# Supplementary materials

Bence Bago

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# 1. Demographics and exclusion

# 2. Main replication analysis

## Study 1a

### Bayesian analysis

Table S1: Do personal force have an effect 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 summarizes the results of the effect of personal force on moral dilemma judgements, separately on Speedboat and Trolley dilemmas. First, we conducted the analysis with 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 all data without exclusions - in both dilemmas, 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 as 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 which indicates that there is no subjectivity in the results - we would arrive at the same conclusion even with unrealistically big and small priors. Although excluding a large number of our participants did not change the conclusion; it introduced some noise that differentially affected the cultural clusters. In the western cluster for example, the effect is less strong if we analyse the data after exclusions, while such difference cannot be observed on the two other cultural clusters.

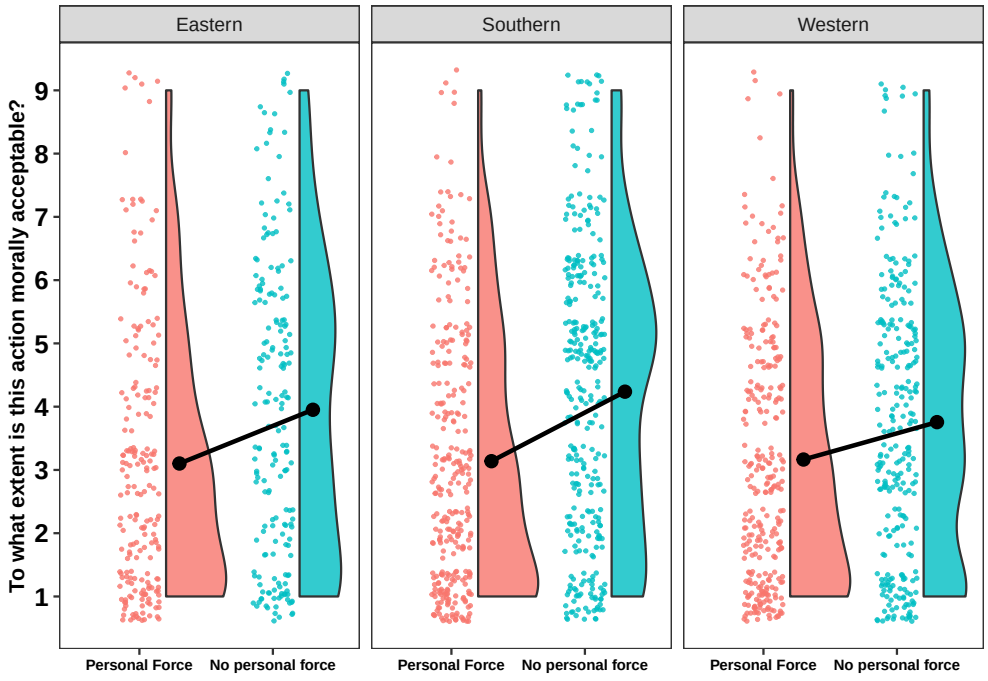


Figure S1: Results on Trolley dilemmas in Study 1 when all exclusion criteria are applied. Black points are group level averages. There is an effect of personal force on each of the three clusters.

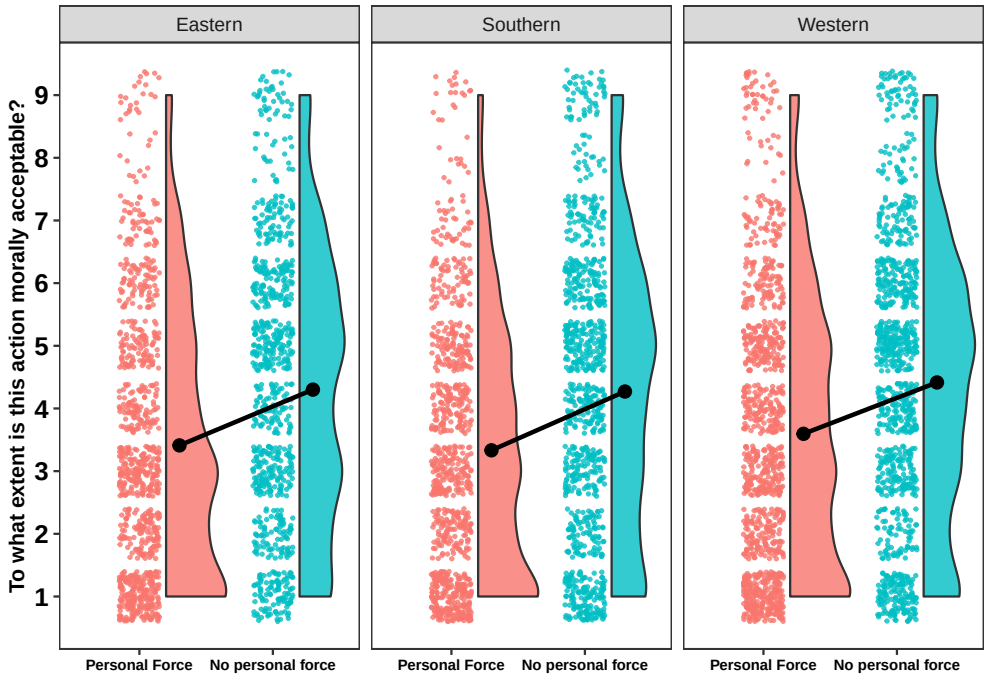


Figure S2: Results on Trolley dilemmas in Study 1 when no exclusion criteria is applied. Black points are group level averages. There is an effect of personal force on each of the three clusters.

Table S2: Do personal force have an effect 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 |

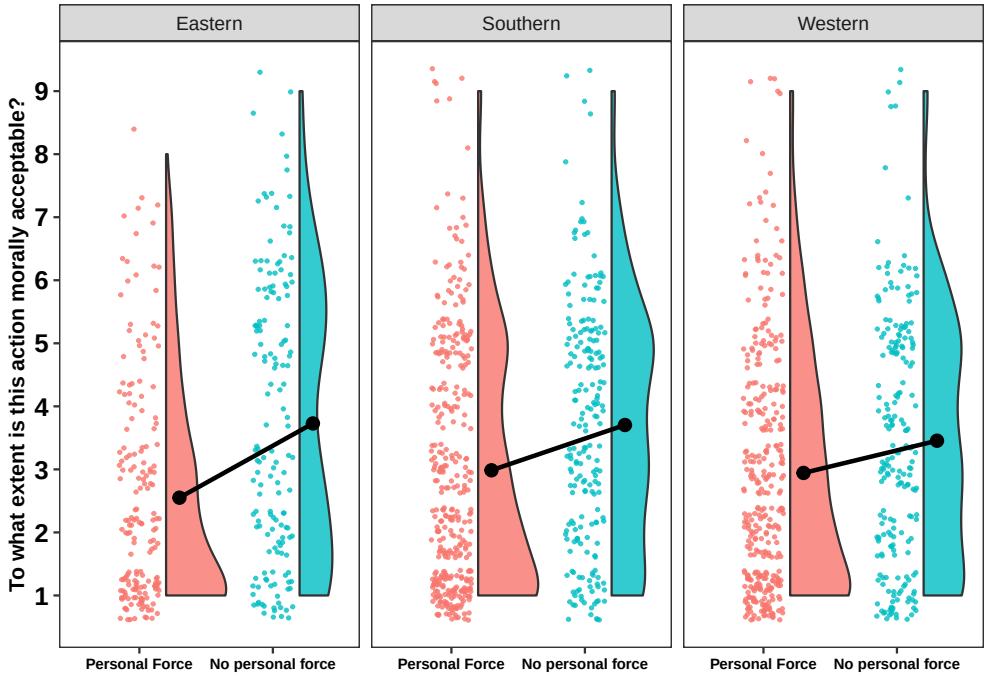


Figure S3: Results on Speedboat dilemmas in Study 1 when all exclusion criteria are applied. Black points are group level averages. There is an effect of personal force on each of the three clusters.

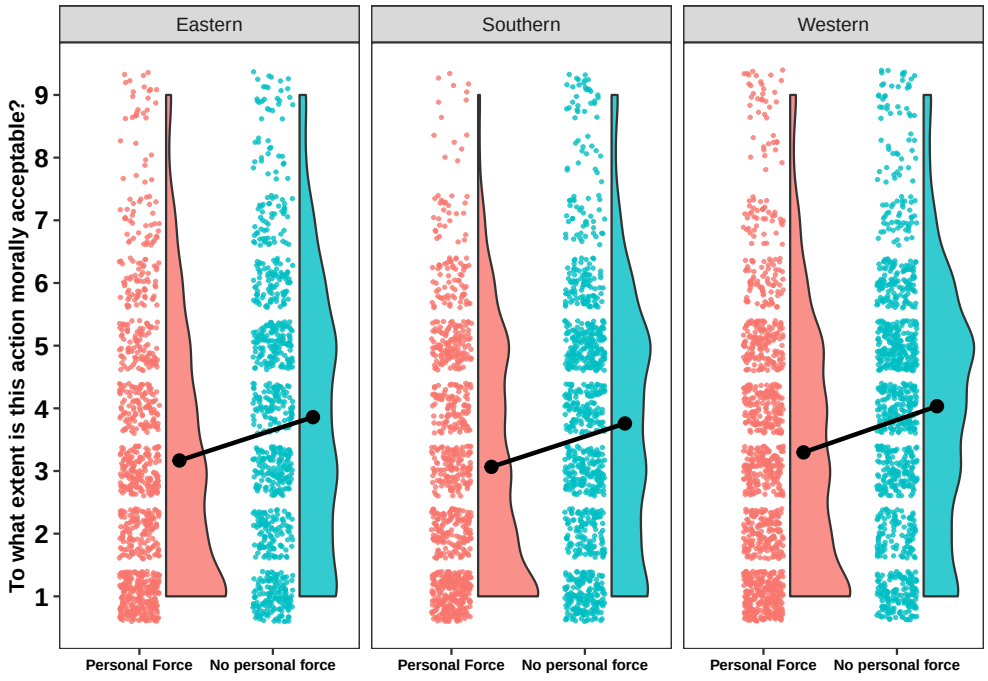


Figure S4: Results on Speedboat dilemmas in Study 1 when no exclusion criteria is applied. Black points are group level averages. There is an effect of personal force on each of the three clusters.

## 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 inteeraction term. In case of the trolley dilemmas, we have very strong evidence (BF >10) to conclude that the interaction exists in the Western and Southern cultural clusters, but not in the Eastern cluster (where $1/10 < BF < 10$, suggesting an inconclusive result). here, we believe is again a case of selection bias. When we analyse all the data, without exclusion, we manage to replicate the effect in all cultural clusters ($BF > 10$). The evidence however is more mixed for the Speedboat dilemmas. Here, we only find evidence for the interaction on the Western cluster, but we do not find an effect on the other two clusters. Although the BF only goes below our null threshold (eastern cluster - without exclusion), $BF < 1$ in this case makes the null hypothesis more likely then the alternative one.

Since the exclusion criteria clearly induced a selection and affected our results in unexpected ways, we decided to analyse all the data (without any exclusions) from now on.

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

| Exclusion | Cluster | BF | RR | F | df | p |
|---|---|---|---|---|---|---|
| Exclusion | Eastern | 3.0e-01 | 2.2e-01, Inf | 0.041 | 1, 319 | 0.84 |
| | Southern | 1.7e+01 | 1.3e-0.2, 2.3 | 9.455 | 1, 686 | 0.002 |
| | Western | 2.2e+11 | <1.0e-04, 3.1e+10 | 58.035 | 1, 2967 | <.001 |
| No exclusion | Eastern | 8.1e+02 | 2.7e-0.4, 1.1e+03 | 18.430 | 1, 2052 | <.001 |
| | Southern | 1.4e+14 | <1.0e-04, 8.9e+15 | 72.282 | 1, 2485 | <.001 |
| | Western | 6.3e+48 | <1.0e-04, >1.0e+18 | 233.910 | 1, 12874 | <.001 |

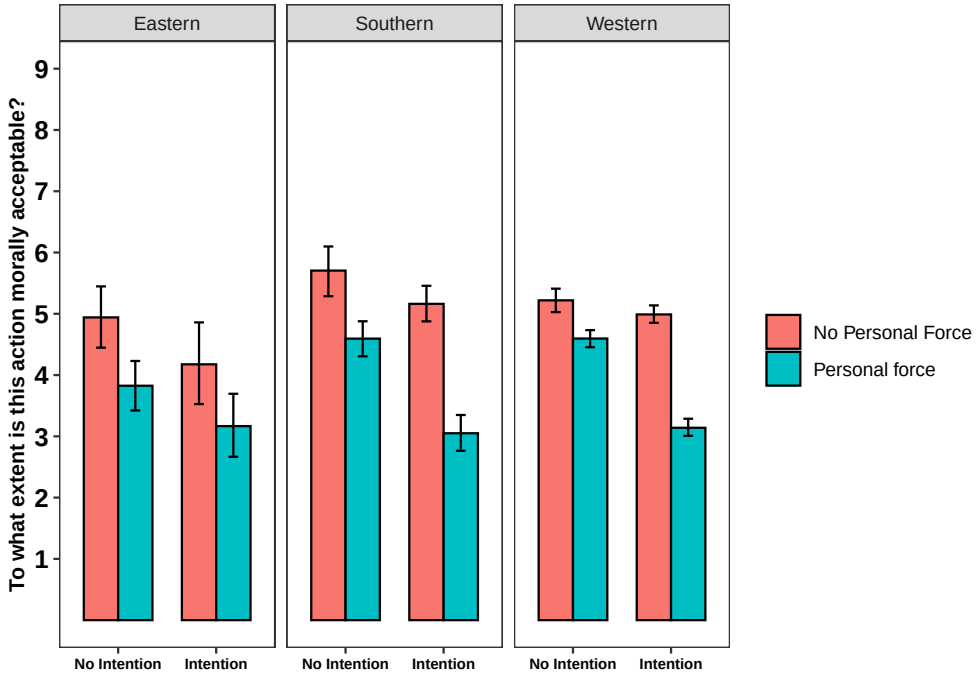


Figure S5: Results on Trolley dilemmas in Study 2 when all exclusion criteria are applied. Error bars are 95% confidence intervals on the mean. We can observe a significant interaction between personal force and intention on all cultural clusters.

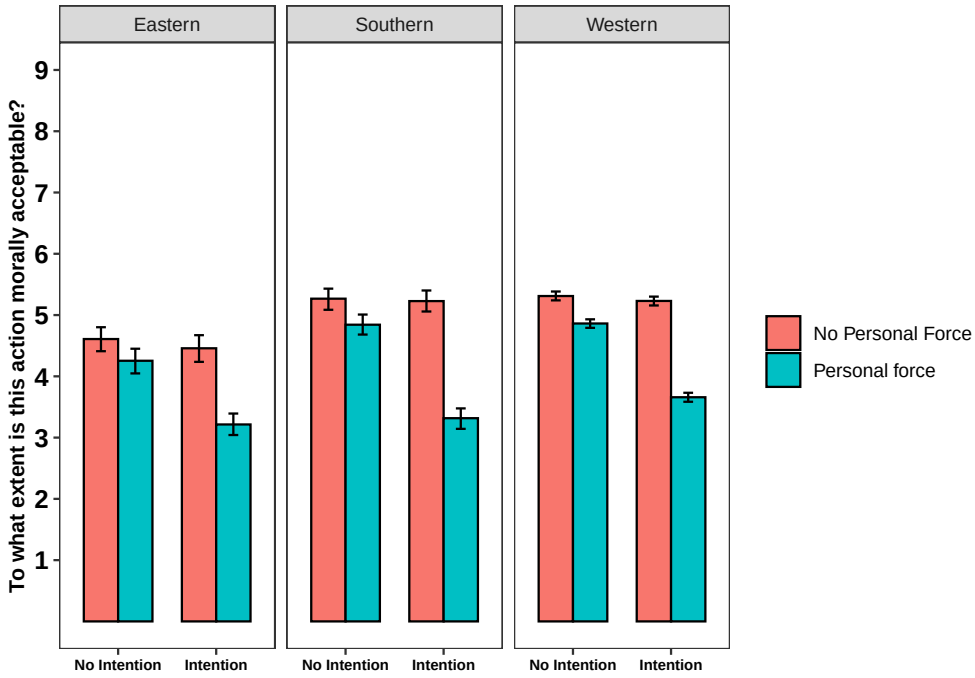


Figure S6: Results on Trolley dilemmas in Study 2 when no exclusion criteria are applied. Error bars are 95% confidence intervals on the mean. We can observe a significant interaction between personal force and intention on all cultural clusters.

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

| **Exclusion** | **Cluster** | **BF** | **RR** | **F** | **df** | **p** |
|---|---|---|---|---|---|---|
| Exclusion | Eastern | 0.4 | 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 | 48.0 | 2.0e-0.3, 7.8e-01 | 13.585 | 1, 12874 | <.001 |

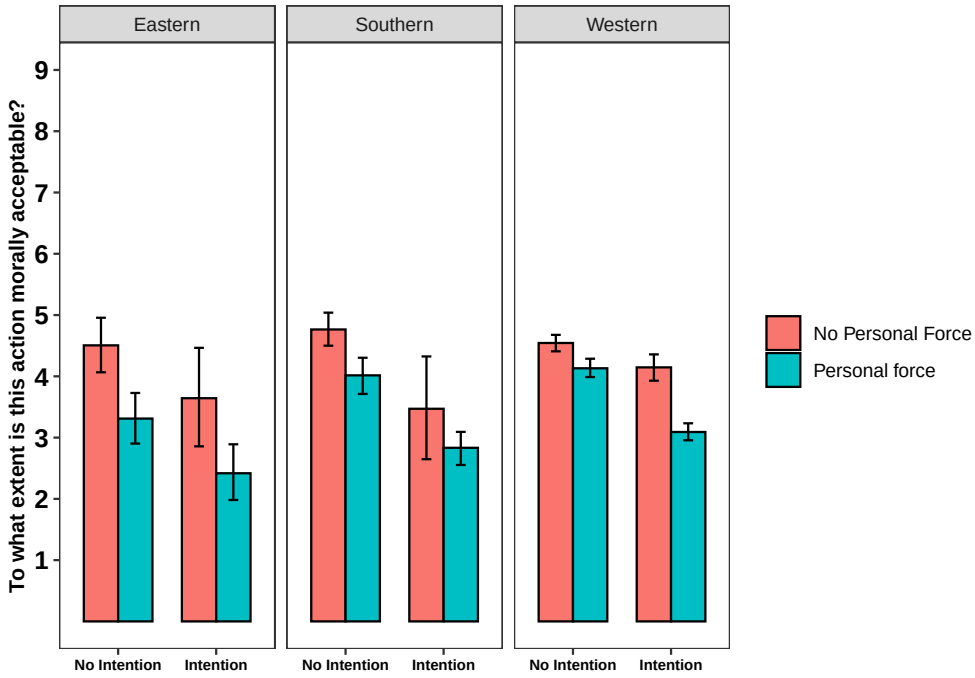


Figure S7: Results on the Speedboat dilemmas in Study 2 when all exclusion criteria are applied. Error bars are 95% confidence intervals on the mean. We can observe a significant interaction between personal force and intention only on the Western cluster.

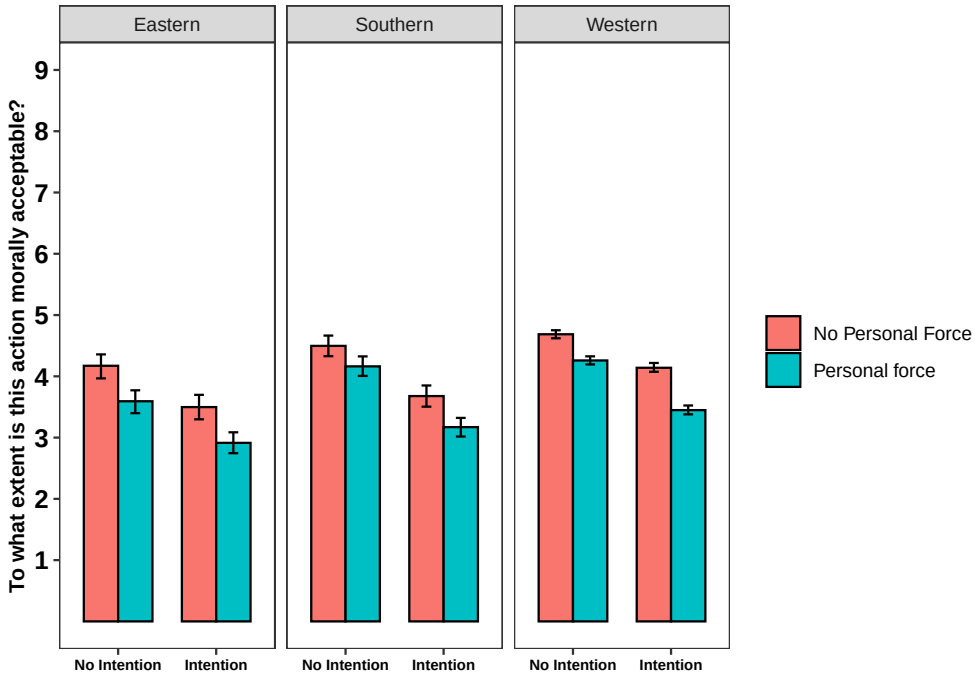


Figure S8: Results on the Speedboat dilemmas in Study 2 when no exclusion criteria is applied. Error bars are 95% confidence intervals on the mean. We can observe a significant interaction between personal force and intention only on the Western cluster.

# 3. Effects of individualism-collectivism

## Study 1a and 1b

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

| variable | BF | b | p |
|---|---|---|---|
| Country-level collectivism | 0.0 | 0.371 | 0.837 |
| Vertical Individualism | 0.0 | -0.002 | 0.947 |
| Horizontal Individualism | 0.1 | -0.058 | 0.162 |
| Vertical Collectivism | 0.0 | 0.010 | 0.779 |
| Horizontal Collectivism | 0.1 | 0.013 | 0.738 |

In the following analysis we used Bayesian and frequentist miwed effect models in whihc we added the random intercept of countries to all models. IN the Bayesian analysis, the bayes faktor 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 theeffect 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.

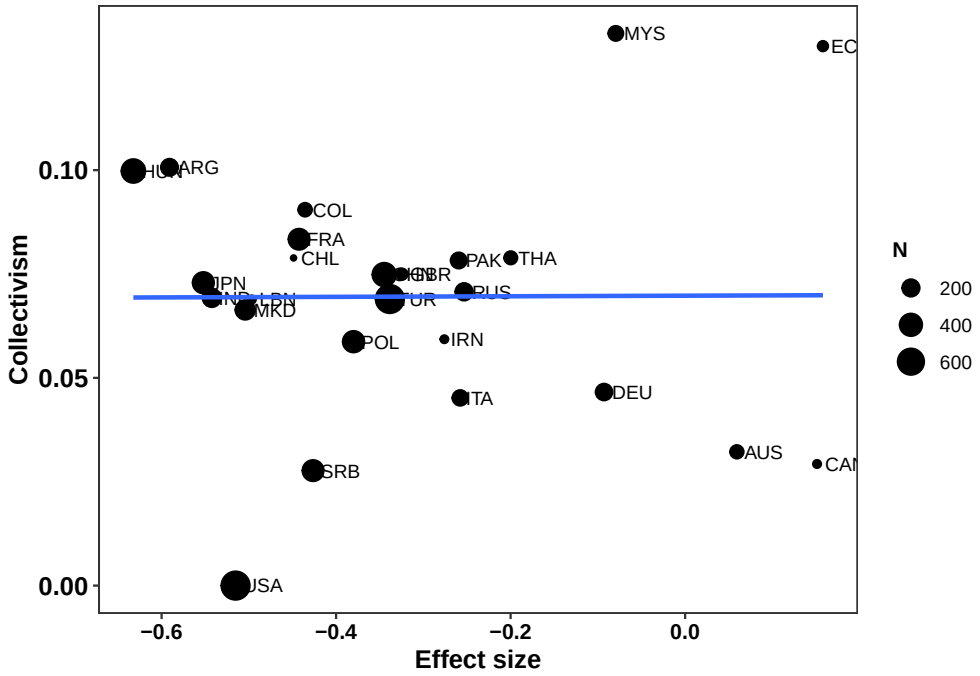


Figure S9: Correlation between country-level individualism/collectivism and the effect of personal force in Cohen D on the Trolley dilemmas

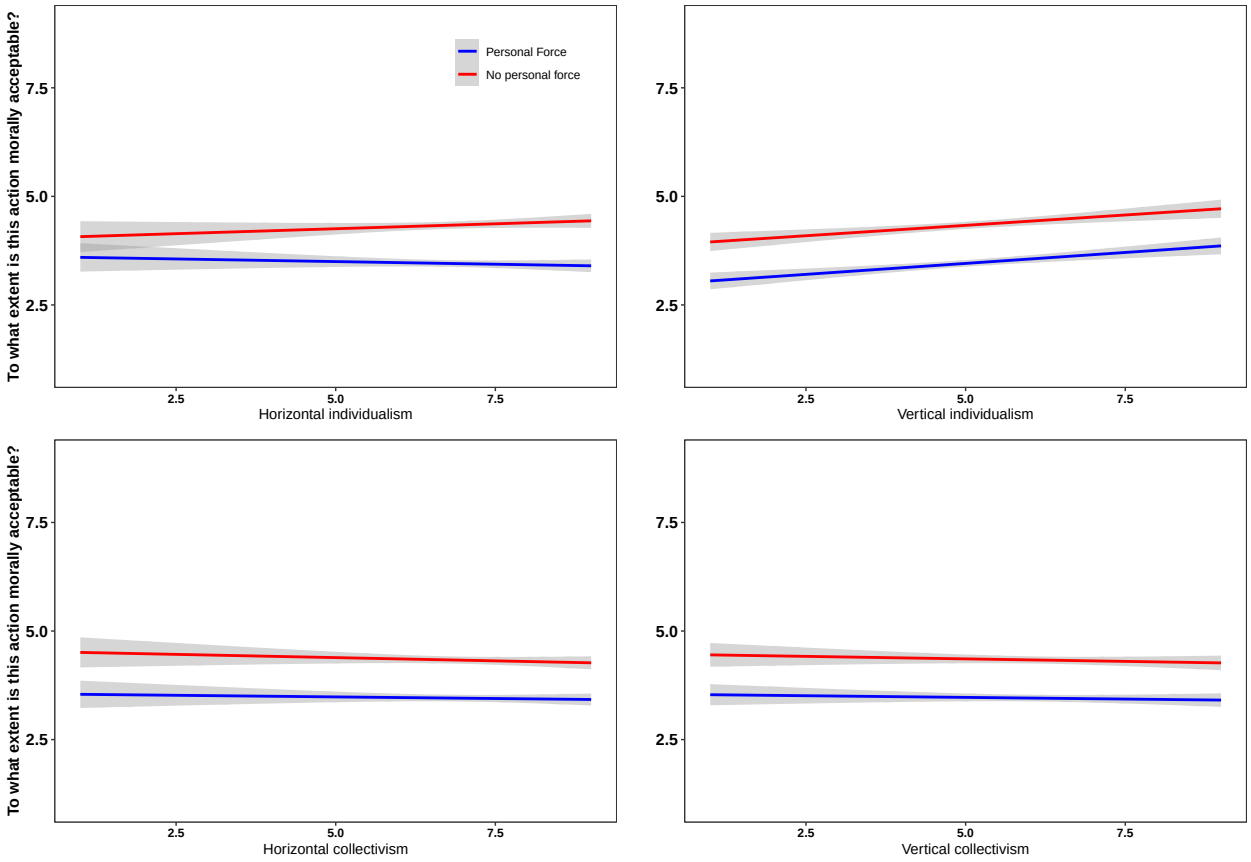


Figure S10: Personal level individualism/collectivism effects on the Trolley dilemmas

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

| **variable** | **BF** | **b** | **p** |
|---|---|---|---|
| Country-level collectivism | 0.1 | 0.880 | 0.605 |
| Vertical Individualism | 0.1 | 0.022 | 0.480 |
| Horizontal Individualism | 0.2 | -0.060 | 0.126 |
| Vertical Collectivism | 0.1 | 0.029 | 0.370 |
| Horizontal Collectivism | 0.1 | 0.046 | 0.215 |

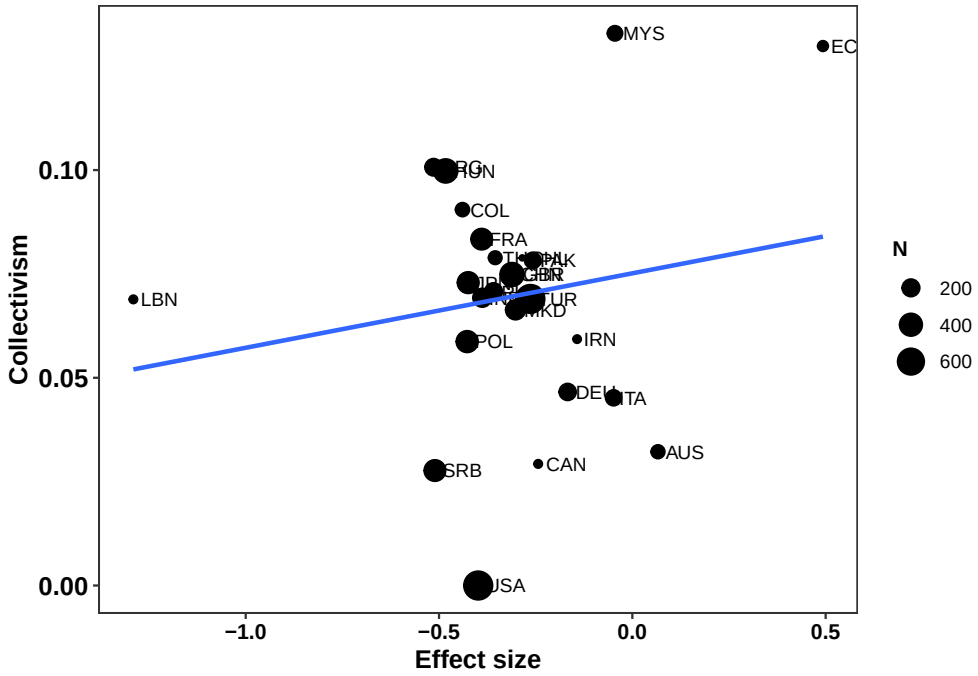


Figure S11: Correlation between country-level individualism/collectivism and the effect of personal force in Cohen D on the Speedboat dilemmas

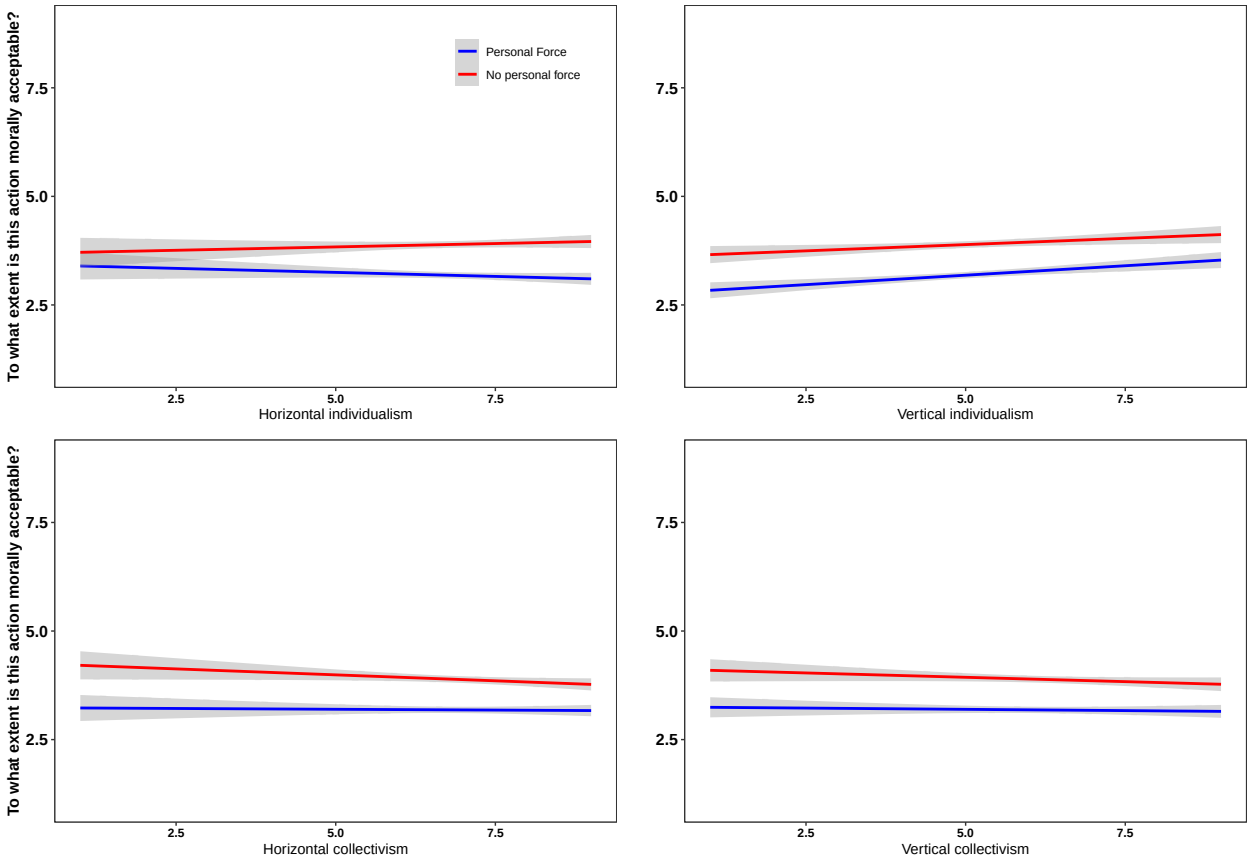


Figure S12: Personal level individualism/collectivism effects on the Speedboat dilemmas

## 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 frequentuists 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 | 0.3 | -4.123 | 0.047 |
| Vertical Individualism | 0.0 | 0.006 | 0.881 |
| Horizontal Individualism | 0.2 | -0.086 | 0.064 |
| Vertical Collectivism | 0.0 | -0.009 | 0.827 |
| Horizontal Collectivism | 0.6 | -0.107 | 0.020 |

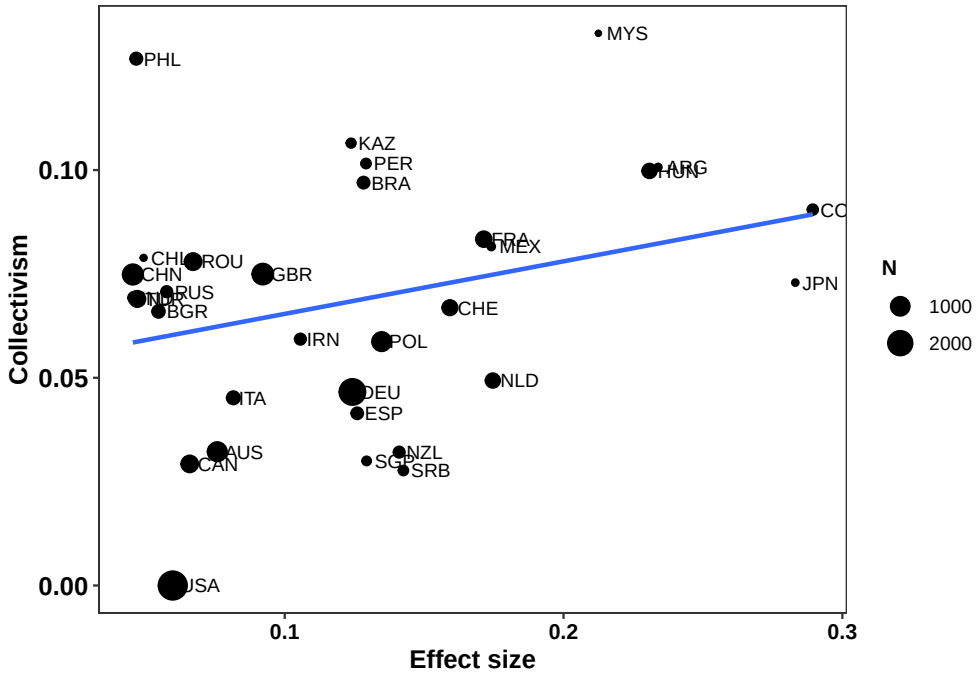


Figure S13: Correlation between country-level individualism/collectivism and the effect of personal force in Eta sqaured on the Trolley dilemmas

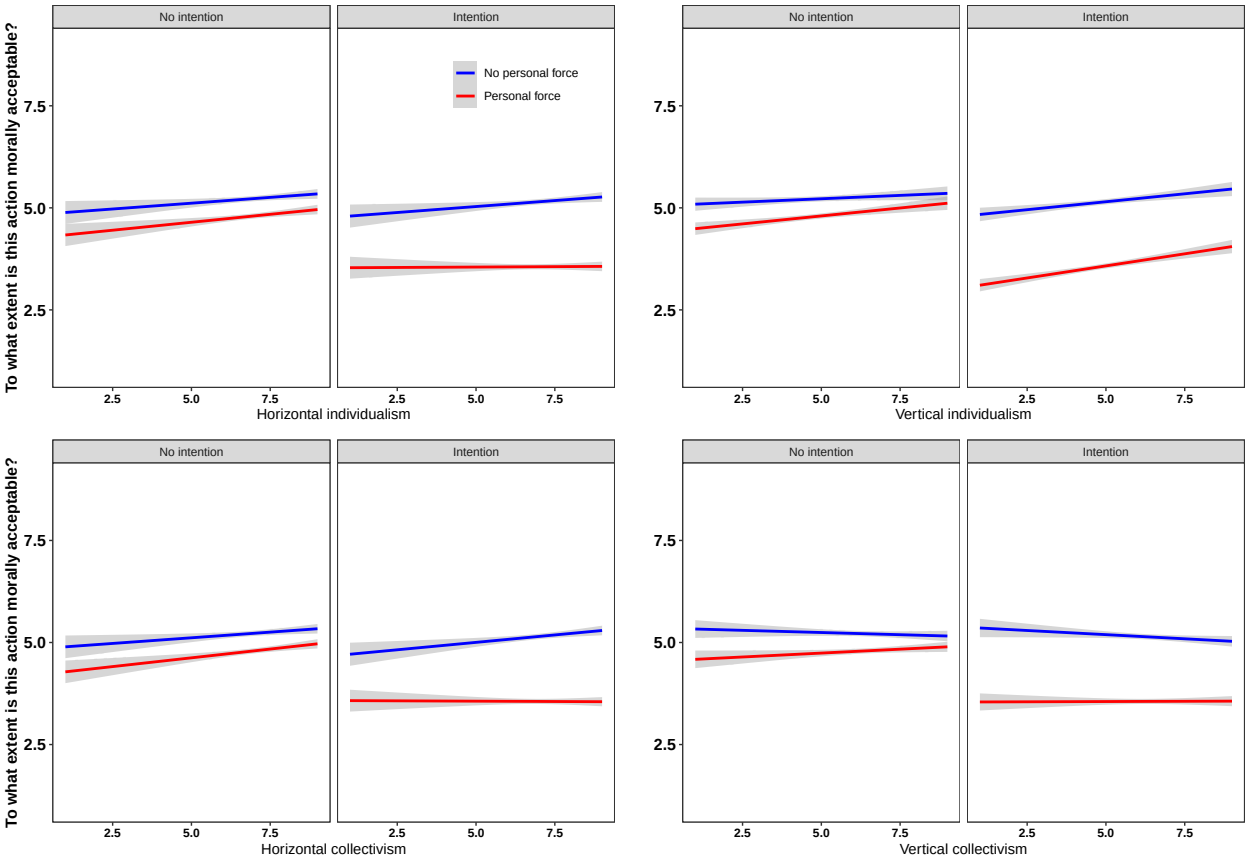


Figure S14: Personal level individualism/collectivism effects on the interaction of personal force and intention (trolley dilemmas)

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

| **variable** | **BF** | **b** | **p** |
|---|---|---|---|
| Country-level collectivism | 0.5 | 4.420 | 0.027 |
| Vertical Individualism | 0.0 | 0.004 | 0.921 |
| Horizontal Individualism | 0.0 | -0.035 | 0.440 |
| Vertical Collectivism | 0.0 | 0.015 | 0.688 |
| Horizontal Collectivism | 0.1 | -0.036 | 0.424 |

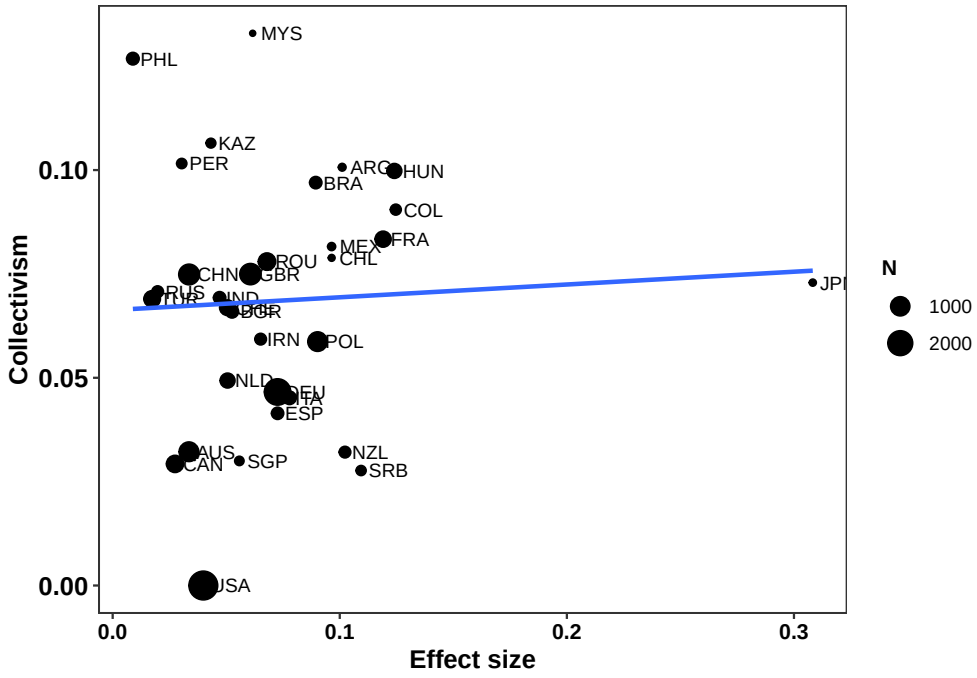


Figure S15: Correlation between country-level individualism/collectivism and the interactional effect of personal force and intention in Eta squared on Speedboat dilemmas

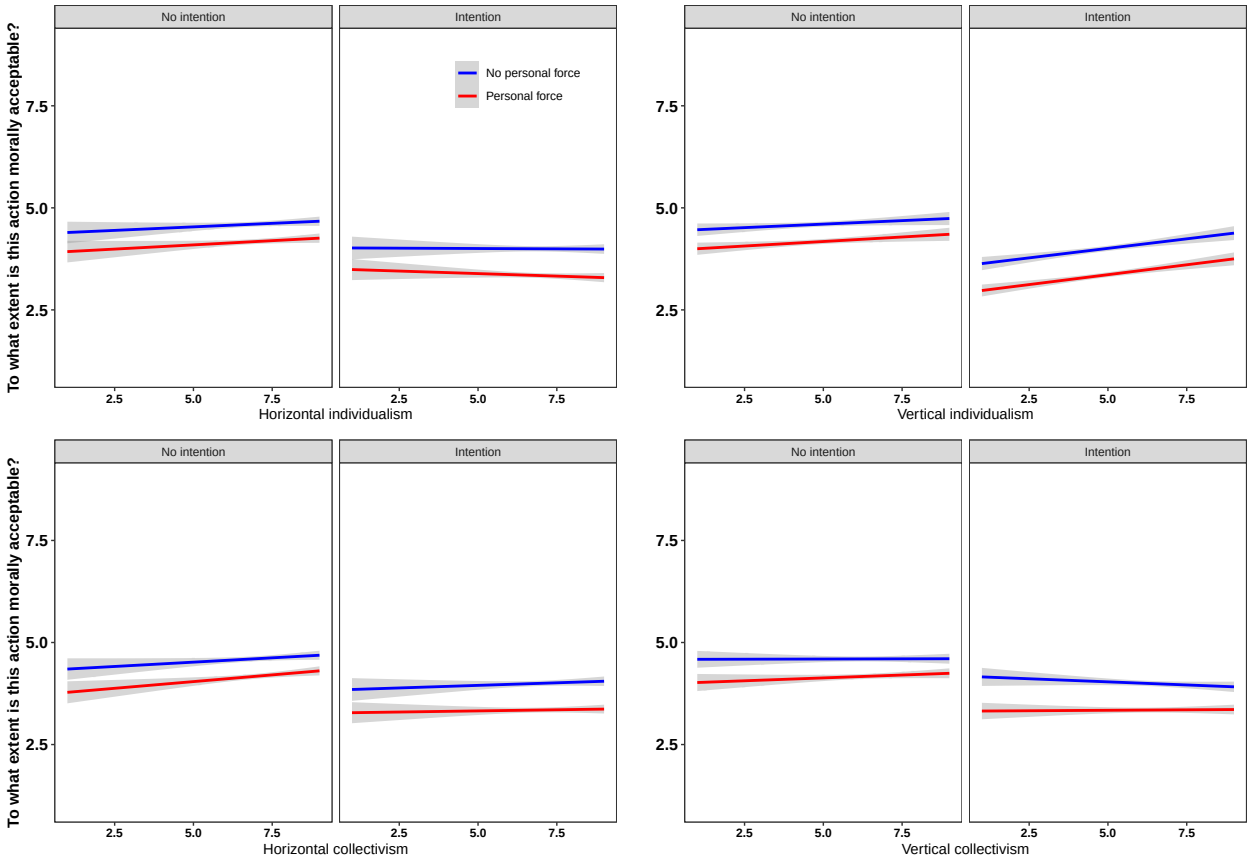


Figure S16: Personal level individualism/collectivism effects on the interaction of personal force and intention (speedboat dilemmas)

# 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

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 |