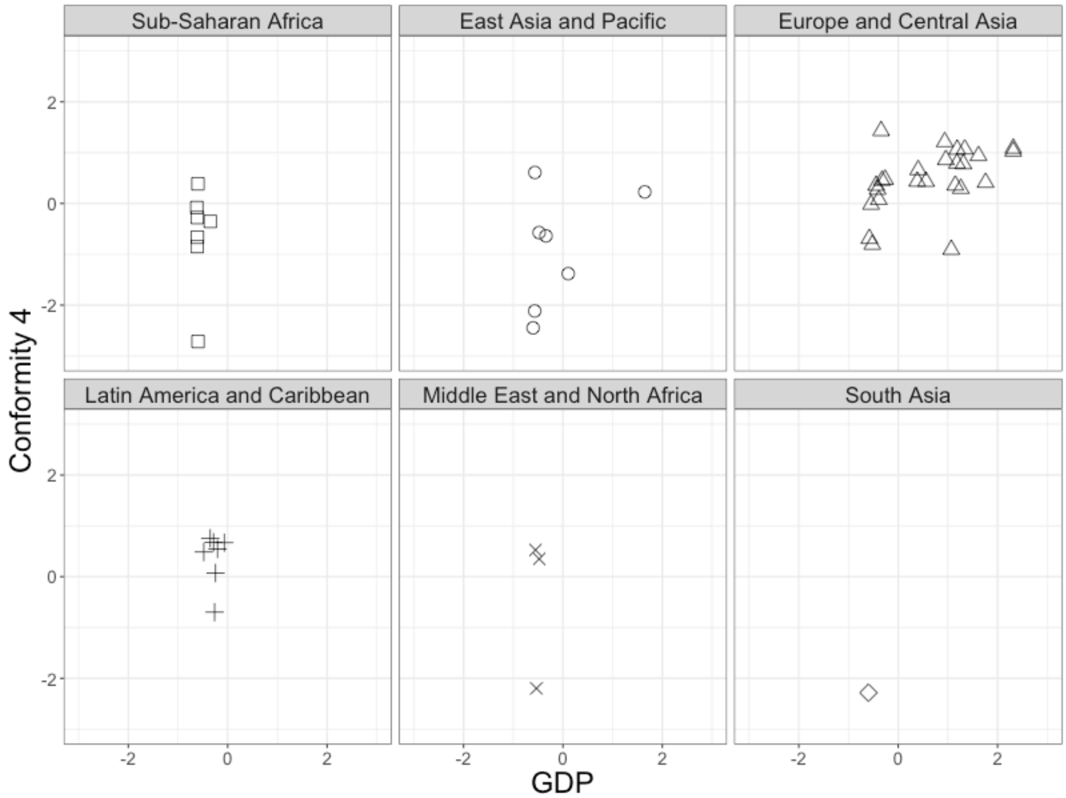
Supplementary Figure S12: Scatter plots displaying the correlation between regional level of GDP per capita and the index of *Conformity 1* by global region. Each point represents a country or region.




Supplementary Figure S13: Scatter plots displaying the correlation between regional level of GDP per capita and the index of *Conformity 2* by global region. Each point represents a country or region.




Supplementary Figure S14: Scatter plots displaying the correlation between regional level of GDP per capita and the index of *Conformity 3* by global region. Each point represents a country or region.




Supplementary Figure S15: Scatter plots displaying the correlation between regional level of GDP per capita and the index of *Conformity 4* by global region. Each point represents a country or region.

Supplementary Table S1: The number of countries or regions in each global region used for analysis (GE: government effectiveness, PS: pathogen stress, IND: *Individualism*, C1: *Conformity 1*, C2: *Conformity 2*, C3, *Conformity 3*, C4: *Conformity 4*).

| | Dependent variables | | | | |
|---|---|---|---|---|---|
| | IND | C1 | C2 | C3 | C4 |
| GE and PS were used as independent variables | | | | | |
| Sub-Saharan Africa | 14 | 11 | 11 | 11 | 7 |
| East Asia and Pacific | 12 | 11 | 11 | 11 | 8 |
| Europe and Central Asia | 38 | 39 | 39 | 47 | 25 |
| Latin America and Caribbean | 17 | 12 | 11 | 12 | 7 |
| Middle East and North Africa | 13 | 7 | 6 | 9 | 3 |
| South Asia | 6 | 3 | 3 | 3 | 1 |
| Total | 100 | 83 | 81 | 93 | 51 |
| GDP per capita and PS were used for independent variables | | | | | |
| Sub-Saharan Africa | 14 | 11 | 11 | 11 | 7 |
| East Asia and Pacific | 11 | 10 | 10 | 10 | 7 |
| Europe and Central Asia | 38 | 39 | 39 | 47 | 25 |
| Latin America and Caribbean | 17 | 12 | 11 | 12 | 7 |
| Middle East and North Africa | 13 | 7 | 6 | 9 | 3 |
| South Asia | 6 | 3 | 3 | 3 | 1 |
| Total | 99 | 82 | 80 | 92 | 50 |

Supplementary Table S2: Posterior distribution of zero-order correlation coefficients between dependent variables. *ESS* represents effective sample sizes of MCMC simulations.

| | | | Quantiles | | | Sample | |
|---|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | size | *ESS* |
| *Individualism and Conformity 1* | –0.62 | 0.08 | –0.75 | –0.62 | –0.45 | 70 | 12142 |
| *Individualism and Conformity 2* | –0.40 | 0.10 | –0.59 | –0.40 | –0.18 | 68 | 14609 |
| *Individualism and Conformity 3* | –0.40 | 0.09 | –0.58 | –0.41 | –0.21 | 80 | 14885 |
| *Individualism and Conformity 4* | 0.27 | 0.14 | –0.03 | 0.27 | 0.52 | 45 | 16000 |
| *Conformity 1 and Conformity 2* | 0.47 | 0.09 | 0.29 | 0.47 | 0.63 | 83 | 16000 |
| *Conformity 1 and Conformity 3* | 0.66 | 0.06 | 0.53 | 0.66 | 0.77 | 85 | 10564 |
| *Conformity 1 and Conformity 4* | –0.30 | 0.13 | –0.53 | –0.31 | –0.04 | 51 | 16000 |
| *Conformity 2 and Conformity 3* | 0.15 | 0.11 | –0.06 | 0.15 | 0.36 | 83 | 16000 |
| *Conformity 2 and Conformity 4* | –0.32 | 0.13 | –0.55 | –0.32 | –0.05 | 51 | 16000 |
| *Conformity 3 and Conformity 4* | –0.16 | 0.14 | –0.42 | –0.16 | 0.12 | 51 | 16000 |

Supplementary Table S3: Numerical values of estimated parameter in Model 1 using both pathogen stress and government effectiveness as independent variables. GE and PS represent government effectiveness and pathogen stress, respectively. *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Individualism* | | | | | | |
| $a_0$ | –0.22 | 0.07 | –0.37 | –0.22 | –0.08 | 13857 |
| GE | 0.44 | 0.10 | 0.25 | 0.44 | 0.63 | 10736 |
| PS | –0.39 | 0.10 | –0.58 | –0.39 | –0.19 | 11323 |
| $\sigma_y$ | 0.69 | 0.05 | 0.60 | 0.69 | 0.80 | 13446 |
| *Conformity 1* | | | | | | |
| $a_0$ | 0.19 | 0.08 | 0.04 | 0.19 | 0.34 | 16000 |
| GE | –0.31 | 0.10 | –0.50 | –0.31 | –0.12 | 12934 |
| PS | 0.55 | 0.10 | 0.36 | 0.55 | 0.74 | 13420 |
| $\sigma_y$ | 0.68 | 0.05 | 0.58 | 0.67 | 0.79 | 14347 |
| *Conformity 2* | | | | | | |
| $a_0$ | 0.13 | 0.10 | –0.06 | 0.13 | 0.33 | 14358 |
| GE | –0.20 | 0.12 | –0.45 | –0.20 | 0.04 | 11178 |
| PS | 0.43 | 0.12 | 0.20 | 0.43 | 0.67 | 11891 |
| $\sigma_y$ | 0.84 | 0.07 | 0.72 | 0.84 | 0.99 | 14594 |
| *Conformity 3* | | | | | | |
| $a_0$ | 0.19 | 0.10 | 0.002 | 0.19 | 0.39 | 15191 |
| GE | –0.25 | 0.11 | –0.47 | –0.25 | –0.02 | 11100 |
| PS | 0.36 | 0.12 | 0.13 | 0.36 | 0.59 | 11223 |
| $\sigma_y$ | 0.86 | 0.06 | 0.74 | 0.85 | 0.99 | 13363 |
| *Conformity 4* | | | | | | |
| $a_0$ | –0.17 | 0.14 | –0.45 | –0.17 | 0.11 | 9963 |
| GE | 0.15 | 0.18 | –0.21 | 0.15 | 0.51 | 7762 |
| PS | –0.42 | 0.17 | –0.76 | –0.42 | –0.09 | 8812 |
| $\sigma_y$ | 0.88 | 0.09 | 0.72 | 0.87 | 1.09 | 11771 |

Supplementary Table S4: Numerical values of estimated parameter in Model 2 using both pathogen stress and government effectiveness as independent variables. GE and PS represent government effectiveness and pathogen stress, respectively. Subscript numbers under *a* represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Individualism* | | | | | | |
| $\mu_a$ | –0.29 | 0.29 | –0.87 | –0.29 | 0.29 | 8551 |
| GE | 0.54 | 0.09 | 0.35 | 0.54 | 0.72 | 16000 |
| PS | –0.11 | 0.12 | –0.35 | –0.11 | 0.13 | 10850 |
| $a_1$ | –0.20 | 0.18 | –0.55 | –0.19 | 0.16 | 16000 |
| $a_2$ | –0.93 | 0.20 | –1.31 | –0.93 | –0.52 | 12602 |
| $a_3$ | 0.14 | 0.15 | –0.16 | 0.14 | 0.45 | 14116 |
| $a_4$ | –0.64 | 0.15 | –0.93 | –0.64 | –0.36 | 16000 |
| $a_5$ | –0.06 | 0.16 | –0.38 | –0.06 | 0.26 | 16000 |
| $a_6$ | –0.10 | 0.23 | –0.54 | –0.09 | 0.36 | 16000 |
| $\sigma_a$ | 0.61 | 0.33 | 0.25 | 0.53 | 1.44 | 7018 |
| $\sigma_y$ | 0.60 | 0.05 | 0.52 | 0.60 | 0.70 | 16000 |
| *Conformity 1* | | | | | | |
| $\mu_a$ | 0.28 | 0.21 | –0.09 | 0.27 | 0.72 | 5287 |
| GE | –0.30 | 0.10 | –0.49 | –0.30 | –0.10 | 11251 |
| PS | 0.43 | 0.14 | 0.14 | 0.43 | 0.70 | 7365 |
| $a_1$ | 0.26 | 0.20 | –0.11 | 0.25 | 0.66 | 10565 |
| $a_2$ | 0.17 | 0.19 | –0.21 | 0.17 | 0.55 | 12158 |
| $a_3$ | –0.03 | 0.16 | –0.36 | –0.03 | 0.26 | 6655 |
| $a_4$ | 0.44 | 0.18 | 0.10 | 0.44 | 0.80 | 7078 |
| $a_5$ | 0.51 | 0.23 | 0.09 | 0.50 | 0.99 | 7103 |
| $a_6$ | 0.35 | 0.27 | –0.15 | 0.33 | 0.94 | 9989 |
| $\sigma_a$ | 0.37 | 0.26 | 0.08 | 0.31 | 1.02 | 3637 |
| $\sigma_y$ | 0.65 | 0.05 | 0.55 | 0.65 | 0.77 | 11364 |

Supplementary Table S4 (cond.): Numerical values of estimated parameters in Model 2 using both pathogen stress and government effectiveness as independent variables. GE and PS represent government effectiveness and pathogen stress, respectively. Subscript numbers under *a* represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 2* | | | | | | |
| $\mu_a$ | 0.11 | 0.32 | –0.54 | 0.11 | 0.74 | 9305 |
| GE | –0.17 | 0.13 | –0.42 | –0.17 | 0.08 | 5108 |
| PS | 0.58 | 0.18 | 0.25 | 0.58 | 0.94 | 7998 |
| $a_1$ | –0.13 | 0.27 | –0.66 | –0.12 | 0.36 | 3075 |
| $a_2$ | 0.15 | 0.25 | –0.36 | 0.15 | 0.65 | 12278 |
| $a_3$ | 0.31 | 0.18 | –0.05 | 0.31 | 0.68 | 10656 |
| $a_4$ | –0.33 | 0.25 | –0.82 | –0.34 | 0.17 | 1164 |
| $a_5$ | 0.71 | 0.33 | 0.12 | 0.71 | 1.37 | 4165 |
| $a_6$ | –0.04 | 0.37 | –0.79 | –0.02 | 0.66 | 16000 |
| $\sigma_a$ | 0.62 | 0.40 | 0.14 | 0.53 | 1.62 | 3274 |
| $\sigma_y$ | 0.79 | 0.07 | 0.67 | 0.78 | 0.96 | 616 |
| *Conformity 3* | | | | | | |
| $\mu_a$ | 0.27 | 0.43 | –0.59 | 0.27 | 1.16 | 9214 |
| GE | –0.14 | 0.11 | –0.35 | –0.14 | 0.07 | 13657 |
| PS | 0.12 | 0.15 | –0.17 | 0.12 | 0.42 | 10529 |
| $a_1$ | 1.16 | 0.27 | 0.65 | 1.16 | 1.69 | 12857 |
| $a_2$ | –0.42 | 0.25 | –0.91 | –0.43 | 0.06 | 13922 |
| $a_3$ | –0.27 | 0.17 | –0.60 | –0.27 | 0.05 | 12949 |
| $a_4$ | 0.60 | 0.20 | 0.19 | 0.60 | 0.99 | 16000 |
| $a_5$ | 0.56 | 0.23 | 0.10 | 0.56 | 1.02 | 16000 |
| $a_6$ | –0.01 | 0.38 | –0.75 | –0.01 | 0.72 | 16000 |
| $\sigma_a$ | 0.91 | 0.49 | 0.38 | 0.79 | 2.15 | 7100 |
| $\sigma_y$ | 0.73 | 0.06 | 0.62 | 0.72 | 0.85 | 16000 |

Supplementary Table S4 (cond.): Numerical values of estimated parameters in Model 2 using both pathogen stress and government effectiveness as independent variables. GE and PS represent government effectiveness and pathogen stress, respectively. Subscript numbers under *a* represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 4* | | | | | | |
| $\mu_a$ | –0.39 | 0.45 | –1.39 | –0.34 | 0.34 | 5231 |
| GE | 0.27 | 0.18 | –0.10 | 0.27 | 0.62 | 6319 |
| PS | –0.16 | 0.25 | –0.63 | –0.16 | 0.35 | 3443 |
| $a_1$ | –0.37 | 0.34 | –1.08 | –0.35 | 0.25 | 5874 |
| $a_2$ | –0.71 | 0.37 | –1.44 | –0.72 | –0.03 | 3103 |
| $a_3$ | 0.03 | 0.25 | –0.43 | 0.02 | 0.54 | 4397 |
| $a_4$ | 0.12 | 0.30 | –0.43 | 0.11 | 0.73 | 5725 |
| $a_5$ | –0.35 | 0.39 | –1.17 | –0.33 | 0.41 | 9420 |
| $a_6$ | –1.06 | 0.79 | –2.83 | –0.95 | 0.12 | 3078 |
| $\sigma_a$ | 0.75 | 0.57 | 0.07 | 0.63 | 2.17 | 2689 |
| $\sigma_y$ | 0.82 | 0.09 | 0.66 | 0.81 | 1.03 | 6541 |

Supplementary Table S5: Numerical values of estimated parameters in Model 3 using both pathogen stress and government effectiveness as independent variables. GE and PS represent government effectiveness and pathogen stress, respectively. Subscript numbers under *a*, GE, and PS represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Individualism* | | | | | | |
| $\mu_a$ | –0.38 | 0.26 | –0.89 | –0.38 | 0.13 | 6822 |
| $\mu_{\mathrm{GE}}$ | 0.48 | 0.20 | 0.09 | 0.47 | 0.87 | 6604 |
| $\mu_{\mathrm{PS}}$ | 0.07 | 0.27 | –0.41 | 0.05 | 0.64 | 6929 |
| $a_1$ | –0.18 | 0.24 | –0.64 | –0.18 | 0.33 | 8870 |
| $a_2$ | –0.84 | 0.25 | –1.34 | –0.83 | –0.37 | 5778 |
| $a_3$ | –0.17 | 0.18 | –0.51 | –0.17 | 0.18 | 10043 |
| $a_4$ | –0.70 | 0.15 | –0.99 | –0.70 | –0.42 | 10297 |
| $a_5$ | –0.10 | 0.15 | –0.39 | –0.10 | 0.20 | 12569 |
| $a_6$ | –0.25 | 0.27 | –0.78 | –0.25 | 0.29 | 7768 |
| $\mathrm{GE}_1$ | 0.45 | 0.24 | –0.03 | 0.46 | 0.93 | 10631 |
| $\mathrm{GE}_2$ | 0.25 | 0.20 | –0.15 | 0.25 | 0.60 | 5397 |
| $\mathrm{GE}_3$ | 0.66 | 0.12 | 0.42 | 0.66 | 0.91 | 5398 |
| $\mathrm{GE}_4$ | 0.49 | 0.22 | 0.07 | 0.49 | 0.94 | 9425 |
| $\mathrm{GE}_5$ | 0.36 | 0.18 | –0.002 | 0.37 | 0.69 | 9464 |
| $\mathrm{GE}_6$ | 0.64 | 0.34 | 0.08 | 0.59 | 1.45 | 7004 |
| $\mathrm{PS}_1$ | –0.19 | 0.25 | –0.71 | –0.17 | 0.27 | 8240 |
| $\mathrm{PS}_2$ | 0.07 | 0.29 | –0.47 | 0.06 | 0.66 | 8117 |
| $\mathrm{PS}_3$ | –0.27 | 0.17 | –0.60 | –0.27 | 0.05 | 5718 |
| $\mathrm{PS}_4$ | 0.31 | 0.31 | –0.23 | 0.30 | 0.95 | 6336 |
| $\mathrm{PS}_5$ | 0.19 | 0.26 | –0.30 | 0.18 | 0.73 | 8485 |
| $\mathrm{PS}_6$ | 0.29 | 0.36 | –0.32 | 0.26 | 1.05 | 6483 |
| $\sigma_a$ | 0.51 | 0.30 | 0.16 | 0.44 | 1.27 | 5450 |
| $\sigma_{\mathrm{GE}}$ | 0.33 | 0.26 | 0.04 | 0.28 | 0.96 | 3146 |
| $\sigma_{\mathrm{PS}}$ | 0.46 | 0.32 | 0.07 | 0.40 | 1.28 | 4227 |
| $\sigma_y$ | 0.56 | 0.04 | 0.48 | 0.56 | 0.65 | 16000 |

Supplementary Table S5 (cond.): Numerical values of estimated parameters in Model 3 using both pathogen stress and government effectiveness as independent variables. GE and PS represent government effectiveness and pathogen stress, respectively. Subscript numbers under *a*, GE, and PS represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 1* | | | | | | |
| $\mu_a$ | 0.37 | 0.22 | –0.10 | 0.36 | 0.82 | 953 |
| $\mu_{\mathrm{GE}}$ | –0.27 | 0.17 | –0.59 | –0.27 | 0.08 | 5800 |
| $\mu_{\mathrm{PS}}$ | 0.33 | 0.24 | –0.19 | 0.35 | 0.77 | 4562 |
| $a_1$ | 0.40 | 0.26 | –0.07 | 0.39 | 0.96 | 5750 |
| $a_2$ | 0.25 | 0.23 | –0.21 | 0.26 | 0.71 | 4975 |
| $a_3$ | 0.10 | 0.19 | –0.29 | 0.10 | 0.47 | 1382 |
| $a_4$ | 0.48 | 0.18 | 0.14 | 0.47 | 0.83 | 6079 |
| $a_5$ | 0.57 | 0.25 | 0.14 | 0.55 | 1.11 | 3353 |
| $a_6$ | 0.44 | 0.29 | –0.09 | 0.42 | 1.10 | 5386 |
| $\mathrm{GE}_1$ | –0.22 | 0.22 | –0.61 | –0.24 | 0.31 | 5848 |
| $\mathrm{GE}_2$ | –0.29 | 0.16 | –0.63 | –0.29 | 0.03 | 7327 |
| $\mathrm{GE}_3$ | –0.27 | 0.11 | –0.50 | –0.27 | –0.05 | 6332 |
| $\mathrm{GE}_4$ | –0.28 | 0.20 | –0.69 | –0.28 | 0.13 | 7253 |
| $\mathrm{GE}_5$ | –0.24 | 0.21 | –0.64 | –0.26 | 0.24 | 5460 |
| $\mathrm{GE}_6$ | –0.29 | 0.28 | –0.93 | –0.29 | 0.26 | 6773 |
| $\mathrm{PS}_1$ | 0.31 | 0.24 | –0.20 | 0.32 | 0.74 | 4450 |
| $\mathrm{PS}_2$ | 0.26 | 0.29 | –0.38 | 0.29 | 0.78 | 4557 |
| $\mathrm{PS}_3$ | 0.57 | 0.19 | 0.21 | 0.57 | 0.96 | 1976 |
| $\mathrm{PS}_4$ | 0.26 | 0.29 | –0.39 | 0.29 | 0.76 | 4466 |
| $\mathrm{PS}_5$ | 0.31 | 0.34 | –0.46 | 0.34 | 0.95 | 4719 |
| $\mathrm{PS}_6$ | 0.27 | 0.33 | –0.50 | 0.31 | 0.83 | 4412 |
| $\sigma_a$ | 0.35 | 0.26 | 0.03 | 0.30 | 0.97 | 1821 |
| $\sigma_{\mathrm{GE}}$ | 0.19 | 0.20 | 0.01 | 0.13 | 0.71 | 1841 |
| $\sigma_{\mathrm{PS}}$ | 0.32 | 0.27 | 0.02 | 0.27 | 1.00 | 1933 |
| $\sigma_y$ | 0.65 | 0.05 | 0.55 | 0.65 | 0.77 | 7140 |

Supplementary Table 5 (cond.): Numerical values of estimated parameter in Model 3 using both pathogen stress and government effectiveness as independent variables. GE and PS represent government effectiveness and pathogen stress, respectively. Subscript numbers under *a*, GE, and PS represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 2* | | | | | | |
| $\mu_a$ | 0.08 | 0.37 | –0.67 | 0.09 | 0.78 | 4666 |
| $\mu_{GE}$ | –0.17 | 0.26 | –0.67 | –0.17 | 0.36 | 5703 |
| $\mu_{PS}$ | 0.58 | 0.27 | 0.08 | 0.59 | 1.10 | 1551 |
| $a_1$ | –0.29 | 0.39 | –1.13 | –0.26 | 0.39 | 3265 |
| $a_2$ | 0.15 | 0.31 | –0.47 | 0.15 | 0.79 | 3437 |
| $a_3$ | 0.30 | 0.21 | –0.12 | 0.30 | 0.71 | 3348 |
| $a_4$ | –0.38 | 0.25 | –0.87 | –0.38 | 0.12 | 2774 |
| $a_5$ | 0.76 | 0.36 | 0.08 | 0.75 | 1.46 | 3661 |
| $a_6$ | –0.05 | 0.42 | –0.91 | –0.04 | 0.75 | 3457 |
| $GE_1$ | –0.34 | 0.36 | –1.30 | –0.28 | 0.22 | 941 |
| $GE_2$ | –0.11 | 0.22 | –0.52 | –0.12 | 0.37 | 4179 |
| $GE_3$ | –0.19 | 0.14 | –0.46 | –0.18 | 0.09 | 4063 |
| $GE_4$ | –0.11 | 0.28 | –0.63 | –0.12 | 0.50 | 4815 |
| $GE_5$ | –0.13 | 0.43 | –1.04 | –0.15 | 0.89 | 797 |
| $GE_6$ | –0.14 | 0.41 | –0.97 | –0.15 | 0.76 | 7342 |
| $PS_1$ | 0.65 | 0.30 | 0.10 | 0.64 | 1.33 | 2069 |
| $PS_2$ | 0.47 | 0.34 | –0.32 | 0.50 | 1.07 | 2373 |
| $PS_3$ | 0.56 | 0.21 | 0.14 | 0.56 | 0.96 | 1813 |
| $PS_4$ | 0.66 | 0.32 | 0.08 | 0.64 | 1.35 | 1729 |
| $PS_5$ | 0.59 | 0.37 | –0.17 | 0.59 | 1.35 | 2362 |
| $PS_6$ | 0.58 | 0.34 | –0.12 | 0.58 | 1.28 | 2852 |
| $\sigma_a$ | 0.69 | 0.46 | 0.16 | 0.60 | 1.78 | 2550 |
| $\sigma_{GE}$ | 0.33 | 0.33 | 0.03 | 0.23 | 1.16 | 1344 |
| $\sigma_{PS}$ | 0.31 | 0.29 | 0.03 | 0.23 | 1.06 | 1589 |
| $\sigma_y$ | 0.79 | 0.07 | 0.67 | 0.78 | 0.93 | 7190 |

Supplementary Table S5 (cond.): Numerical values of estimated parameter in Model 3 using both pathogen stress and government effectiveness as independent variables. GE and PS represent government effectiveness and pathogen stress, respectively. Subscript numbers under *a*, GE, and PS represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 3* | | | | | | |
| $\mu_a$ | 0.21 | 0.38 | –0.53 | 0.21 | 0.95 | 4414 |
| $\mu_{\mathrm{GE}}$ | –0.17 | 0.39 | –0.83 | –0.20 | 0.69 | 4868 |
| $\mu_{\mathrm{PS}}$ | 0.21 | 0.29 | –0.35 | 0.21 | 0.77 | 5613 |
| $a_1$ | 0.71 | 0.41 | –0.10 | 0.72 | 1.50 | 4360 |
| $a_2$ | –0.23 | 0.33 | –0.87 | –0.23 | 0.39 | 4917 |
| $a_3$ | –0.35 | 0.18 | –0.71 | –0.36 | 0.004 | 4583 |
| $a_4$ | 0.58 | 0.20 | 0.19 | 0.58 | 0.97 | 5160 |
| $a_5$ | 0.47 | 0.23 | 0.04 | 0.47 | 0.92 | 3679 |
| $a_6$ | 0.10 | 0.46 | –0.77 | 0.08 | 1.08 | 4360 |
| $\mathrm{GE}_1$ | –0.15 | 0.38 | –0.88 | –0.17 | 0.66 | 3778 |
| $\mathrm{GE}_2$ | –0.47 | 0.25 | –0.97 | –0.46 | 0.02 | 3841 |
| $\mathrm{GE}_3$ | –0.03 | 0.12 | –0.26 | –0.02 | 0.22 | 2877 |
| $\mathrm{GE}_4$ | –0.07 | 0.32 | –0.67 | –0.08 | 0.59 | 6056 |
| $\mathrm{GE}_5$ | –0.64 | 0.28 | –1.22 | –0.63 | –0.13 | 3709 |
| $\mathrm{GE}_6$ | 0.36 | 0.81 | –0.74 | 0.16 | 2.45 | 3291 |
| $\mathrm{PS}_1$ | 0.55 | 0.38 | –0.08 | 0.50 | 1.38 | 3004 |
| $\mathrm{PS}_2$ | 0.16 | 0.34 | –0.54 | 0.16 | 0.83 | 6592 |
| $\mathrm{PS}_3$ | 0.13 | 0.18 | –0.21 | 0.13 | 0.48 | 3502 |
| $\mathrm{PS}_4$ | 0.07 | 0.33 | –0.65 | 0.10 | 0.69 | 5464 |
| $\mathrm{PS}_5$ | 0.13 | 0.32 | –0.56 | 0.14 | 0.73 | 6627 |
| $\mathrm{PS}_6$ | 0.23 | 0.36 | –0.51 | 0.22 | 0.99 | 8003 |
| $\sigma_a$ | 0.73 | 0.43 | 0.25 | 0.63 | 1.78 | 3189 |
| $\sigma_{\mathrm{GE}}$ | 0.65 | 0.56 | 0.12 | 0.51 | 2.07 | 3254 |
| $\sigma_{\mathrm{PS}}$ | 0.42 | 0.37 | 0.06 | 0.33 | 1.29 | 2123 |
| $\sigma_y$ | 0.69 | 0.06 | 0.59 | 0.69 | 0.82 | 1670 |

Supplementary Table S5 (cond.): Numerical values of estimated parameter in Model 3 using both pathogen stress and government effectiveness as independent variables. GE and PS represent government effectiveness and pathogen stress, respectively. Subscript numbers under *a*, GE, and PS represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 4* | | | | | | |
| $\mu_a$ | –0.29 | 0.47 | –1.36 | –0.24 | 0.49 | 4546 |
| $\mu_{GE}$ | 0.30 | 0.51 | –0.63 | 0.29 | 1.27 | 6272 |
| $\mu_{PS}$ | –0.34 | 0.52 | –1.53 | –0.29 | 0.53 | 3730 |
| $a_1$ | –0.42 | 0.47 | –1.47 | –0.37 | 0.38 | 4220 |
| $a_2$ | –0.61 | 0.48 | –1.58 | –0.59 | 0.24 | 2711 |
| $a_3$ | 0.07 | 0.27 | –0.44 | 0.06 | 0.62 | 6340 |
| $a_4$ | 0.16 | 0.31 | –0.42 | 0.15 | 0.79 | 5494 |
| $a_5$ | –0.19 | 0.45 | –1.10 | –0.18 | 0.72 | 4996 |
| $a_6$ | –0.75 | 0.87 | –2.76 | –0.58 | 0.57 | 2963 |
| $GE_1$ | 0.50 | 0.48 | –0.32 | 0.43 | 1.64 | 4225 |
| $GE_2$ | 0.29 | 0.36 | –0.45 | 0.28 | 1.03 | 5584 |
| $GE_3$ | 0.27 | 0.20 | –0.13 | 0.27 | 0.64 | 6923 |
| $GE_4$ | 0.19 | 0.47 | –0.88 | 0.22 | 1.09 | 7413 |
| $GE_5$ | 0.21 | 0.80 | –1.70 | 0.26 | 1.68 | 6341 |
| $GE_6$ | 0.36 | 1.05 | –1.38 | 0.30 | 2.44 | 4022 |
| $PS_1$ | 0.04 | 0.46 | –0.76 | 0.00 | 1.07 | 3515 |
| $PS_2$ | –0.37 | 0.51 | –1.47 | –0.34 | 0.57 | 3217 |
| $PS_3$ | –0.12 | 0.29 | –0.68 | –0.12 | 0.47 | 5308 |
| $PS_4$ | –0.15 | 0.42 | –0.99 | –0.15 | 0.70 | 7933 |
| $PS_5$ | –0.69 | 0.88 | –2.88 | –0.49 | 0.57 | 2991 |
| $PS_6$ | –0.71 | 0.77 | –2.46 | –0.57 | 0.49 | 2630 |
| $\sigma_a$ | 0.72 | 0.61 | 0.05 | 0.58 | 2.27 | 2350 |
| $\sigma_{GE}$ | 0.57 | 0.74 | 0.03 | 0.36 | 2.34 | 1372 |
| $\sigma_{PS}$ | 0.69 | 0.69 | 0.04 | 0.51 | 2.39 | 2082 |
| $\sigma_y$ | 0.82 | 0.10 | 0.66 | 0.81 | 1.03 | 9234 |

Supplementary Tables S6: Summary of analysis results using both pathogen stress and government effectiveness as independent variables. Parameters in parentheses indicate the parameters in Model 3. Asterisks in columns of global effects (GE, PS, $\mu_{GE}$, or $\mu_{PS}$) indicate that the effect was significant (i.e., the 95% Bayesian credible interval of the effect did not include zero). Numbers in columns of region–specific effects ($GE_j$ or $PS_j$) indicate global regions in which significant effects were found (1 = Sub-Saharan Africa, 2 = East Asia and Pacific, 3 = Europe and Central Asia, 4 = Latin America and Caribbean, 5 = Middle East and North Africa, and 6 = South Asia). Rows shaded in gray indicate the best model, in which the WAIC value was smallest in three models.

| Dependent variables | Model | Parameters | | | |
|---|---|---|---|---|---|
| | | GE ($\mu_{GE}$) | PS ($\mu_{PS}$) | ($GE_j$) | ($PS_j$) |
| *Individualism* | Model 1 | * | * | | |
| | Model 2 | * | | | |
| | Model 3 | * | | 3,4,6 | |
| *Conformity 1* | Model 1 | * | * | | |
| | Model 2 | * | * | | |
| | Model 3 | | | 3 | 3 |
| *Conformity 2* | Model 1 | | * | | |
| | Model 2 | | * | | |
| | Model 3 | | * | | 1, 3, 4 |
| *Conformity 3* | Model 1 | * | * | | |
| | Model 2 | | | | |
| | Model 3 | | | 5 | |
| *Conformity 4* | Model 1 | | * | | |
| | Model 2 | | | | |
| | Model 3 | | | | |

Supplementary Table S7: Numerical values of estimated parameters in Model 1 using both pathogen stress and GDP per capita as independent variables. GDP and PS represent GDP per capita and pathogen stress, respectively. *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Individualism* | | | | | | |
| $a_0$ | –0.09 | 0.07 | –0.24 | –0.09 | 0.05 | 15682 |
| GDP | 0.40 | 0.11 | 0.18 | 0.40 | 0.62 | 12681 |
| PS | –0.46 | 0.10 | –0.66 | –0.46 | –0.27 | 12240 |
| $\sigma_y$ | 0.72 | 0.05 | 0.63 | 0.72 | 0.83 | 13678 |
| *Conformity 1* | | | | | | |
| $a_0$ | 0.09 | 0.08 | –0.06 | 0.09 | 0.25 | 12862 |
| GDP | –0.45 | 0.12 | –0.69 | –0.45 | –0.22 | 13024 |
| PS | 0.54 | 0.09 | 0.36 | 0.54 | 0.72 | 12445 |
| $\sigma_y$ | 0.66 | 0.05 | 0.57 | 0.66 | 0.78 | 13877 |
| *Conformity 2* | | | | | | |
| $a_0$ | 0.06 | 0.10 | –0.14 | 0.06 | 0.26 | 13980 |
| GDP | –0.27 | 0.15 | –0.57 | –0.27 | 0.03 | 11467 |
| PS | 0.43 | 0.12 | 0.20 | 0.43 | 0.67 | 11973 |
| $\sigma_y$ | 0.84 | 0.07 | 0.72 | 0.84 | 0.99 | 13963 |
| *Conformity 3* | | | | | | |
| $a_0$ | 0.14 | 0.10 | –0.05 | 0.14 | 0.33 | 14599 |
| GDP | –0.20 | 0.14 | –0.47 | –0.20 | 0.07 | 12626 |
| PS | 0.43 | 0.12 | 0.20 | 0.43 | 0.65 | 12442 |
| $\sigma_y$ | 0.87 | 0.07 | 0.75 | 0.86 | 1.00 | 15600 |
| *Conformity 4* | | | | | | |
| $a_0$ | –0.12 | 0.13 | –0.38 | –0.12 | 0.14 | 13741 |
| GDP | 0.24 | 0.20 | –0.16 | 0.23 | 0.63 | 10677 |
| PS | –0.38 | 0.17 | –0.71 | –0.39 | –0.05 | 10524 |
| $\sigma_y$ | 0.88 | 0.09 | 0.72 | 0.87 | 1.08 | 13303 |

Supplementary Table S8: Numerical values of estimated parameters in Model 2 using both pathogen stress and GDP per capita as independent variables. GDP and PS represent GDP per capita and pathogen stress, respectively. Subscript numbers under *a* represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Individualism* | | | | | | |
| $\mu_a$ | –0.14 | 0.23 | –0.61 | –0.14 | 0.30 | 7079 |
| GDP | 0.39 | 0.11 | 0.18 | 0.39 | 0.61 | 1914 |
| PS | –0.28 | 0.13 | –0.53 | –0.28 | –0.02 | 9514 |
| $a_1$ | –0.10 | 0.19 | –0.47 | –0.09 | 0.26 | 16000 |
| $a_2$ | –0.47 | 0.21 | –0.89 | –0.47 | –0.03 | 643 |
| $a_3$ | 0.26 | 0.17 | –0.06 | 0.26 | 0.60 | 2562 |
| $a_4$ | –0.45 | 0.17 | –0.78 | –0.45 | –0.10 | 512 |
| $a_5$ | –0.12 | 0.17 | –0.45 | –0.12 | 0.20 | 16000 |
| $a_6$ | 0.02 | 0.23 | –0.43 | 0.02 | 0.49 | 16000 |
| $\sigma_a$ | 0.45 | 0.28 | 0.12 | 0.39 | 1.15 | 1414 |
| $\sigma_y$ | 0.67 | 0.05 | 0.58 | 0.67 | 0.78 | 2058 |
| *Conformity 1* | | | | | | |
| $\mu_a$ | 0.19 | 0.21 | –0.19 | 0.18 | 0.63 | 7054 |
| GDP | –0.43 | 0.12 | –0.66 | –0.43 | –0.19 | 11358 |
| PS | 0.43 | 0.13 | 0.17 | 0.44 | 0.68 | 8317 |
| $a_1$ | 0.16 | 0.19 | –0.21 | 0.16 | 0.55 | 11193 |
| $a_2$ | 0.03 | 0.18 | –0.34 | 0.04 | 0.37 | 14129 |
| $a_3$ | –0.10 | 0.15 | –0.41 | –0.10 | 0.19 | 5874 |
| $a_4$ | 0.32 | 0.17 | 0.004 | 0.31 | 0.67 | 9951 |
| $a_5$ | 0.47 | 0.24 | 0.05 | 0.46 | 0.95 | 5687 |
| $a_6$ | 0.24 | 0.27 | –0.27 | 0.22 | 0.82 | 12130 |
| $\sigma_a$ | 0.37 | 0.25 | 0.09 | 0.32 | 0.99 | 4106 |
| $\sigma_y$ | 0.63 | 0.05 | 0.54 | 0.63 | 0.75 | 8258 |

Supplementary Table S8 (cond.): Numerical values of estimated parameters in Model 2 using both pathogen stress and GDP per capita as independent variables. GDP and PS represent GDP per capita and pathogen stress, respectively. Subscript numbers under *a* represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 2* | | | | | | |
| $\mu_a$ | 0.03 | 0.32 | –0.62 | 0.04 | 0.66 | 10060 |
| GDP | –0.24 | 0.15 | –0.53 | –0.24 | 0.05 | 13007 |
| PS | 0.60 | 0.17 | 0.28 | 0.59 | 0.92 | 8913 |
| $a_1$ | –0.20 | 0.26 | –0.73 | –0.19 | 0.31 | 11423 |
| $a_2$ | 0.01 | 0.23 | –0.46 | 0.02 | 0.47 | 16000 |
| $a_3$ | 0.28 | 0.19 | –0.08 | 0.28 | 0.65 | 9830 |
| $a_4$ | –0.42 | 0.24 | –0.90 | –0.42 | 0.05 | 8519 |
| $a_5$ | 0.67 | 0.33 | 0.06 | 0.67 | 1.32 | 8361 |
| $a_6$ | –0.13 | 0.37 | –0.89 | –0.11 | 0.57 | 16000 |
| $\sigma_a$ | 0.63 | 0.38 | 0.16 | 0.54 | 1.60 | 5735 |
| $\sigma_y$ | 0.78 | 0.07 | 0.67 | 0.78 | 0.93 | 13591 |
| *Conformity 3* | | | | | | |
| $\mu_a$ | 0.23 | 0.45 | –0.66 | 0.22 | 1.13 | 6600 |
| GDP | –0.13 | 0.12 | –0.37 | –0.13 | 0.11 | 16000 |
| PS | 0.15 | 0.15 | –0.13 | 0.15 | 0.45 | 9677 |
| $a_1$ | 1.12 | 0.26 | 0.61 | 1.12 | 1.64 | 11825 |
| $a_2$ | –0.49 | 0.24 | –0.95 | –0.48 | –0.03 | 16000 |
| $a_3$ | –0.29 | 0.17 | –0.63 | –0.29 | 0.04 | 11100 |
| $a_4$ | 0.55 | 0.21 | 0.14 | 0.55 | 0.95 | 16000 |
| $a_5$ | 0.54 | 0.24 | 0.08 | 0.54 | 1.01 | 16000 |
| $a_6$ | –0.05 | 0.38 | –0.81 | –0.05 | 0.70 | 16000 |
| $\sigma_a$ | 0.92 | 0.51 | 0.38 | 0.80 | 2.23 | 6105 |
| $\sigma_y$ | 0.73 | 0.06 | 0.63 | 0.73 | 0.86 | 16000 |

Supplementary Table S8 (cond.): Numerical values of estimated parameters in Model 2 using both pathogen stress and GDP per capita as independent variables. GDP and PS represent GDP per capita and pathogen stress, respectively. Subscript numbers under *a* represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes in which 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 4* | | | | | | |
| $\mu_a$ | –0.29 | 0.42 | –1.24 | –0.25 | 0.41 | 3428 |
| GDP | 0.30 | 0.20 | –0.09 | 0.30 | 0.68 | 311 |
| PS | –0.19 | 0.24 | –0.65 | –0.19 | 0.30 | 293 |
| $a_1$ | –0.28 | 0.32 | –0.96 | –0.26 | 0.32 | 5074 |
| $a_2$ | –0.61 | 0.35 | –1.31 | –0.60 | 0.02 | 797 |
| $a_3$ | 0.07 | 0.25 | –0.37 | 0.06 | 0.58 | 730 |
| $a_4$ | 0.25 | 0.31 | –0.30 | 0.24 | 0.86 | 344 |
| $a_5$ | –0.22 | 0.37 | –1.00 | –0.21 | 0.52 | 12982 |
| $a_6$ | –0.89 | 0.73 | –2.56 | –0.76 | 0.19 | 1674 |
| $\sigma_a$ | 0.71 | 0.56 | 0.07 | 0.59 | 2.11 | 558 |
| $\sigma_y$ | 0.82 | 0.09 | 0.66 | 0.81 | 1.03 | 2414 |

Supplementary Table S9: Numerical values of estimated parameters in Model 3 using both pathogen stress and GDP per capita as independent variables. GDP and PS represent GDP per capita and pathogen stress, respectively. Subscript numbers under *a*, GDP, and PS represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes when 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Individualism* | | | | | | |
| $\mu_a$ | –0.26 | 0.23 | –0.72 | –0.26 | 0.22 | 5700 |
| $\mu_{\mathrm{GDP}}$ | 0.32 | 0.28 | –0.26 | 0.32 | 0.86 | 6195 |
| $\mu_{\mathrm{PS}}$ | –0.10 | 0.30 | –0.64 | –0.11 | 0.55 | 6511 |
| $a_1$ | –0.08 | 0.31 | –0.61 | –0.10 | 0.60 | 5328 |
| $a_2$ | –0.58 | 0.24 | –1.06 | –0.57 | –0.15 | 5118 |
| $a_3$ | –0.01 | 0.20 | –0.38 | –0.01 | 0.38 | 4976 |
| $a_4$ | –0.49 | 0.19 | –0.86 | –0.50 | –0.13 | 5076 |
| $a_5$ | –0.15 | 0.16 | –0.46 | –0.15 | 0.18 | 12622 |
| $a_6$ | –0.22 | 0.32 | –0.83 | –0.22 | 0.44 | 4866 |
| $\mathrm{GDP}_1$ | 0.32 | 0.45 | –0.61 | 0.32 | 1.26 | 6667 |
| $\mathrm{GDP}_2$ | 0.32 | 0.21 | –0.12 | 0.33 | 0.74 | 12025 |
| $\mathrm{GDP}_3$ | 0.43 | 0.12 | 0.20 | 0.43 | 0.67 | 7035 |
| $\mathrm{GDP}_4$ | 0.46 | 0.39 | –0.24 | 0.42 | 1.40 | 6822 |
| $\mathrm{GDP}_5$ | 0.07 | 0.27 | –0.50 | 0.08 | 0.52 | 3223 |
| $\mathrm{GDP}_6$ | 0.31 | 0.44 | –0.61 | 0.32 | 1.21 | 6522 |
| $\mathrm{PS}_1$ | –0.37 | 0.25 | –0.90 | –0.36 | 0.09 | 6937 |
| $\mathrm{PS}_2$ | –0.04 | 0.33 | –0.65 | –0.06 | 0.63 | 4154 |
| $\mathrm{PS}_3$ | –0.50 | 0.17 | –0.83 | –0.50 | –0.16 | 4310 |
| $\mathrm{PS}_4$ | 0.06 | 0.31 | –0.49 | 0.05 | 0.70 | 6581 |
| $\mathrm{PS}_5$ | 0.05 | 0.33 | –0.56 | 0.03 | 0.73 | 3267 |
| $\mathrm{PS}_6$ | 0.24 | 0.42 | –0.47 | 0.21 | 1.13 | 5172 |
| $\sigma_a$ | 0.42 | 0.28 | 0.07 | 0.36 | 1.12 | 4165 |
| $\sigma_{\mathrm{GDP}}$ | 0.40 | 0.37 | 0.03 | 0.31 | 1.36 | 2344 |
| $\sigma_{\mathrm{PS}}$ | 0.53 | 0.37 | 0.07 | 0.45 | 1.41 | 2182 |
| $\sigma_y$ | 0.63 | 0.05 | 0.54 | 0.63 | 0.74 | 6259 |

Supplementary Table S9 (cond.): Numerical values of estimated parameters in Model 3 using both pathogen stress and GDP per capita as independent variables. GDP and PS represent GDP per capita and pathogen stress, respectively. Subscript numbers under *a*, GDP, and PS represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes when 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 1* | | | | | | |
| $\mu_a$ | 0.28 | 0.22 | –0.13 | 0.27 | 0.73 | 4268 |
| $\mu_{GDP}$ | –0.47 | 0.30 | –1.11 | –0.46 | 0.11 | 4620 |
| $\mu_{PS}$ | 0.30 | 0.26 | –0.27 | 0.33 | 0.75 | 4055 |
| $a_1$ | 0.29 | 0.29 | –0.24 | 0.27 | 0.91 | 3831 |
| $a_2$ | 0.17 | 0.22 | –0.26 | 0.17 | 0.60 | 4998 |
| $a_3$ | 0.04 | 0.19 | –0.34 | 0.04 | 0.40 | 2316 |
| $a_4$ | 0.36 | 0.19 | 0.001 | 0.35 | 0.75 | 4749 |
| $a_5$ | 0.49 | 0.27 | 0.03 | 0.47 | 1.08 | 2803 |
| $a_6$ | 0.33 | 0.32 | –0.26 | 0.31 | 1.03 | 5112 |
| $GDP_1$ | –0.45 | 0.44 | –1.39 | –0.44 | 0.47 | 5515 |
| $GDP_2$ | –0.58 | 0.24 | –1.07 | –0.56 | –0.16 | 2545 |
| $GDP_3$ | –0.36 | 0.13 | –0.62 | –0.35 | –0.09 | 5804 |
| $GDP_4$ | –0.42 | 0.39 | –1.20 | –0.43 | 0.41 | 3867 |
| $GDP_5$ | –0.53 | 0.44 | –1.51 | –0.49 | 0.34 | 4718 |
| $GDP_6$ | –0.51 | 0.45 | –1.50 | –0.47 | 0.37 | 4194 |
| $PS_1$ | 0.29 | 0.25 | –0.23 | 0.30 | 0.73 | 4438 |
| $PS_2$ | 0.16 | 0.33 | –0.58 | 0.20 | 0.69 | 2562 |
| $PS_3$ | 0.59 | 0.18 | 0.25 | 0.58 | 0.94 | 2377 |
| $PS_4$ | 0.29 | 0.27 | –0.29 | 0.31 | 0.79 | 6891 |
| $PS_5$ | 0.28 | 0.35 | –0.51 | 0.32 | 0.92 | 6164 |
| $PS_6$ | 0.20 | 0.35 | –0.61 | 0.26 | 0.79 | 3457 |
| $\sigma_a$ | 0.34 | 0.28 | 0.02 | 0.28 | 1.02 | 2530 |
| $\sigma_{GDP}$ | 0.37 | 0.35 | 0.03 | 0.28 | 1.30 | 1847 |
| $\sigma_{PS}$ | 0.37 | 0.30 | 0.03 | 0.30 | 1.11 | 1764 |
| $\sigma_y$ | 0.63 | 0.05 | 0.53 | 0.63 | 0.75 | 11556 |

Supplementary Table S9 (cond.): Numerical values of estimated parameters in Model 3 using both pathogen stress and GDP per capita as independent variables. GDP and PS represent GDP per capita and pathogen stress, respectively. Subscript numbers under *a*, GDP, and PS represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes when 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 2* | | | | | | |
| $\mu_a$ | 0.04 | 0.35 | –0.67 | 0.05 | 0.73 | 4806 |
| $\mu_{\mathrm{GDP}}$ | –0.21 | 0.40 | –0.98 | –0.23 | 0.66 | 667 |
| $\mu_{\mathrm{PS}}$ | 0.60 | 0.27 | 0.08 | 0.58 | 1.14 | 1533 |
| $a_1$ | –0.27 | 0.44 | –1.25 | –0.27 | 0.52 | 3549 |
| $a_2$ | 0.05 | 0.27 | –0.48 | 0.03 | 0.60 | 2356 |
| $a_3$ | 0.25 | 0.21 | –0.15 | 0.24 | 0.69 | 283 |
| $a_4$ | –0.39 | 0.28 | –0.94 | –0.38 | 0.14 | 279 |
| $a_5$ | 0.62 | 0.37 | –0.06 | 0.59 | 1.39 | 1203 |
| $a_6$ | –0.08 | 0.46 | –1.04 | –0.06 | 0.86 | 4291 |
| $\mathrm{GDP}_1$ | –0.14 | 0.61 | –1.37 | –0.18 | 1.24 | 3815 |
| $\mathrm{GDP}_2$ | –0.13 | 0.28 | –0.66 | –0.16 | 0.46 | 2177 |
| $\mathrm{GDP}_3$ | –0.28 | 0.16 | –0.59 | –0.28 | 0.05 | 1805 |
| $\mathrm{GDP}_4$ | –0.06 | 0.53 | –1.06 | –0.12 | 1.27 | 3637 |
| $\mathrm{GDP}_5$ | –0.45 | 0.61 | –1.86 | –0.36 | 0.62 | 159 |
| $\mathrm{GDP}_6$ | –0.12 | 0.61 | –1.31 | –0.14 | 1.28 | 4112 |
| $\mathrm{PS}_1$ | 0.71 | 0.31 | 0.20 | 0.66 | 1.41 | 633 |
| $\mathrm{PS}_2$ | 0.49 | 0.34 | –0.27 | 0.50 | 1.11 | 2107 |
| $\mathrm{PS}_3$ | 0.56 | 0.19 | 0.18 | 0.55 | 0.97 | 1603 |
| $\mathrm{PS}_4$ | 0.69 | 0.31 | 0.15 | 0.65 | 1.38 | 1173 |
| $\mathrm{PS}_5$ | 0.58 | 0.38 | –0.22 | 0.56 | 1.36 | 2393 |
| $\mathrm{PS}_6$ | 0.58 | 0.35 | –0.17 | 0.57 | 1.30 | 2213 |
| $\sigma_a$ | 0.63 | 0.44 | 0.11 | 0.54 | 1.73 | 181 |
| $\sigma_{\mathrm{GDP}}$ | 0.58 | 0.55 | 0.07 | 0.40 | 1.86 | 79 |
| $\sigma_{\mathrm{PS}}$ | 0.31 | 0.33 | 0.03 | 0.22 | 1.11 | 275 |
| $\sigma_y$ | 0.79 | 0.07 | 0.67 | 0.79 | 0.93 | 1738 |

Supplementary Table S9 (cond.): Numerical values of estimated parameters in Model 3 using both pathogen stress and GDP per capita as independent variables. GDP and PS represent GDP per capita and pathogen stress, respectively. Subscript numbers under *a*, GDP, and PS represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes when 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 3* | | | | | | |
| $\mu_a$ | 0.02 | 0.39 | –0.73 | 0.01 | 0.79 | 5471 |
| $\mu_{GDP}$ | –0.56 | 0.55 | –1.73 | –0.53 | 0.40 | 6642 |
| $\mu_{PS}$ | 0.20 | 0.26 | –0.29 | 0.19 | 0.72 | 6302 |
| $a_1$ | 0.36 | 0.51 | –0.63 | 0.35 | 1.38 | 5830 |
| $a_2$ | –0.44 | 0.27 | –0.98 | –0.44 | 0.08 | 9198 |
| $a_3$ | –0.38 | 0.18 | –0.73 | –0.37 | –0.04 | 9299 |
| $a_4$ | 0.47 | 0.26 | –0.05 | 0.47 | 0.98 | 7928 |
| $a_5$ | 0.31 | 0.26 | –0.20 | 0.30 | 0.82 | 9293 |
| $a_6$ | –0.19 | 0.52 | –1.26 | –0.17 | 0.82 | 7889 |
| $GDP_1$ | –1.00 | 0.91 | –3.05 | –0.89 | 0.52 | 4704 |
| $GDP_2$ | –0.69 | 0.29 | –1.27 | –0.69 | –0.13 | 9585 |
| $GDP_3$ | –0.04 | 0.13 | –0.28 | –0.04 | 0.21 | 11987 |
| $GDP_4$ | –0.31 | 0.61 | –1.53 | –0.32 | 0.95 | 7879 |
| $GDP_5$ | –1.01 | 0.57 | –2.20 | –0.98 | –0.01 | 7017 |
| $GDP_6$ | –0.32 | 0.81 | –1.96 | –0.33 | 1.40 | 7502 |
| $PS_1$ | 0.43 | 0.35 | –0.12 | 0.38 | 1.22 | 3301 |
| $PS_2$ | 0.11 | 0.33 | –0.62 | 0.12 | 0.76 | 7805 |
| $PS_3$ | 0.12 | 0.16 | –0.20 | 0.12 | 0.43 | 8233 |
| $PS_4$ | 0.09 | 0.28 | –0.54 | 0.10 | 0.62 | 10325 |
| $PS_5$ | 0.20 | 0.30 | –0.39 | 0.19 | 0.84 | 9474 |
| $PS_6$ | 0.21 | 0.35 | –0.49 | 0.19 | 0.95 | 9390 |
| $\sigma_a$ | 0.71 | 0.44 | 0.21 | 0.61 | 1.80 | 4464 |
| $\sigma_{GDP}$ | 0.88 | 0.66 | 0.16 | 0.72 | 2.54 | 4001 |
| $\sigma_{PS}$ | 0.35 | 0.31 | 0.02 | 0.27 | 1.15 | 2286 |
| $\sigma_y$ | 0.70 | 0.06 | 0.60 | 0.69 | 0.82 | 16000 |

Supplementary Table S9 (cond.): Numerical values of estimated parameters in Model 3 using both pathogen stress and GDP per capita as independent variables. GDP and PS represent GDP per capita and pathogen stress, respectively. Subscript numbers under *a*, GDP, and PS represent global regions (1: Sub-Saharan Africa, 2 East Asia and Pacific, 3: Europe and Central Asia, 4: Latin America and Caribbean, 5: Middle East and North Africa, and 6: South Asia). *ESS* represents effective sample sizes of MCMC simulations. Rows shaded in gray indicate the effects of slopes when 95% Bayesian credible intervals of values did not include zero.

| | | | Quantiles | | | |
|---|---|---|---|---|---|---|
| | *Mean* | *SD* | 2.5% | 50% | 97.5% | *ESS* |
| *Conformity 4* | | | | | | |
| $\mu_a$ | –0.16 | 0.57 | –1.20 | –0.11 | 0.67 | 2631 |
| $\mu_{\mathrm{GDP}}$ | 0.41 | 0.68 | –0.86 | 0.37 | 1.89 | 4987 |
| $\mu_{\mathrm{PS}}$ | –0.32 | 0.45 | –1.32 | –0.29 | 0.45 | 3228 |
| $a_1$ | –0.26 | 0.53 | –1.38 | –0.23 | 0.74 | 2023 |
| $a_2$ | –0.50 | 0.41 | –1.33 | –0.47 | 0.24 | 2997 |
| $a_3$ | 0.14 | 0.27 | –0.37 | 0.14 | 0.67 | 2761 |
| $a_4$ | 0.23 | 0.37 | –0.42 | 0.23 | 0.98 | 422 |
| $a_5$ | –0.06 | 0.55 | –1.12 | –0.07 | 1.06 | 2235 |
| $a_6$ | –0.52 | 0.85 | –2.51 | –0.36 | 0.79 | 2019 |
| $\mathrm{GDP}_1$ | 0.55 | 0.93 | –1.05 | 0.42 | 2.84 | 4174 |
| $\mathrm{GDP}_2$ | 0.46 | 0.36 | –0.23 | 0.44 | 1.22 | 4933 |
| $\mathrm{GDP}_3$ | 0.28 | 0.21 | –0.13 | 0.28 | 0.70 | 5579 |
| $\mathrm{GDP}_4$ | 0.04 | 1.06 | –2.69 | 0.21 | 1.82 | 168 |
| $\mathrm{GDP}_5$ | 0.28 | 0.99 | –1.95 | 0.32 | 2.21 | 227 |
| $\mathrm{GDP}_6$ | 0.75 | 1.19 | –1.03 | 0.52 | 3.81 | 3812 |
| $\mathrm{PS}_1$ | –0.05 | 0.43 | –0.83 | –0.09 | 0.92 | 1860 |
| $\mathrm{PS}_2$ | –0.32 | 0.46 | –1.30 | –0.31 | 0.58 | 3443 |
| $\mathrm{PS}_3$ | –0.13 | 0.27 | –0.65 | –0.14 | 0.41 | 3215 |
| $\mathrm{PS}_4$ | –0.20 | 0.38 | –0.95 | –0.21 | 0.55 | 5786 |
| $\mathrm{PS}_5$ | –0.60 | 0.80 | –2.67 | –0.40 | 0.53 | 3223 |
| $\mathrm{PS}_6$ | –0.58 | 0.71 | –2.29 | –0.42 | 0.52 | 2831 |
| $\sigma_a$ | 0.72 | 0.69 | 0.05 | 0.59 | 2.21 | 1952 |
| $\sigma_{\mathrm{GDP}}$ | 0.83 | 0.90 | 0.04 | 0.55 | 3.15 | 603 |
| $\sigma_{\mathrm{PS}}$ | 0.56 | 0.56 | 0.01 | 0.41 | 2.03 | 857 |
| $\sigma_y$ | 0.82 | 0.09 | 0.66 | 0.81 | 1.02 | 6635 |

Supplementary Tables S10: Summary of analysis results using both pathogen stress and GDP as independent variables. Parameters in parentheses indicate the parameters in Model 3. Asterisks in columns of global effects (GDP, PS, $\mu_{GE}$, or $\mu_{PS}$) indicate that the effect was significant (i.e., the 95% Bayesian credible interval of the effect did not include zero). Numbers in columns of region–specific effects ($GDP_j$ or $PS_j$) indicate global regions in which significant effects were found (1 = Sub-Saharan Africa, 2 = East Asia and Pacific, 3 = Europe and Central Asia, 4 = Latin America and Caribbean, 5 = Middle East and North Africa, and 6 = South Asia). Rows shaded in gray indicate the best model, in which the WAIC value was smallest in three models.

| Dependent variables | Model | Parameters | | | |
|---|---|---|---|---|---|
| | | GDP ($\mu_{GDP}$) | PS ($\mu_{PS}$) | ($GDP_j$) | ($PS_j$) |
| *Individualism* | Model 1 | * | * | | |
| | Model 2 | * | * | | |
| | Model 3 | | | 3 | 3 |
| *Conformity 1* | Model 1 | * | * | | |
| | Model 2 | * | * | | |
| | Model 3 | | | 2, 3 | 3 |
| *Conformity 2* | Model 1 | | * | | |
| | Model 2 | | * | | |
| | Model 3 | | * | | 1, 3, 4 |
| *Conformity 3* | Model 1 | | * | | |
| | Model 2 | | | | |
| | Model 3 | | | 2, 5 | |
| *Conformity 4* | Model 1 | | * | | |
| | Model 2 | | | | |
| | Model 3 | | | | |

## Supplementary Method

Bayesian estimation of zero-order correlation coefficients

Here, we explain the method of Bayesian estimation of zero-order correlation coefficients between $y_a$ and $y_b$. $\vec{y}$ represents the two–dimensional vector of $y$, and $\vec{y}$ obeys the following statistical model:

$$\vec{\mu} = \begin{bmatrix} \mu_a \\ \mu_b \end{bmatrix},$$

$$\Sigma = \begin{pmatrix} \sigma_a^2 & \sigma_a \sigma_b \rho \\ \sigma_a \sigma_b \rho & \sigma_b^2 \end{pmatrix}, \tag{S1}$$

$$\vec{y} \sim \mathrm{Normal}_2(\vec{\mu}, \Sigma).$$

$\vec{\mu}$ represents the mean vector of $y$. $\mu_a$ and $\mu_b$ represent the mean values of $y_a$ and $y_b$, respectively. $\Sigma$ represents the covariance matrix of $y_a$ and $y_b$. $\sigma_a$ and $\sigma_b$ represent the standard deviation of $y_a$ and $y_b$, respectively. $\sigma_{ab}$ represents the covariance of $y_a$ and $y_b$. $\rho$ represents the correlation coefficients between $y_a$ and $y_b$. $\vec{y}$ obeys two variants normal distribution with two–dimensional mean vector $\vec{\mu}$ and 2 x 2 covariance matrix $\Sigma$.

We estimated the parameter values of $\vec{\mu}$, $\Sigma$, and $\rho$ from $y_a$ and $y_b$ by conducting MCMC simulations. We used the uniformed distribution [–1, 1] for a prior of $\rho$. We calculated the 95% Bayesian credible intervals of $\rho$.