Supplementary materials

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1. Demographics and exclusion

2. Main replication analysis

Study 1a

Bayesian analysis

Table S1: The effect of personal force on moral dilemma judgements on Trolley dilemmas

Exclusion	Cluster	BF	RR	t	df	p
Exclusion	Eastern	1.9e+02	1.5e-02, 4.7e+01	-3.69	366.23	<.001
	Southern	2.4e+07	3.0e-08, 9.0e+06	-6.32	619.93	<.001
	Western	8.0e+01	4.0e-0.3, 1.4e+01	-3.41	553.15	<.001
No exclusion	Eastern	4.0e+14	8.0e-15, 2.0e+13	-8.56	1707.97	<.001
	Southern	4.0e+17	1.0e-23, 1.9e+22	-9.40	1851.54	<.001
	Western	4.5e+14	2.0e-19, 6.0e+17	-8.57	2112.23	<.001

Table S1 and S2 and Figures S1-4 summarise the results of the effect of personal force on moral dilemma judgements, separately for the Speedboat and Trolley dilemmas. First, we conducted the analysis excluding participants based on our exclusion criteria. In this analysis, we replicated the effect of personal force in all cultural clusters, in both the Trolley and Speedboat dilemmas. We also analysed the data without exclusions - in both dilemmas and we arrive at the same conclusion; the effect of personal force on moral judgments is culturally universal; people judge acts that require no personal force more acceptable than acts that do. The "RR" column in the tables indicates the robustness region; a region for the prior with which we would arrive at the same conclusion. This region is very wide, indicating that the results are robust to our prior choices. Although excluding the data of a large number of participants did not change the conclusion, it introduced some noise that differentially affected the cultural clusters. In the western cluster, for example, the t value (effect size) is smaller if we analyse the data after exclusions, while such difference cannot be observed in the two other cultural clusters.

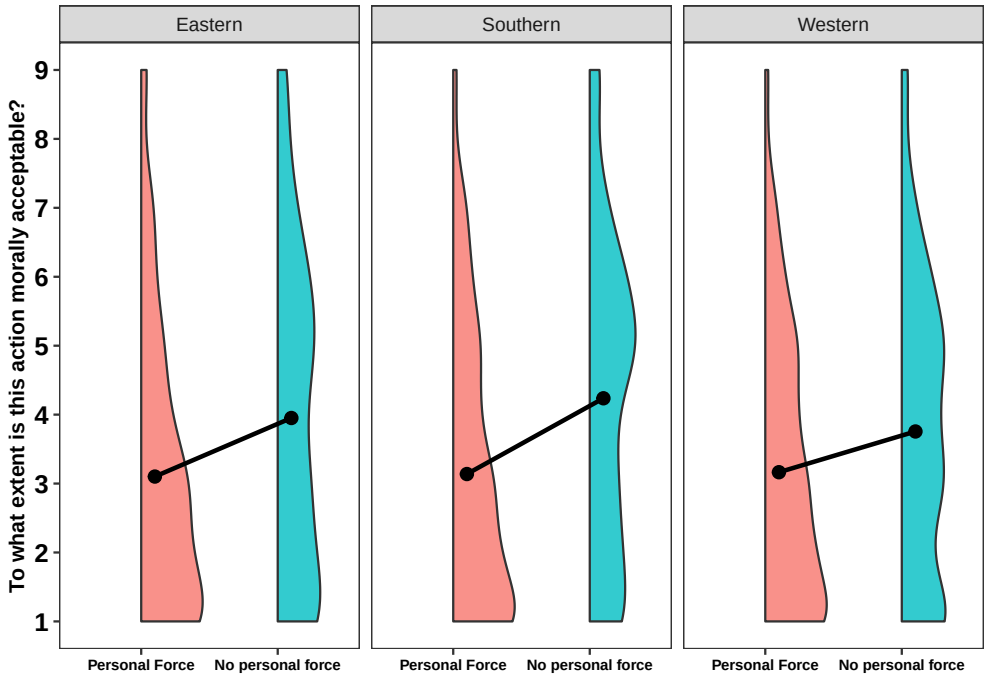

Figure S1: Results on Trolley dilemmas in Study 1 with all exclusion criteria applied. Black full circles indicate group level means.

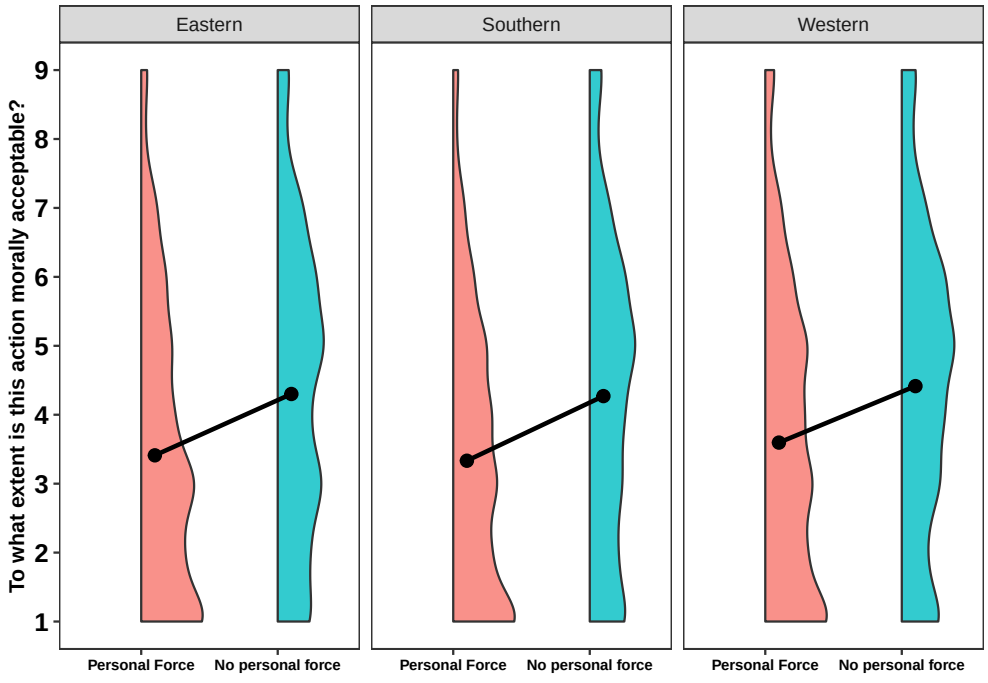

Figure S2: Results on Trolley dilemmas in Study 1 with no exclusion criteria applied. Black full circles indicate group level means.

Table S2: The effect of personal force on moral dilemma judgements on Speedboat dilemmas

Exclusion	Cluster	BF	RR	t	df	p
Exclusion	Eastern	1.2e+05	2.6e-06, 5.7e+04	-5.26	283.92	<.001
	Southern	1.0e+03	3.0e-04, 2.5e+03	-4.19	436.86	<.001
	Western	2.5e+01	6.0e-03, 4.3	-3.01	437.36	0.003
No exclusion	Eastern	1.4e+09	8.4e-10, 1.1e+08	-6.84	1708.66	<.001
	Southern	9.4e+10	5.8e-18, 2.2e+16	-7.48	1855.02	<.001
	Western	4.5e+13	8.0e-18, 1.2e+16	-8.29	2122.07	<.001

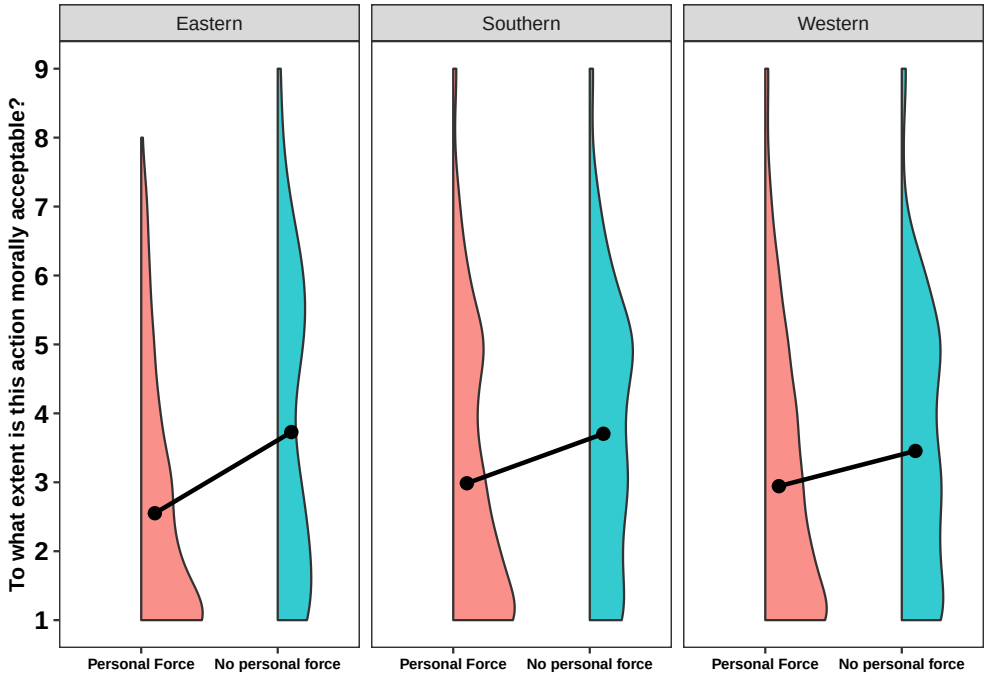

Figure S3: Results on Trolley dilemmas in Study 1 with all exclusion criteria applied. Black full circles indicate group level means.

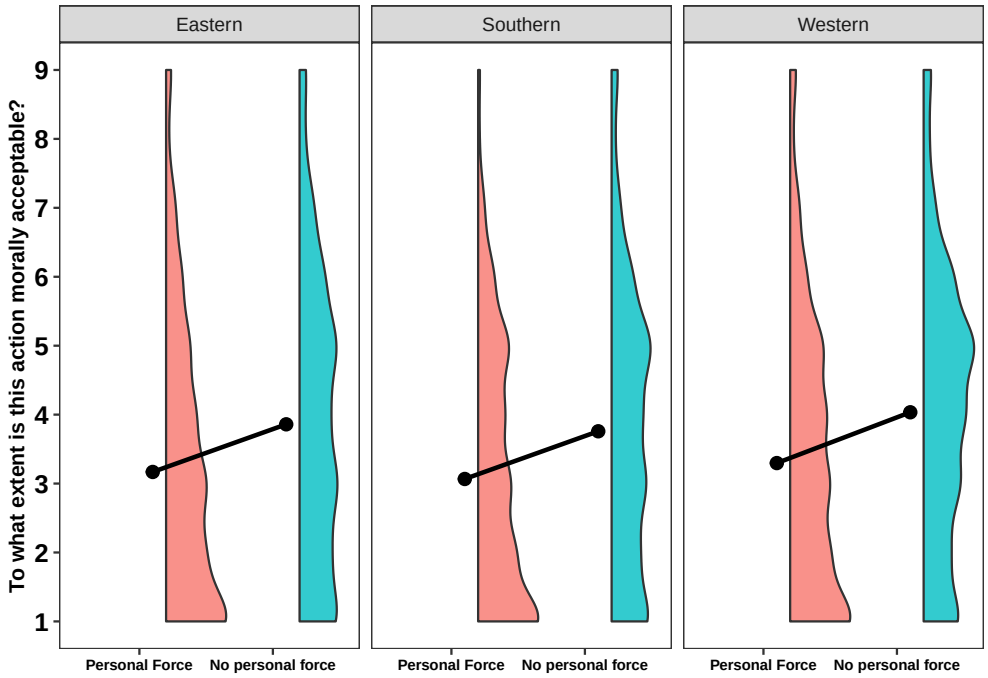

Figure S4: Results on Speedboat dilemmas in Study 1 with no exclusion criteria applied. Black full circles indicate group level means.

Study 2a and 2b

We analysed the interactional effect of personal force and intention in a similar way (Tables S3 and S4, Figures S5-S8). We treatment coded both personal force (0 = no personal force; 1 = personal force) and intention (0 = no intention; 1 = intention) and added them to the model. In the Bayesian analysis, the Bayes factor represents the ratio of two Bayesian regression models (we always used the same priors for these models): the denominator model, a model with the two main effects but without the critical two-way interaction, and in the numerator the full model including the interaction term. In case of the trolley dilemmas, we have strong evidence (BF >10) to conclude that the interaction exists in the Western and Southern cultural clusters, while in the Eastern cluster results are inconclusive ($1/10 < BF < 10$). Here, we believe is again a case of selection bias. When we analysed all the data, without exclusions, we replicated the effect in all cultural clusters (BF > 10). The evidence however is more mixed for the Speedboat dilemmas. Here, we found evidence only for the interaction on the Western cluster but we did not find an effect on the other two clusters. Although the BF goes below only our null threshold (eastern cluster - without exclusions), BF < 1 in this case makes the null hypothesis more likely than the alternative one.

Table S3: Do personal force interact with intention on Trolley dilemmas?

Exclusion	**Cluster**	**BF**	**RR**	**F**	**df**	**p**
Exclusion	Eastern	6.0e-01	2.2e-01, Inf	0.041	1, 319	0.84
	Southern	1.2e+01	1.3e-0.2, 2.3	9.455	1, 686	0.002
	Western	1.5e+11	<1.0e-04, 3.1e+10	58.035	1, 2967	<.001
No exclusion	Eastern	1.8e+03	2.7e-0.4, 1.1e+03	18.430	1, 2052	<.001
	Southern	1.3e+14	<1.0e-04, 8.9e+15	72.282	1, 2485	<.001
	Western	6.9e+48	<1.0e-04, >1.0e+18	233.910	1, 12874	<.001

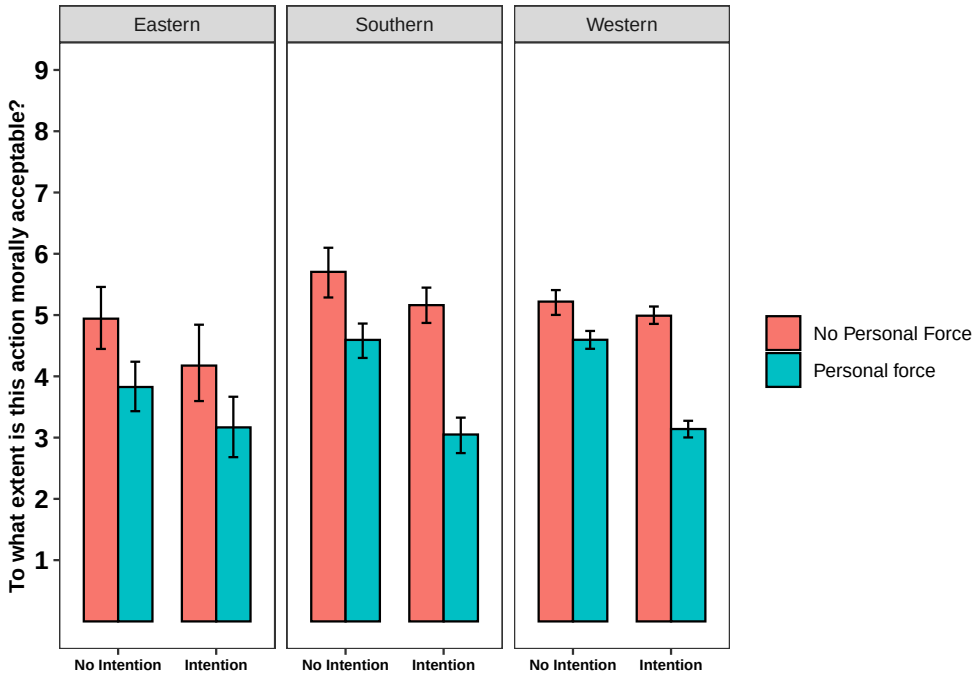

Figure S5: Results on Trolley dilemmas in Study 2 when all exclusion criteria are applied. Error bars are 95% confidence intervals on the mean.

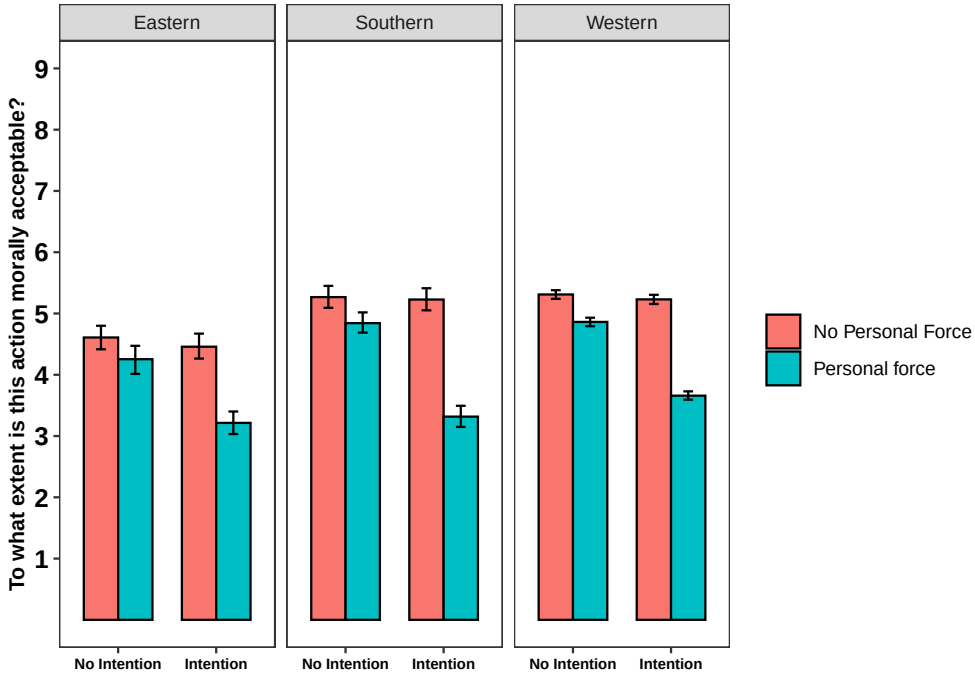

Figure S6: Results on Trolley dilemmas in Study 2 when no exclusion criteria are applied. Error bars are 95% confidence intervals on the mean.

Table S4: Do personal force interact with intention on Speedboat dilemmas?

Exclusion	Cluster	BF	RR	F	df	p
Exclusion	Eastern	0.3	0, 2.8e-0.1	0.003	1, 273	0.959
	Southern	0.3	2.2e-01, Inf	0.068	1, 572	0.794
	Western	140.0	1.2e-03, 1.5e+01, 3.1e+10	14.604	1, 2656	<.001
No exclusion	Eastern	0.1	8.0e-02, Inf	0.001	1, 2052	0.979
	Southern	0.2	0, 3.5e-01	1.050	1, 2485	0.306
	Western	42.0	2.0e-0.3, 7.8e-01	13.585	1, 12874	<.001

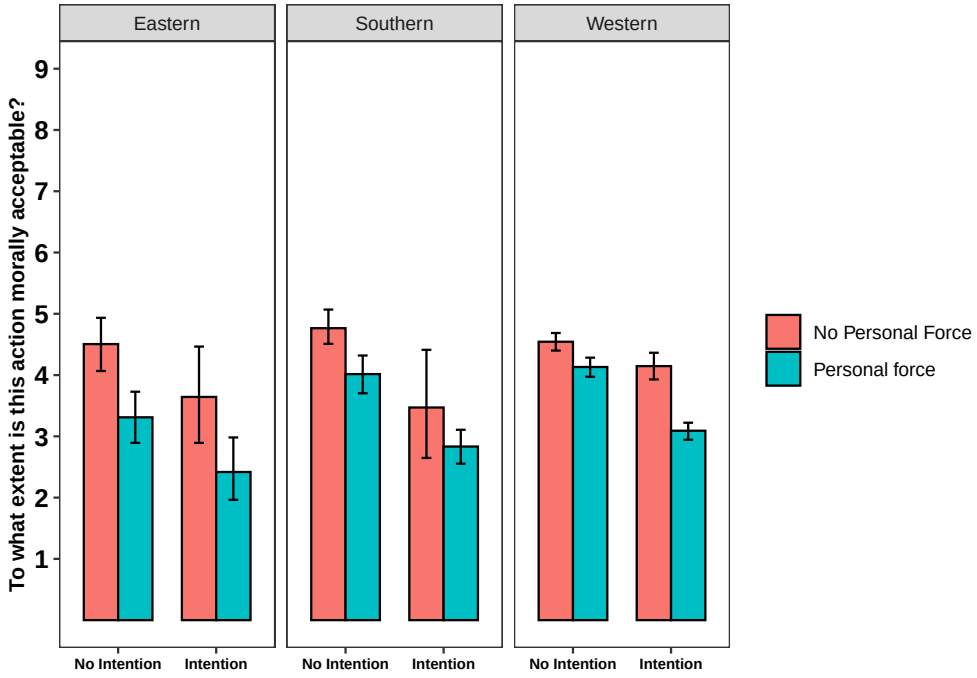

Figure S7: Results on the Speedboat dilemmas in Study 2 when all exclusion criteria are applied. Error bars are 95% confidence intervals on the mean.

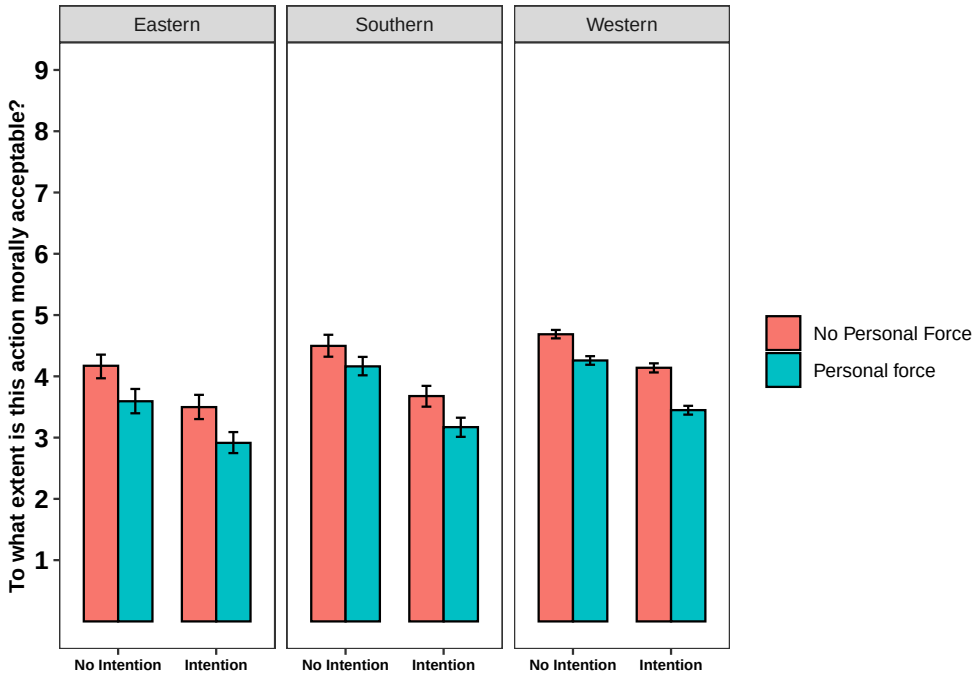

Figure S8: Results on the Speedboat dilemmas in Study 2 when no exclusion criteria is applied. Error bars are 95% confidence intervals on the mean.

The initial idea behind the exclusion critria was that by excluding certain people, we decrease noise and, as a result, we avoid false negative effects. For example, we thought that people failing the attention check questions do not paid enough attention to the task, or that people who were familiar with the trolley problem would respond with their knowledge of the trolley problem in mind, and that would result in a decreased effect of personal force. We observed the complete opposite; we observed a bigger effect size if there was no participants excluded in all cases previously analysed. This could mean either an increased random noise due to the decreased N, or a systematic bias that was intrudiced by a large number of exclusions (85% excluded overall). Hence, to avoid such biases, from this point, we applied no exclusion criteria.

3. Individualism-collectivism analysis

Study 1a and 1b

In the following analysis we used Bayesian and frequentist mixed effect models in which we added the random intercept of countries to all models. In the Bayesian analysis, the bayes factor is a comparison of the model in which there are only main effects (denominator) and the full model (including the main effects and interaction). We can see that regarding the effect of personal force, there is a strong evidence that no individual or country level measure of culture affects it, in fact, in 4, out of the 5 cases in the speedboat, and 5 out of 5 cases in the trolley dilemma we have strong evidence for a null effect.

Table S5: Is the effect of personal force affected by individualism/collectivism on Trolley dilemmas?

variable	BF	b	p
Country-level collectivism	0.15820	0.371	0.837
Vertical Individualism	0.07303	-0.002	0.947
Horizontal Individualism	0.22130	-0.058	0.162
Vertical Collectivism	0.08576	0.010	0.779
Horizontal Collectivism	0.08792	0.013	0.738

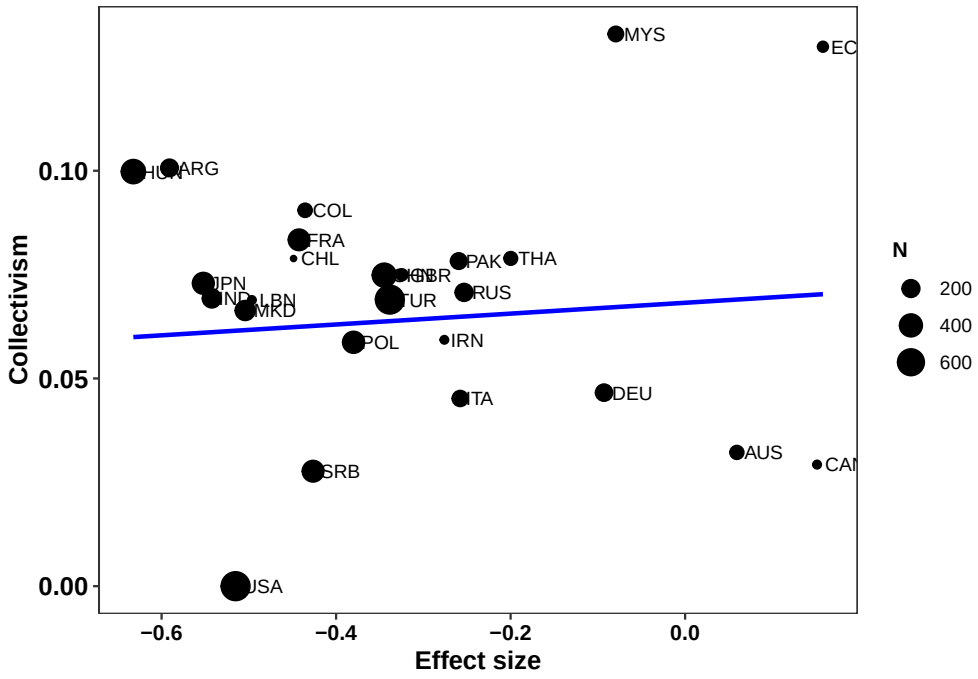

Figure S9: Correlation between country-level individualism/collectivism and the effect of personal force in Cohen D on the Trolley dilemmas

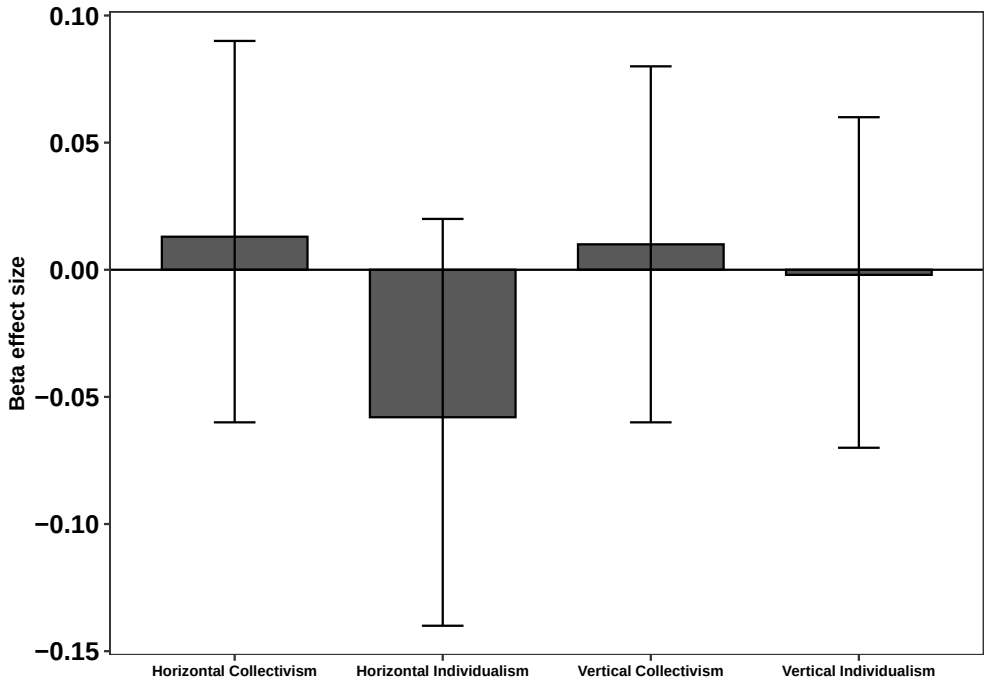

Figure S10: Personal level individualism/collectivism effects on the Trolley dilemmas. Beta effect size of the interaction

Table S6: Is the effect of personal force affected by individualism/collectivism on Speedboat dilemmas?

variable	**BF**	**b**	**p**
Country-level collectivism	0.06764	0.880	0.605
Vertical Individualism	0.10140	0.022	0.480
Horizontal Individualism	0.16170	-0.060	0.126
Vertical Collectivism	0.13650	0.029	0.370
Horizontal Collectivism	0.17200	0.046	0.215

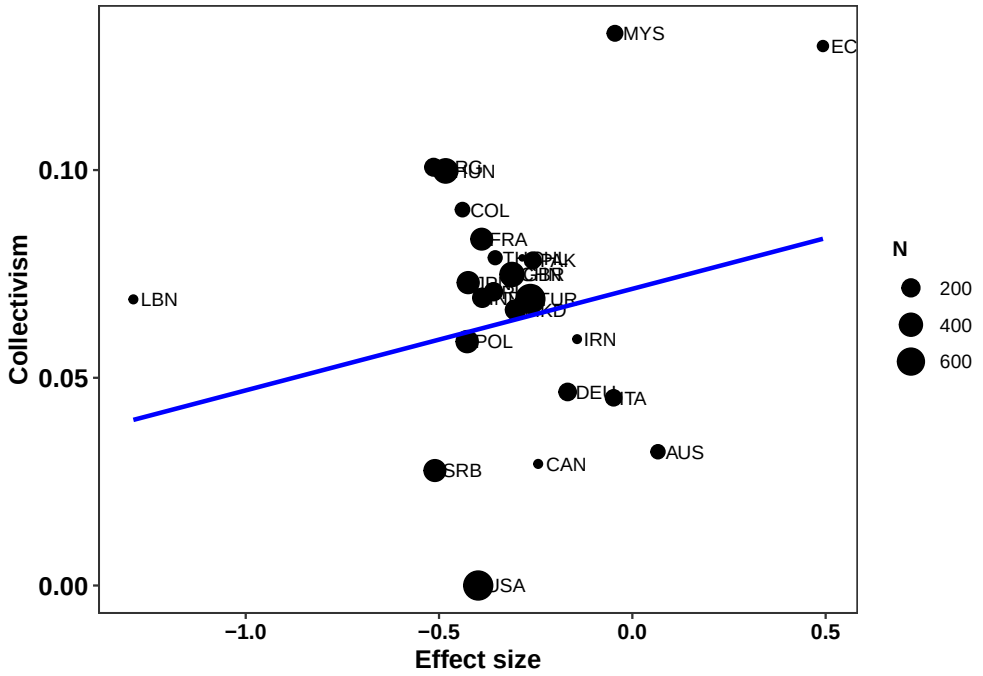

Figure S11: Correlation between country-level individualism/collectivism and the effect of personal force in Cohen D on the Speedboat dilemmas

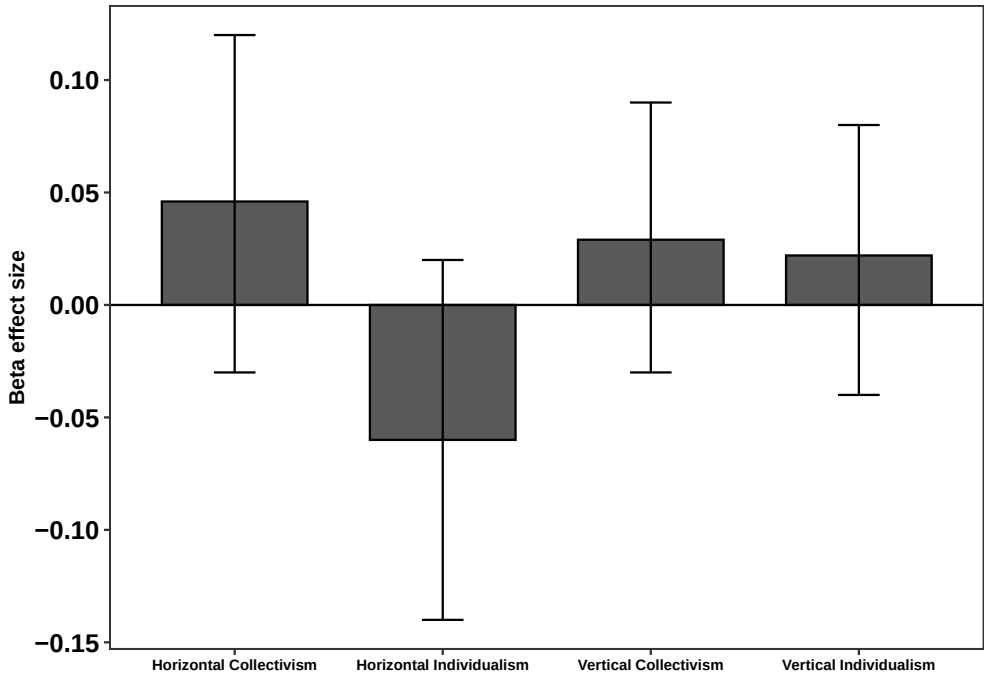

Figure S12: Personal level individualism/collectivism effects on the Speedboat dilemmas

Study 2a and 2b

We applied similar analysis strategy as before: we compared the full model (including the three way interaction) with a model that includes all main effects and interactions but the three-way interaction. Here, the results are somewhat fuzzier. IN the trolley dilemma, the frequentist test shows a significant effect of both country level and horizontal collectivism, but the Bayes Faktor shows the contrary; that the null effect is more likely to be true than the alternative. This comes from the differences between the two tests; the frequentists compares to the intercept, while the Bayesian to an alternative model. Even if the effect exists it cannot be generalized to the speedboat dilemmas.

Table S7: Is the interaction of personal force and intention affected by individualism/collectivism on Trolley dilemmas?

variable	BF	b	p
Country-level collectivism	1.3840	-4.123	0.047
Vertical Individualism	0.3219	0.006	0.881
Horizontal Individualism	4.3130	-0.086	0.064
Vertical Collectivism	0.2941	-0.009	0.827
Horizontal Collectivism	6.8330	-0.107	0.020

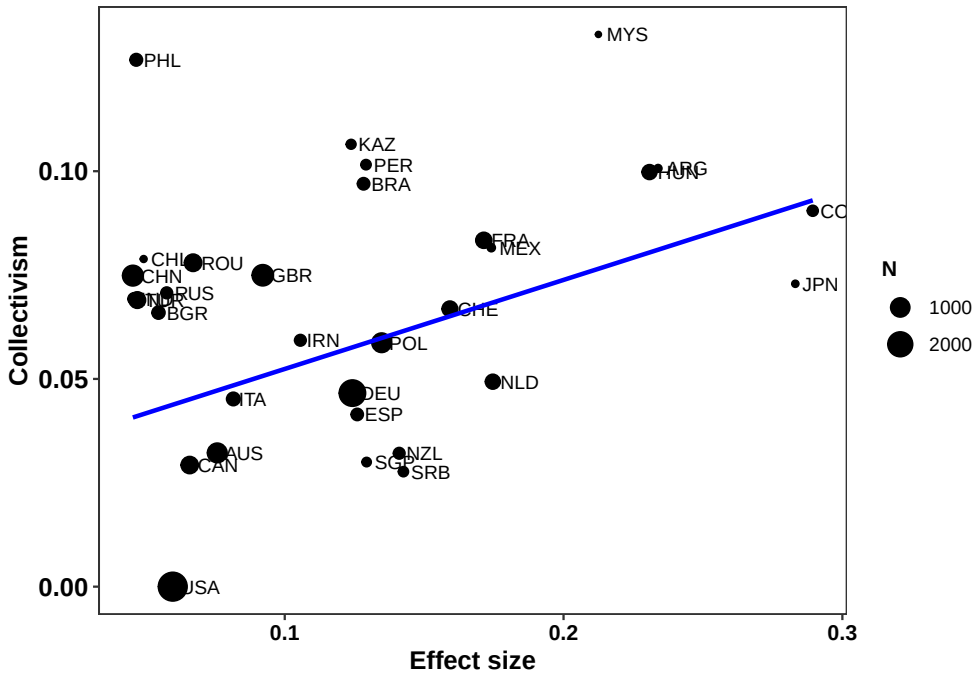

Figure S13: Correlation between country-level individualism/collectivism and the effect of personal force in Eta sqaured on the Trolley dilemmas

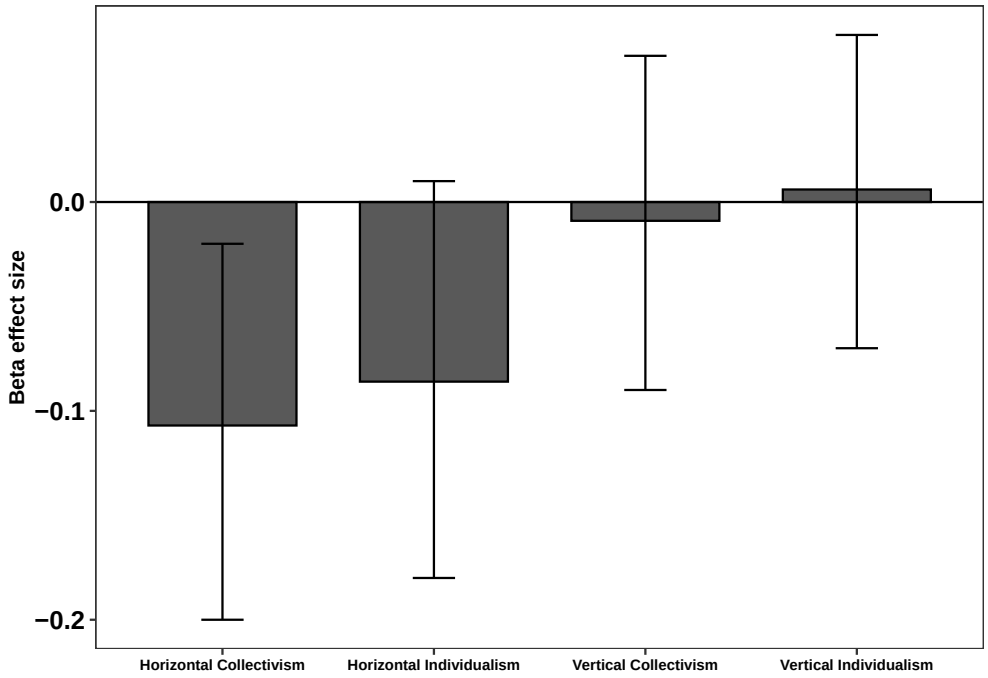

Figure S14: Personal level individualism/collectivism effects on the interaction of personal force and intention (trolley dilemmas)

Table S8: Is the interaction of personal force and intention affected by individualism/collectivism on Speedboat dilemmas?

variable	**BF**	**b**	**p**
Country-level collectivism	0.6788	4.420	0.027
Vertical Individualism	0.3788	0.004	0.921
Horizontal Individualism	2.0780	-0.035	0.440
Vertical Collectivism	0.5796	0.015	0.688
Horizontal Collectivism	0.7245	-0.036	0.424

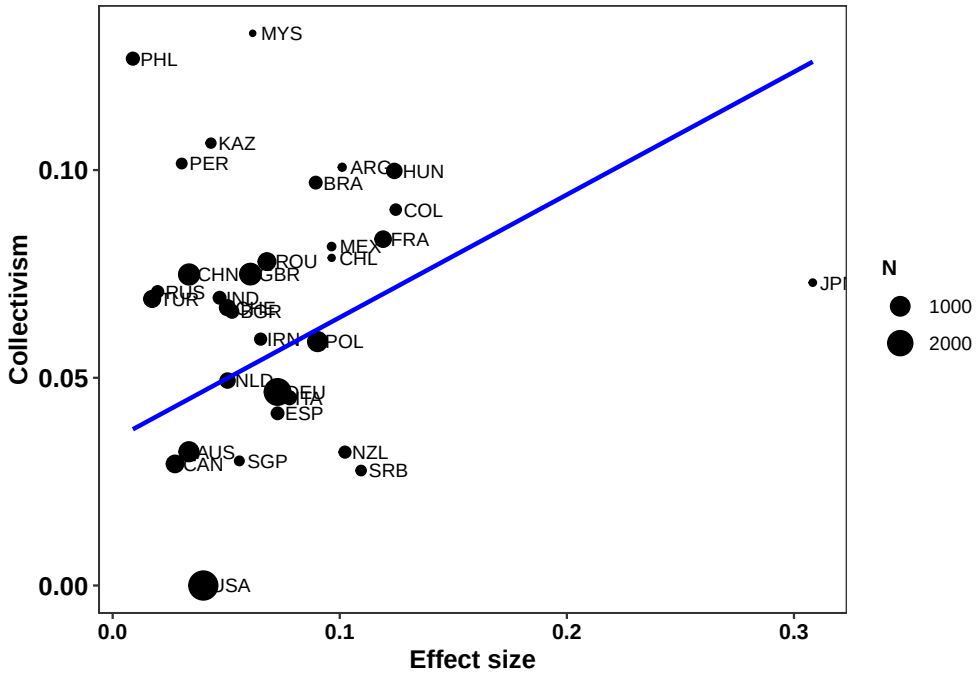

Figure S15: Correlation between country-level individualism/collectivism and the interactional effect of personal force and intention in Eta squared on Speedboat dilemmas

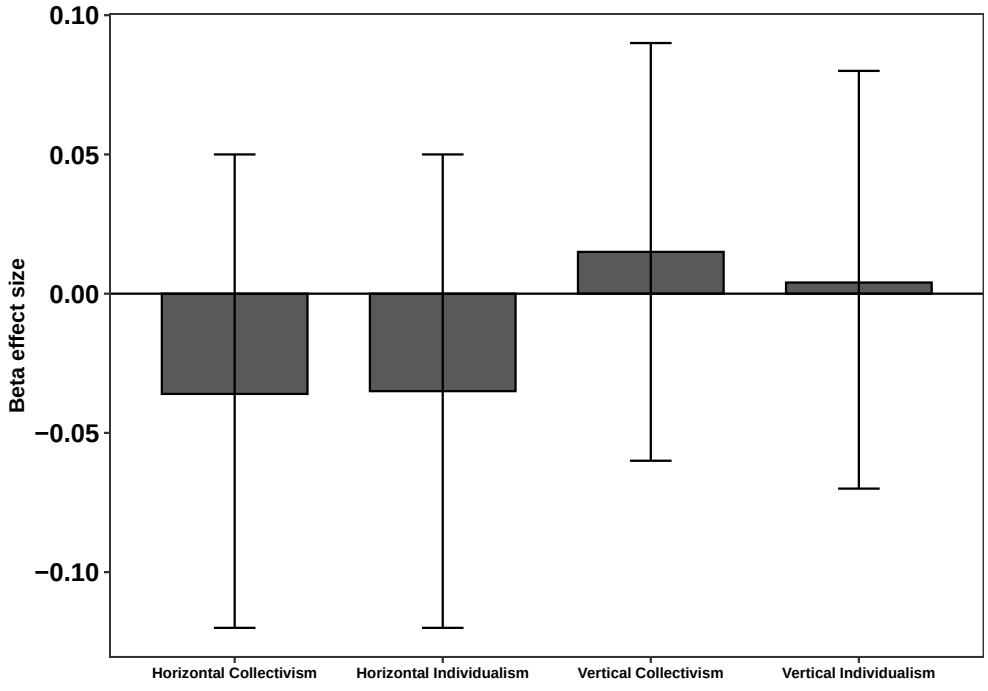

Figure S16: Personal level individualism/collectivism effects on the interaction of personal force and intention (speedboat dilemmas)

Table S9: Effect of Physical Contact and Intention

Cluster	Dilemma	Comparison	t value	B	Degrees of Freedom	p va
Eastern	Trolley	Intention	-3.07	15.30	1,060.61	0.00
Eastern	Speedboat	Intention	-3.06	14.83	1,062.72	0.00
Eastern	Trolley	Physical Contact	1.30	0.36	1,058.33	0.19
Eastern	Speedboat	Physical Contact	2.05	1.08	1,120.01	0.04
Southern	Trolley	Intention	-8.46	80,566,942,978,910.88	1,421.86	0.00
Southern	Speedboat	Intention	-6.12	9,139,382.04	1,400.39	0.00
Southern	Trolley	Physical Contact	1.29	0.31	1,490.81	0.20
Southern	Speedboat	Physical Contact	-0.64	0.17	1,415.68	0.52
Western	Trolley	Intention	-11.01	144,377,840,072,261,052,384,682,882.00	2,999.62	0.00
Western	Speedboat	Intention	-7.65	1,210,464,812,105.90	3,006.15	0.00
Western	Trolley	Physical Contact	3.33	28.15	3,177.42	0.00
Western	Speedboat	Physical Contact	2.19	1.04	3,200.81	0.03

Cluster	Dilemma	t value	
Eastern	Trolley	9.96	10,206,194,134,477,045,760.00
Eastern	Speedboat	9.58	360,700,885,063,732,864.00
Southern	Trolley	16.77	839,533,382,142,754,312,184,886,020,222,466,066,840,866,860,600,668,486.00
Southern	Speedboat	11.51	82,691,078,389,289,932,346,208,224.00
Western	Trolley	34.32	8,633,863,245,635,544,928,806,268,462,862,462,826,846,426,866,828,600,608,866,608,404,2
Western	Speedboat	27.41	2,003,062,889,681,501,842,402,062,440,028,628,682,668,604,424,862,228,804,080,642,808,2

4. Additional analysis

Effect of physical contact and intention

In every cluster and for both types of dilemma we found good enough evidence supporting the alternative hypothesis when testing the effect of physical contact and the effect of intention. The summary of the results can be found in Table X.

Comparing the standard switch and standard footbridge dilemmas

When comparing the standard switch and standard footbridge dilemmas in all clusters for the trolley and the speedboat tasks we found good enough evidence in every case for the support of the alternative hypothesis. The summary results of each comparison separately can be found in Table X.

Oxford utilitarianism Scale